VIA ELECTRONIC MAIL

January 21, 2022

TCEQ Air Modeling and Data Analysis Section (Attn: Bryce Kuchan)
MC 164
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Re: Federal Clean Air Act El Paso County §179B Demonstration: El Paso-Las Cruces, Texas-New Mexico Nonattainment Area

Dear Mr. Kuchan:

On behalf of Sierra Club, Environmental Integrity Project, Texas RioGrande Legal Aid, Chaparral Community Coalition for Health and Environment, Familias Unidas del Chamizal, Earthworks, Sunrise El Paso, and Sunset Heights Neighborhood Improvement Association ("Community and Environmental Groups"), thank you for the opportunity to comment on the draft Federal Clean Air Act El Paso County §179B Demonstration: El Paso-Las Cruces, Texas-New Mexico Nonattainment Area ("Demo."). Our organizations represent hundreds of individuals living in El Paso and Doña Ana County, New Mexico. We are committed to protecting residents of this region from air pollution, with a special focus on eliminating disproportionate pollution impacts on low-income and minority communities.

Our organizations have consistently advocated for improving air quality in the El Paso-Las Cruces area. In addition, we have engaged in prior proceedings under Section 179B of the Clean Air Act, commenting on the U.S. Environmental Protection Agency's 2020 Guidance on the Preparation of Clean Air Act Section 179 Demonstrations, as well as on TCEQ's draft 179B demonstration for Bexar County.

There can be no serious question that El Paso is experiencing unsafe levels of ozone pollution. In its 2020 State of the Air report, the American Lung Association, ranked El Paso-Las Cruces at number 13 on a list of the most ozone-polluted metropolitan areas in the United States, worse than New York, Chicago, and Dallas-Fort Worth.[1] This ranking reflects the fact that El Paso experiences a weighted-average of 12 high ozone days per year.[2]

These elevated pollution levels cause real harm to individuals in our community. According to analysis by researchers at New York University and the American Thoracic Society, elevated ozone levels in El Paso-Las Cruces cause, on an annual basis, about 22

[1] *Most Polluted Cities*, AM. LUNG ASS'N, https://www.lung.org/research/sota/city-rankings/most-polluted-cities.
[2] *Texas: El Paso*, AM. LUNG ASS'N, https://www.lung.org/research/sota/city-rankings/states/texas/el-paso.

premature deaths, 110 emergency room visits, and over 224,000 missed work or school days.[3] Our members experience a variety of health problems on days with high ozone levels, including asthma attacks, difficulty breathing, and headaches.

As explained in the Technical Comments below, the weight of the evidence does ***not*** support TCEQ's contention that the El Paso-Las Cruces Nonattainment Area would have attained the national ambient air quality standard for ozone by August 3, 2021 "but for" emissions from Ciudad Juarez. We urge TCEQ to follow the evidence, and refrain from finalizing its 179B demonstration. Instead, the agency should promulgate a state implementation plan designed to reduce emissions from new and existing sources of ozone-precursor pollution in El Paso and other parts of west Texas, in order to protect the health and welfare of all of the individuals who live, work, and recreate in this region.

Respectfully,

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[3] HEALTH OF THE AIR 2021, https://healthoftheair.org/ (El Paso County experienced 16 premature deaths, 87 emergency room visits, and 173,158 impacted days, while Doña Ana County experienced 6 premature deaths, 23 emergency room visits, and 50,960 impacted days).

COMMUNITY AND ENVIRONMENTAL GROUPS' TECHNICAL COMMENTS

INTRODUCTION

The weight of the evidence does not support TCEQ's contention that the El Paso-Las Cruces Nonattainment Area ("NA") would have attained the NAAQS by August 3, 2021 "but for" emissions from Ciudad Juarez, Chihuahua ("Juarez"). Rather, the evidence shows that ozone levels are rising throughout west Texas and southern New Mexico, driven by diverse factors including a dramatic increase in emissions from oil and gas operations in the Permian Basin, sustained population growth in west Texas, higher temperatures, and more frequent wildfires. Moreover, ozone exceedances in the El Paso-Las Cruces area have become so frequent and so severe that nonattainment is "overdetermined." In other words, it is not possible to identify a single factor that is the "but for" cause of the problem.

Among other things, the evidence shows:

- **The El Paso-Las Cruces area would fail to attain even if the contribution from north-central Mexico were excluded.** The Desert View monitor in Sunland Park is violating the NAAQS with a design value of 78 ppb. Source apportionment modeling indicates that north-central Mexico contributes a maximum of 7 ppb to ozone levels at this monitor. Thus, Desert View would still be violating the NAAQS with a design value of 71 ppb even if the contribution from north-central Mexico were subtracted.

- **Texas contributes more to nonattainment in the El Paso-Las Cruces area than Juarez does.** In 2011, Texas contributed between 6.4 to 8.6 ppb (9 to 12%) compared to 5.3 to 6.8 ppb (8 to 10%) from north-central Mexico. Modeling conducted using 2014 emission inputs suggested Texas' contribution would decrease slightly by 2025 (to 4.4 to 5.9 ppb) while the contribution of north-central Mexico would remain essentially the same (5.1 to 7.0 ppb). This modeling almost certainly understates Texas' current contribution because it does not reflect the dramatic increase in emissions in the Permian Basin over the last half of the 2010s. Accordingly, it is reasonable to assume that Texas continues to contribute more to regional non-attainment than north-central Mexico.

- **Skyrocketing emissions from oil and gas development in the Permian Basin are contributing to rising ozone levels in the El Paso-Las Cruces area.** Meteorological analysis shows that air travels through the Permian Basin before reaching the Desert View on a *majority* of exceedance days reported at that monitor.

Source apportionment modeling confirms a linkage between Permian emissions and ozone levels in the El Paso-Las Cruces area.

- **The El Paso-Las Cruces area experiences multiple violations of the ozone standard each year that cannot be attributed to Juarez.** For example, Skyline Park showed two violations in 2018, four violations in 2019, and three violations in 2020 that TCEQ found were not linked to Juarez.

Because the weight of the evidence does not indicate that the NA would attain the ozone standard "but for" emissions emanating from Juarez, TCEQ should not finalize its 179B demonstration. Instead, the agency should promulgate a state implementation plan designed to reduce emissions from new and existing sources of ozone-precursor pollution in El Paso County and other parts of west Texas that contribute to regional nonattainment.

LEGAL COMMENTS

A. TCEQ Must Limit its Consideration to the Emissions from Juarez, rather than Considering International Emissions in Aggregate

The overriding purpose of the Clean Air Act is to "protect and enhance" air quality, 42 U.S.C. § 7401(b), and mitigate the "mounting dangers to the public health and welfare" caused by air pollution. *Id.*, § 7401(a)(2). To that end, Congress established the National Ambient Air Quality Standards ("NAAQS") program, which EPA uses to regulate six common air pollutants, including ground-level ozone. *Id.*, § 7409. Under the NAAQS program, EPA establishes health-based standards for each pollutant at a level that is "requisite to protect the public health" with an adequate margin of safety. *Id.*, § 7409(b)(1). States then develop state implementation plans ("SIPs") to provide for the attainment and maintenance of these standards. *Id.*, § 7410.

Section 179B, enacted as part of the 1990 Amendments to the Clean Air Act, authorizes EPA to provide limited relief in the event a state fails to attain the NAAQS due to "emissions emanating from outside of the United States." *Id.*, § 7509a. In drafting the provision that became Section 179B, Congress emphasized that it intended to provide a narrow exception to be

invoked only under "very limited circumstances." S. REP. No. 98-426 at 38 (1984). Congress "recognize[ed] that failure to meet health-based standards in . . . areas [that do not attain the standards] poses a continued risk to individuals living there and that ongoing efforts to attain these standards must be made." *Id.* Nonetheless, Congress offered an exception for "some limited cases [where] an area may fail to attain ambient standards because of emissions *from immediately adjacent areas in a foreign country.*" *Id.* (emphasis added).

The statute effectuates Congress' desire to create a "very limited" exception by limiting relief to cases where nonattainment is caused by "emissions *emanating* from outside of the United States." 42 U.S.C. § 7509a(b) (emphasis added). The term "emanate" means to "issue or spread out from (a source)" or to "originate from; be produced by." *See Emanate*, LEXICO (POWERED BY OXFORD), https://www.lexico.com/en/definition/emanate. Thus, a valid 179B demonstration must identify *specific* foreign sources from which emissions originate, issue, or spread out.

Consistent with this statutory language, EPA recommends that 179B demonstrations should identify "*specific* international anthropogenic emissions sources (e.g., an international emitting facility) or source regions (e.g., an international metropolitan area) that predominantly influence the monitor location on internationally influenced days." U.S. ENV'T PROT. AGENCY, GUIDANCE ON THE PREPARATION OF CLEAN AIR ACT SECTION 179B DEMONSTRATIONS FOR NONATTAINMENT AREAS AFFECTED BY INTERNATIONAL TRANSPORT OF EMISSIONS at 20 (2020) ("Guidance") (emphasis added). EPA further recommends that states provide "an international emission inventory for proximate sources" and describe "how controls on the upwind international anthropogenic sources differ from those required within the U.S." *Id.* at 20, 27.

In sum, the statutory text, legislative history, and administrative guidance confirm that Section 179B was not designed to relieve states of the obligation to attain the NAAQS simply because the *aggregate* of international emissions causes or contributes to nonattainment. Rather, the provision is applicable in "very limited circumstances" where an area fails to attain due to emissions from an immediately adjacent area of a foreign country. S. REP. No. 98-426 at 38; *accord* Guidance at 20. Notably, TCEQ's own comments on the 179B Guidance indicate that it understands EPA to limit consideration to "specific international contributing source[s]" as opposed to aggregate international sources. TEX. COMM'N ON ENV'T QUALITY, COMMENTS ON THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S (EPA) DRAFT GUIDANCE ON THE PREPARATION OF THE CLEAN AIR ACT SECTION 179B DEMONSTRATIONS FOR NONATTAINMENT AREAS AFFECTED BY INTERNATIONAL TRANSPORT OF EMISSIONS at 6 (2020).

TCEQ has appropriately chosen to focus on whether the El Paso-Las Cruces NA "would have attained the 2015 ozone [NAAQS] by the marginal attainment date of August 3, 2021 'but for' international contributions from neighboring Ciudad Juarez in Mexico." TCEQ, FEDERAL CLEAN AIR ACT EL PASO COUNTY §179B DEMONSTRATION: EL PASO-LAS CRUCES, TEXAS-NEW MEXICO NONATTAINMENT AREA: PUBLIC REVIEW DRAFT REPORT at 2 (2021) ("Demo."). Moreover, the bulk of TCEQ's technical analysis is appropriately focused on emissions emanating from the Juarez area. *See, e.g.*, Demo. at 24 (noting that "the criteria defining 'traveled through Mexico' is met when any part of a trajectory traverses any area of Ciudad Juarez"). However, TCEQ also provides information about the combined impact of Mexico, the Gulf, the Caribbean, and Canada on ozone levels in the El Paso-Las Cruces NA. *See id.* at 33, Table 6-1. This information is not relevant to the question of whether the El Paso-Las Cruces

area would have attained the ozone standard but for emissions from Juarez; accordingly, it is not properly considered as part of the weight of the evidence analysis.

B. TCEQ Must Show that Juarez's Contribution to Nonattainment is "Meaningfully Larger" than Texas's Contribution

Section 179B(b) provides that any state that establishes it "would have attained the [NAAQS] for ozone by the applicable attainment date, *but for* emissions emanating from outside the United States" shall not be subject to reclassification to a higher classification category by operation of law. 42 U.S.C. § 7509a(b) (emphasis added).

The term "but for" is imported from the common law of torts. For this reason, states and EPA must look to the common law in construing Section 179B. *See Morissette v. United States*, 342 U.S. 246, 263 (1952) ("[W]here Congress borrows terms of art in which are accumulated the legal tradition and meaning of centuries of practice, it presumably knows and adopts the cluster of ideas that were attached to each borrowed word in the body of learning from which it was taken and the meaning its use will convey to the judicial mind unless otherwise instructed."). An appropriate starting point is the Restatement (Second) of Torts ("Restatement"). *Cf. Burlington N. & Santa Fe Ry. Co. v. United States*, 556 U.S. 599, 614 (2009) (using the Restatement in deciding how to apportion liability under CERCLA). The Restatement provides that "[i]n order to be a legal cause of another's harm, it is not enough that the harm would not have occurred had the actor not been negligent." Restatement § 431 cmt. a. Rather,

> The negligence must also be a substantial factor in bringing about the plaintiff's harm. The word 'substantial' is used to denote the fact that the defendant's conduct has such an effect in producing the harm as to lead reasonable men to regard it as a cause, using that word in the popular sense, in which there always lurks the idea of responsibility, rather than in the so-called 'philosophic sense,' which includes every one of the great number of events without which any happening would not have occurred.

Id. It might be true in the "philosophical sense" that an international contribution of 1 ppb is a "but for" cause of nonattainment if an area has a design value of 71 ppb, but interpreting the statute in line with the common law and common sense, it would clearly be inappropriate for EPA to approve a 179B demonstration for such an area, because a contribution of 1 ppb cannot be characterized a substantial factor in bringing about nonattainment.

To ensure that the substantial factor test is met, EPA appropriately requires states to compare the international contribution to the domestic contribution to determine if the former is "meaningfully larger" than the latter. *See* Guidance at 44 ("When results show that international contributions are larger on exceedance days and meaningfully larger than domestic contributions, the weight of evidence will be more compelling."). Following this Guidance, a 179B demonstration should not be granted for the El Paso-Las Cruces NA absent evidence that emissions from Juarez are a "substantial factor" in causing nonattainment because they are "meaningfully larger" than the domestic contribution.

C. TCEQ's Demonstration Cannot Be Granted Unless the Weight of the Evidence Shows that the Entire NA Would Have Attained But For Emissions from Juarez

Because the El Paso-Las Cruces NA is a single, multi-state nonattainment area, the TCEQ demonstration cannot be granted unless the weight of the evidence shows that *the entire NA* would have attained the ozone NAAQS by August 3, 2021, but for emissions from Juarez. In other words, it is not sufficient for TCEQ to show that all El Paso County monitors would have attained absent a contribution from Juarez. It is also necessary to show that neighboring areas of southern New Mexico would have attained but for this contribution.[4] TCEQ does not

[4] *See* EPA, RESPONSES TO SIGNIFICANT COMMENTS RECEIVED ON EPA'S REVISED RESPONSE TO STATE AND TRIBAL RECOMMENDATIONS FOR THE 2015 OZONE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) ADDRESSING EL PASO COUNTY, TEXAS AND WELD COUNTY, COLORADO at 30 (2021) (explaining that it would be "inequitable" for El Paso County and Doña Ana County to be subject to different nonattainment classifications, particularly since "El Paso County's

independently attempt to show that emissions from Juarez have prevented southern New Mexico from attaining; instead, it references and relies upon the New Mexico Environment Department ("NMED")'s 179B demonstration. Thus, approval of NMED's demonstration is a necessary condition for approval of TCEQ's demonstration.

TECHNICAL ANALYSIS

A. TCEQ's Back Trajectory Analysis Fails to Demonstrate that Emissions from Juarez Are the Cause of Nonattainment in the El Paso-Las Cruces Area

TCEQ presents analysis purporting to show that every monitor in El Paso County would attain the NAAQS if exceedances caused by international emissions were excluded. This analysis is flawed, for several reasons. First, TCEQ assumes, without any valid basis, that a back trajectory is evidence of international transport "when any part of a trajectory traverses any area of Ciudad Juarez." Demo. at 24. This assumption is applied even if the trajectory only briefly enters Mexico after traveling hundreds of miles across highly polluted parts of Texas.

Second, TCEQ's analysis includes numerous false positives. Comparing data from the different monitors in the El Paso-Las Cruces NA shows ***seven*** days when an exceedance at one monitor was linked to Juarez and excluded, even though another monitor in the NA experienced an exceedance that was not linked to Juarez. This comparison indicates that (1) incidental transport of polluted air through Juarez on the way to El Paso is common and (2) TCEQ's methodology is not a reliable way to distinguish emissions that incidentally travel through Juarez from those that originate there.

Third, TCEQ's analysis improperly conflates contribution with but-for causation by excluding all days that are deemed to be influenced by transport from Juarez, without

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nonattainment designation is based on its contribution to a violating monitor" in Doña Ana County).

considering the possibility that a violation was "overdetermined" (i.e., that the violation might have occurred even absent the contribution from Juarez). Source apportionment modeling cited by TCEQ indicates that emissions in north-central Mexico may be responsible for up to 7.0 ppb of the ozone reaching the El Paso-Las Cruces NA. Demo. at 36. This indicates that emissions from Juarez will generally *not* be sufficient to explain violations that are more than 7.0 ppb above the NAAQS (i.e., violations of 78 ppb or greater). Because these exceedances would have occurred even in the absence of a contribution from Juarez, it is improper to exclude them entirely. When this mistake is corrected, it becomes clear that the Demonstration should not be approved, because the El Paso-Las Cruces NA would not have attained the NAAQS even if emissions from Juarez were excluded.

1. TCEQ Improperly Assumes that International Transport is Occurring if a Back Trajectory Traverses Any Part of Juarez for Any Amount of Time

TCEQ assumes, without any valid basis, that international transport is occurring "when any part of a trajectory traverses any area of Ciudad Juarez." Demo. at 24. Thus, back trajectories that travel for hundreds of miles across the United States are characterized as "international" if, at any point in their journey, they pass into Mexico. Figure 4-5 demonstrates why this methodology is unreliable. Figure 4-5 shows the trajectories arriving at the UTEP monitor on June 6, 2016. *Id.* All eight trajectories originate in Texas, and travel hundreds of miles across the state, passing over the Permian Basin, which emits far more ozone-forming pollution than Juarez. These trajectories cross the border near Socorro, TX, traverse Juarez for about ten miles, and then reenter the United States near the Chamizal National Memorial. Even though these trajectories spend 99% of their lifetime in the United States, TCEQ treats them as evidence of "international transport." Clearly, TCEQ's methodology is not a reliable method for distinguishing emissions that *originate* in Juarez from those that incidentally pass through it.

In response to a request from Commenters, TCEQ published the full set of HYSPLIT back trajectories on January 13, 2022. TCEQ denied Commenters' request for a 10-day extension to consider this additional data, leaving Commenters only five business days to consider the additional data. Given the time limitations, Commenters' analysis of this information has necessarily been cursory. However, this additional information confirms that many of the back trajectories that TCEQ characterized as evidence of "international transport" spend most of their time traversing the United States, before briefly entering Mexico.[5]

Commenters also looked to the back trajectories used by NMED as part of its 179B Demonstration for Sunland Park to gain additional insight about air flow patterns in the Paso del Norte air basin on ozone exceedance days. Like TCEQ, NMED characterized exceedance days as influenced by international emissions when more than 75% of the trajectories travel through the Juarez airspace. CLEAN AIR ACT 179B DEMONSTRATION: SUNLAND PARK OZONE NONATTAINMENT AREA at 16 (2021) ("Sunland Park Demo."). However, NMED found that a "majority" of the back-trajectories form a "J pattern," originating in the midwestern United States or the Gulf of Mexico, traveling across Texas to reach the Paso del Norte air basin, and then briefly traversing Juarez on their way to Sunland Park. *Id.* at 16, Figure 15; *see also* Appendix A to Sunland Park Demo. The back-trajectories for August 5, 2019 (Figure A) are illustrative: the trajectories originate near Oklahoma, travel hundreds of miles across Texas (including over the Permian Basin), and then briefly traverse Juarez before reaching Sunland Park. Appendix A to Sunland Park Demo. at 55. NMED characterized this day as influenced by

[5] These include: 2018 (May 22, June 21, July 25, August 1, August 13, September 9); 2019 (July 14, August 5, August 10, August 15); 2020 (May 6, May 9, June 25, July 7, August 1, August 19). TCEQ, *Supplemental Back Trajectory Image and Data Files*, https://www.tceq.texas.gov/airquality/airmod/docs/international-transport (Jan. 13, 2022) ("Supplemental Data").

international emissions, even though the air parcels spend far more time in Texas than in Mexico. Reviewing NMED's analysis confirms that incidental transport through Juarez is common, and that the methodology used by TCEQ is not a reliable way to distinguish emissions that originate in Juarez from those that incidentally travel through it.

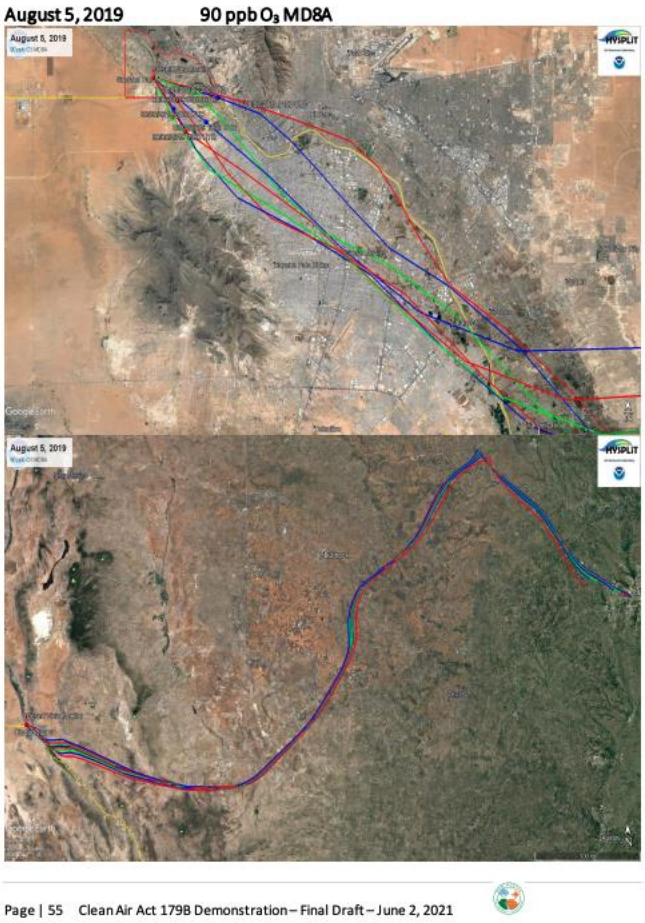

Figure A. Back-trajectories for the Desert View Monitor on August 5, 2019. Appendix A to Sunland Park Demo.

2. TCEQ's Analysis Includes Numerous False Positives

Comparing the HYSPLIT results from different monitors confirms that TCEQ's methodology is inappropriately excluding exceedances that cannot be attributed to a contribution from Juarez, but which instead reflect incidental flow of polluted air through Juarez. Because ozone is well-mixed at the regional level, it is generally the case that different monitors in the

same region will respond to the same emissions. It follows that if a particular high ozone day in the El Paso-Las Cruces NA is caused by emissions from Juarez, it should be possible to establish a linkage to Juarez at *all* of the monitors reporting an exceedance on that day. If not all of the monitors show such a linkage, this suggests that the exceedance is not caused by Juarez.

Collectively, TCEQ and NMED have excluded ***seven*** exceedances that are likely false positives. For example, on August 5, 2019, exceedances were reported at all three of the monitors analyzed by TCEQ, with UTEP reporting a design value of 83 ppb, Chamizal reporting a design value of 79 ppb, and Skyline Park reporting a design value of 76 ppb. Demo. at 25–26, Tables 4-3 to 4-5. TCEQ characterized the exceedances at UTEP and Chamizal as caused by Juarez, and excluded them in calculating the adjusted design values for these sites. *Id.* Yet the Skyline Park exceedance was *not* excluded because it was not linked to Juarez. Considering these three violations together, it appears likely that UTEP and Chamizal would have exceeded the NAAQS even without a contribution from Juarez. While the air arriving at these monitors passed through Juarez and may have picked up additional ozone, it is likely the air was already polluted before it entered Mexico.

Similar inconsistencies occurred on other dates:

Date	**Monitor(s) that Reported Violation Not Linked to Juarez (With Design Value)**	**Monitor(s) Excluded Based on Linkage to Juarez (With Design Value)**
June 4, 2018	Skyline Park (77 ppb)	UTEP (82 ppb), Chamizal (83 ppb)
July 25, 2018	Skyline Park (83 ppb), Desert View (79 ppb)	UTEP (76 ppb), Chamizal (78 ppb)
August 4, 2018	UTEP (86 ppb), Chamizal (87 ppb)	Skyline Park (84 ppb)
August 10, 2019	Skyline Park (78 ppb)	UTEP (72 ppb), Chamizal (75 ppb)

August 19, 2020	Skyline Park (71 ppb)	UTEP (72 ppb)
August 22, 2020	Desert View (76 ppb)	UTEP (72 ppb)

Notably, an analysis that included *all* of the monitors in the El Paso-Las Cruces NA would likely identify many additional false positives—i.e., dates when both linked and unlinked monitors experienced an exceedance.

3. TCEQ's Analysis Conflates "Contribution" with "Causation"

TCEQ incorrectly conflates the question of whether emissions from Juarez "contributed" to an exceedance day with the question of whether these emissions were a "but for" cause of the exceedance. As a result, TCEQ excludes all days it deems to have been influenced by emissions from Juarez, without attempting to show that these emissions could explain the difference between the reported design value and the upper limit of the NAAQS. Elsewhere, the Demonstration cites studies showing that north-central Mexico may contribute up to 7.0 ppb to design values in El Paso County. Demo. at 36.[6] This suggests that emissions from Juarez generally are not a "but for" cause of exceedances of 78 ppb or greater (because a monitor reporting 78 ppb is still exceeding the NAAQS even after a contribution of 7 ppb is subtracted). Yet TCEQ excludes days where the design value in El Paso was much higher. For example, UTEP reported a design value of 91 ppb on July 29, 2018. Demo. at 25, Table 4-3. TCEQ excluded this date because at least six of eight back trajectories traveled through Juarez before reaching the violating monitor. To show that emissions from Juarez were a "but for" cause of this exceedance, TCEQ would need to show that Juarez contributed ***20 ppb*** to the design value

[6] In fact, the maximum contribution from north-central Mexico is lower than 7.0 ppb for certain monitors. *See* Demo. at 37, Figure 6-3. For simplicity, we will assume Juarez could contribute up to 7.0 ppb to any monitor in the NA.

on this day. Since there is no evidence to support the existence of such a large contribution, it is improper to characterize the July 29, 2018 exceedance as "caused" by emissions from Juarez.

4. When TCEQ's Mistaken Exclusion of "Overdetermined" Exceedances is Corrected, it is Clear that Juarez is Not the But For Cause of Nonattainment in the El Paso-Las Cruces NA

If TCEQ had applied a downward adjustment of 7.0 ppb to the design value on days that it deemed influenced by international transport rather than excluding these days entirely, it would have concluded that emissions from Juarez are insufficient to explain the El Paso-Las Cruces area's failure to attain. Table A shows the results of this analysis for the Skyline Park monitor; exceedances labeled with a double asterisk (**) were linked to Juarez by TCEQ and have thus been subject to a downward adjustment of 7.0 ppb.[7]

Table A. Skyline Park Design Values, Subtracting North-Central Mexico Contribution on Days Linked to Juarez.

2018	**MDA8 O3 (ppb)**		**2019**	**MDA8 O3 (ppb)**		**2020**	**MDA8 O3 (ppb)**
25-Jul	83		10-Aug	78		21-Aug	79
4-Jun	77		5-Aug	76		4-Aug	74
4-Aug	77**		7-Aug	75		19-Aug	71
29-Jun	72**		26-Jul	72		9-May	70
4th Highest	72		4th Highest	72		4th Highest	70

[7] In fact, Juarez contributes less than 7.0 to this particular monitor. Demo. at 37, Figure 6-3 (Juarez contributed 5.3 ppb to Skyline Park in 2011 and projected to contribute 5.1 ppb in 2025).

	Three Year Design Value:	71 ppb					

Table B performs a similar analysis with respect to the Desert View monitor, the monitor reporting the highest design value in the NA between 2018 and 2020. This analysis differs from the prior analysis in that design values for *every* exceedance day were adjusted downwards to reflect a presumed contribution from north-central Mexico of 7.0 ppb, regardless of whether back trajectories for that day passed through Juarez. Thus, this analysis overstates the influence of transport from Juarez, by assuming this transport occurs even on days where there is no meteorological evidence of it. Even making the unrealistic assumption that Juarez contributed to every single exceedance day at Desert View, it would not be possible to say that emissions from Juarez were the but for cause of Desert View's failure to attain the NAAQS.

Table B. Desert View Design Values, Subtracting North-Central Mexico Contribution.

2018	MDA8 O3 (ppb)		2019	MDA8 O3 (ppb)		2020	MDA8 O3 (ppb)
4-Aug	80		5-Aug	83		25-Jul	81
4-Jun	75		15-Jul	75		8-Aug	75
21-Jul	74		27-Jul	72		25-Jun	73
29-Jul	74		25-Jul	70		19-Aug	70
4th Highest	74		4th Highest	70		4th Highest	70
	Three-year	71 ppb					

	Design Value:						

Notably, the analysis shown in Table B is essentially the same as the analysis Ramboll performed in 2016 to determine whether anthropogenic emissions from Mexico were the "but for" cause of nonattainment at the Desert View monitor.[8] Ramboll estimated that anthropogenic emissions from Mexico contributed 6.2 ppb to the 2011 design value at Desert View. RAMBOLL, SOUTHERN NEW MEXICO OZONE STUDY: TECHNICAL SUPPORT DOCUMENT at 70–71 (2016), https://www.wrapair2.org/pdf/SNMOS_TechnicalSupportDocument_19Oct2016.pdf ("SNMOS TSD"). Ramboll subtracted this number from the design value reported in 2011 (71 ppb) to show that Desert View would have attained the NAAQS with a design value of 64.8 ppb but for the contribution from north-central Mexico. *Id.* Applying the same methodology here leads to a different result because the design value at Desert View has increased substantially—from 71 ppb in 2011 to 78 ppb—while the expected contribution from north-central Mexico has remained essentially unchanged (7.0 ppb in 2025 compared to 6.8 ppb in 2011).

B. The Weight of the Evidence Indicates that the El Paso-Las Cruces NA Would Violate the NAAQS Even if Emissions from Juarez were Eliminated

The weight of the evidence indicates that El Paso-Las Cruces NA would not have attained the ozone NAAQS by August 3, 2021, even if emissions from Juarez had been excluded. This conclusion is supported by several lines of evidence. First, the worsening air quality in the El Paso-Las Cruces area since 2016 is part of a larger regional trend of rising ozone levels across west Texas and southern New Mexico. This trend—which has led to ozone exceedances hundreds of miles from the border—is driven by skyrocketing emissions from the Permian

[8] *See also* Demo. at 38, Table 6-3 (performing this analysis for El Paso County monitors).

Basin, a region that emits more about 12 times as much VOC pollution as Juarez. HYSPLIT back trajectories and source apportionment modeling confirm that emissions from the Permian Basin contribute to ozone levels in the El Paso-Las Cruces area. Population growth, higher temperatures, and more frequent wildfires also contribute to the trend of worsening air quality.

Second, the El Paso-Las Cruces NA experiences multiple exceedance days each year that cannot be linked to Juarez. Indeed, some of the worst ozone exceedances experienced in recent years show no linkage to Juarez. Third, source apportionment modeling shows that Texas contributes more to ozone levels in the El Paso-Las Cruces NA than north-central Mexico does. Finally, the violating counties (El Paso and Doña Ana) also contribute to regional ozone levels.

1. Ozone Levels Have Been Rising throughout West Texas and Southern New Mexico, Driven by Skyrocketing Emissions from the Permian Basin

The worsening air quality in the El Paso-Las Cruces area since 2016 is part of a larger regional trend of rising ozone levels across west Texas and southern New Mexico. Air quality monitors in this region that have fallen out of attainment with the ozone NAAQS since 2016 include Carlsbad and Carlsbad Caverns National Park, located over 100 miles northeast of El Paso, as well as Chapparal, which lies immediately north of El Paso and about 20 miles north of the international border. The 2018–2020 design values for Carlsbad and Carlsbad Caverns National Park were 78 ppb and 75 ppb, respectively, while Chapparal reported a design value of 72 ppb. EPA, OZONE DESIGN VALUES, 2020; *Ozone Exceedances Monitored in National Parks*, NAT'L PARK SERV. (May 24, 2021), https://www.nps.gov/subjects/air/ozone-exceed.htm.

Ozone levels are trending upward at other monitors in the region as well. The Solano monitor in Las Cruces, about 40 miles north of the border, is now barely attaining at 70 ppb. Even Guadalupe Mountains National Park ("Guadalupe")—an area so isolated that visitors must drive 35 miles to reach the nearest gas station—is now on the verge of violating the NAAQS

after reporting seven ozone exceedances in 2020 and four exceedances in 2021. *See Ozone Exceedances Monitored in National Parks*. Guadalupe, which lies about 100 miles east of El Paso, had never experienced a single exceedance day before 2019. *See id.*

The weight of the evidence indicates that rising ozone levels across this region are driven by emissions from the Permian Basin. This region emits a tremendous amount of ozone-forming pollution. TCEQ data indicate that TCEQ Region 7, centered on Midland-Odessa, emits 362,139 tons of VOC and 85,550 tons of NOx per year. TCEQ, 2020 FIVE-YEAR AMBIENT MONITORING NETWORK ASSESSMENT at Table 10 (2020). In 2014, oil and gas operations in the New Mexico Permian emitted 97,977 tons of VOCs and 35,251 tons of NOx. *See* RAMBOLL, NEW MEXICO OZONE ATTAINMENT INITIATIVE PHOTOCHEMICAL MODELING STUDY – DRAFT FINAL AIR QUALITY TECHNICAL SUPPORT DOCUMENT at 39, Table 4-5 (2021), https://www.wrapair2.org/pdf/NM_OAI_2028_AQTSD_v8.pdf ("NMOAI Study"). Altogether, the Permian Basin emits at least 12 times as much VOC pollution as Juarez and three times as much NOx. *See* Demo at 36, Figure 6-2 (projecting that Juarez will emit 36,138 tons of VOC and 39,909 tons of NOx per year by 2023). In fact, Permian emissions are likely greater than reflected here; researchers have found that these emissions are dramatically underreported.[9]

Emissions from the Permian Basin have skyrocketed since 2016. The volume of natural gas vented or flared provides a reasonable for estimating the amount of ozone-precursor pollution emitted in the Permian Basin, since flaring emits NOx (as well as VOCs in the form of

[9] A recent study analyzing satellite observations of the Permian Basin from 2018–2019 estimated that methane emissions from oil and natural gas production in the basin are approximately 2.7 ± 0.5 Tg a−1, more than two times higher than bottom-up inventory-based estimates. Because VOCs are co-emitted with methane during oil and gas production, this study VOC emissions are also underreported by a factor of two. Yuzhong Zhang et al., *Quantifying Methane Emissions from the Largest Oil-Producing Basin in the United States from Space*, SCIENCE ADVANCES (April 22, 2020), https://advances.sciencemag.org/content/6/17/eaaz5120.

unburned hydrocarbons), while venting releases VOCs. As shown below, the increase in ozone pollution in the El Paso-Las Cruces NA (and elsewhere in the region) starting in 2017 corresponds to a dramatic increase in the amount of venting and flaring in the Permian, with almost a four-fold increase in this wasteful practice between Q1 2017 and Q1 2019.

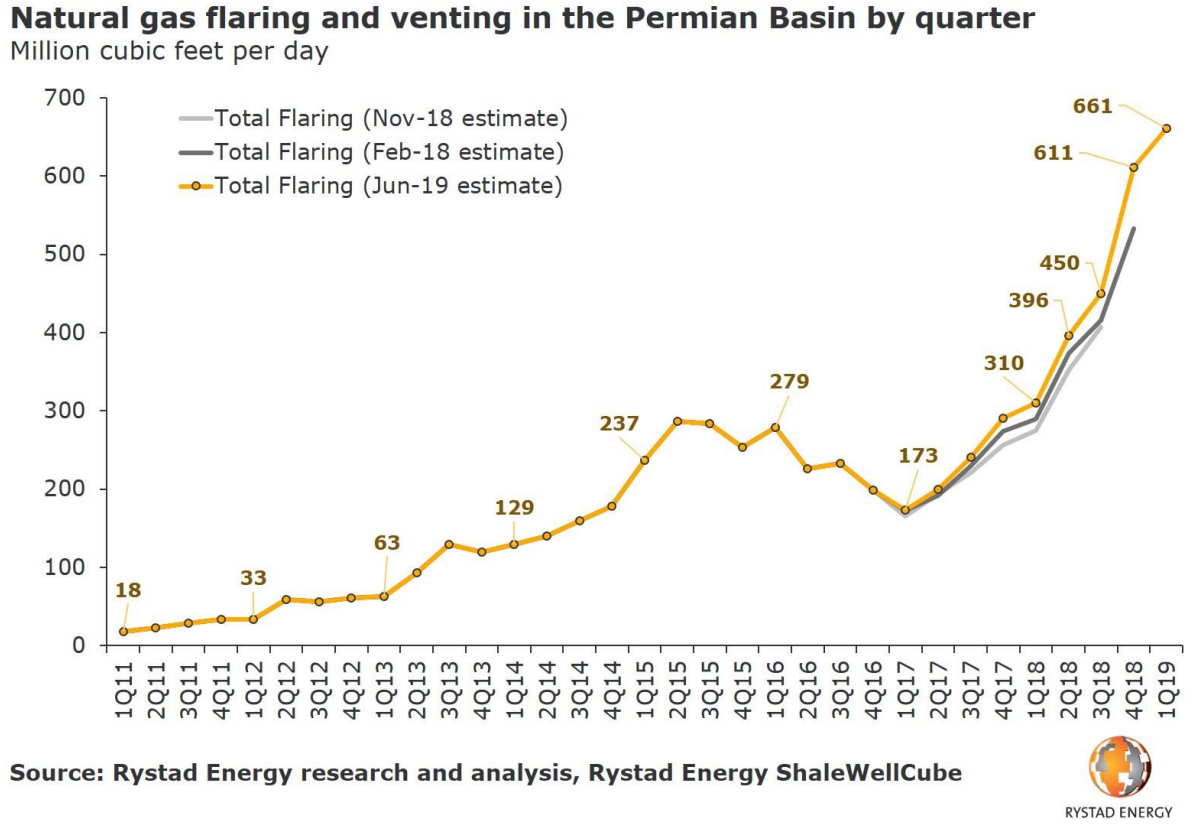

Figure B. Venting and Flaring in the Permian Basin by Quarter. *Permian Natural Gas Flaring and Venting Reaching All-Time High*, RYSTAD ENERGY (June 4, 2019), https://www.rystadenergy.com/newsevents/news/press-releases/Permian-natural-gas-flaring-and-venting-reaching-all-time-high/. This increase in venting and flaring corresponds to increased oil production, with production increasing from under 2 million barrels per day in 2016 to over 5 million in 2022. U.S. ENERGY INFO. ADMIN., DRILLING PRODUCTIVITY REPORT (Jan. 2022), https://www.eia.gov/petroleum/drilling/pdf/dpr-full.pdf.

Several lines of evidence support the notion that the dramatic increase in Permian emissions since 2016 has negatively impacted ozone levels in the El Paso-Las Cruces NA. First, the HYSPLIT back trajectories prepared by TCEQ and NMED show that transport over the Permian is common on exceedance days. HYSPLIT back trajectories show transport from the Permian Basin on a *majority* (26 of 46) of exceedance days at the Desert View monitor. *See, e.g.*, Sunland Park Demo. at 35, 55, 79, 105. Transport through the Permian is observed on many of the exceedance days at Chamizal (7 out of 18), Skyline Park (9 out of 23), and UTEP (11 out of 25). *See* Supplemental Data. Given that the Permian emits at least 12 times as much VOC pollution as Juarez and three times as much NOx, it is reasonable to conclude that Permian emissions predominate on many of the days that involve transport through both regions. This inference is strengthened by the correlation between rising Permian emissions and rising ozone levels in the El Paso-Las Cruces NA. By contrast, emissions in Juarez have not increased substantially since 2016. *See* Demo. at 15 (projecting an increase of 2,775 tons of VOC in Juarez between 2016 and 2023, with no increase in NOx).

Source apportionment modeling also confirms a linkage between Permian emissions and ozone levels in the El Paso-Las Cruces NA. NMED modeling projected that oil and gas operations in Texas are expected to contribute more than 1.0 ppb to the Desert View monitor in 2025. SNMOS TSD at 66, Figure 3-37. Oil and gas operations in New Mexico are expected to contribute another 0.5 ppb to the design value at this monitor by 2028. *See* NMOAI Study at 122, Figure 10-13.

Other studies confirm that emissions from oil and gas production are a meaningful contributor to ozone levels in the El Paso-Las Cruces NA. For example, Fann et al. (2018) found that oil and gas emissions were expected to contribute between 1.4 and 2.58 ppb to peak ozone

levels in the El Paso-Las Cruces area by 2025. Neal Fann et al., *Assessing Human Health PM2.5 and Ozone Impacts from U.S. Oil and Natural Gas Sector Emissions in 2025*, 52 ENV'T SCI. & TECH. 8095 at 8099, Figure 1 (2018), https://pubs.acs.org/doi/10.1021/acs.est.8b02050.

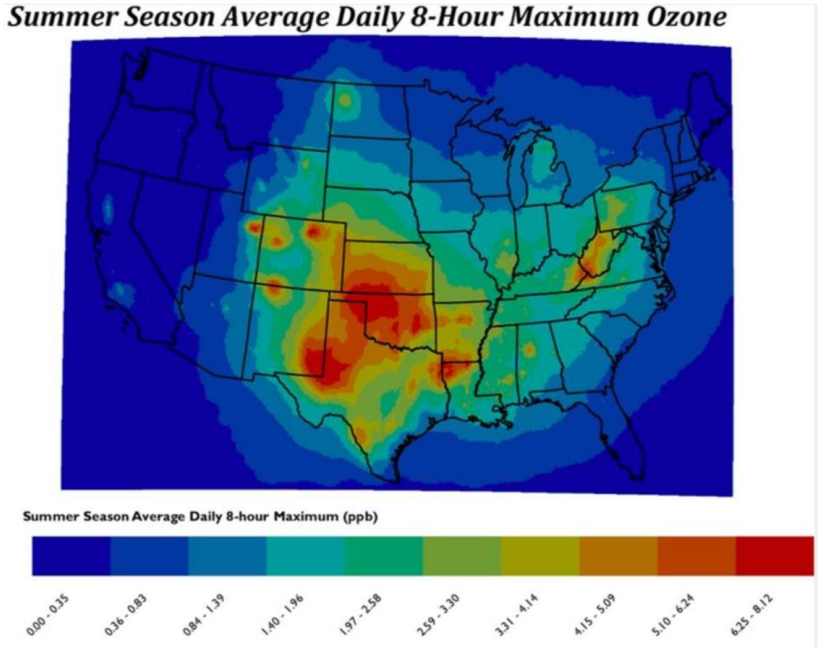

Figure C. Summer Season Daily 8-hour Maximum Ozone Attributable to the Oil and Natural Gas Sector in 2025.

Other factors contributing to rising ozone levels across west Texas and southern New Mexico include sustained population growth in west Texas, higher temperatures, and more frequent wildfires. The Midland-Odessa CSA is one of the fastest growing regions in the United States.[10] According to the Texas Demographic Center, Midland had a population of 193,408 in 2020 (up from 141,671 in 2010), while Odessa had a population of 193,408 (up from 137,130 in

[10] *New Census Bureau Estimates Show Counties in South and West Lead Nation in Population Growth*, U.S. CENSUS BUREAU (Apr. 18, 2019), https://www.census.gov/newsroom/press-releases/2019/estimates-county-metro.html (from 2017 to 2018, Midland experienced the greatest percentage growth in population of any metropolitan area in the nation—growing by 4.3 percent—while Odessa ranked fifth, growing by 3.2 percent).

2010).[11] The Texas Permian as a whole has seen a 3.3 percent population increase from 2013 to 2018, adding 65,942 new residents for a total of 2,061,422, and is projected to expand another 2.3 percent by 2023. TEX. INDEP. PRODUCERS & ROYALTY OWNERS ASS'N, TEXAS PERMIAN BASIN REPORT: WORKFORCE, POPULATION, EDUCATION AND DEMOGRAPHICS TRENDS at 3 (2019). Similarly, Eddy County, New Mexico grew by 15.8 percent between 2010 and 2020, adding 8,485 residents. *QuickFacts: Eddy County, New Mexico*, U.S. CENSUS BUREAU, https://www.census.gov/quickfacts/eddycountynewmexico.

Higher temperatures are also contributing to worsened ozone levels in west Texas and southern New Mexico. According to the Fourth National Climate Assessment, "[t]here is robust evidence from models and observations that climate change is worsening ozone pollution." *Chapter 13: Air Quality*, U.S. GLOBAL CHANGE RESEARCH PROGRAM (2018), https://nca2018.globalchange.gov/chapter/13/. Researchers agree that climate change will cause worsened ozone pollution even if anthropogenic emissions of ozone-precursors remain constant, because higher temperatures lead to increased reactivity of ozone precursors and increased natural emissions (e.g., due to wildfires). *See id.*

El Paso, like the rest of the world, has seen a dramatic increase in average temperatures in recent decades. *See, e.g.*, OFF. OF THE TEX. STATE CLIMATOLOGIST, ASSESSMENT OF HISTORIC AND FUTURE TRENDS OF EXTREME WEATHER IN TEXAS, 1900–2036 at 6 (2021), https://climatexas.tamu.edu/files/ClimateReport-1900to2036-2021Update. Moreover, each of the three years relevant to this demonstration—2018, 2019, and 2020—was one of El Paso's ten hottest years on record. *2020 Was El Paso's Second-Hottest Year on Record*, EL PASO MATTERS

[11] *See* TCEQ, 2020 FIVE-YEAR AMBIENT MONITORING NETWORK ASSESSMENT at 20 (citing data from Texas Demographic Center).

(Dec. 31, 2020), https://elpasomatters.org/2020/12/31/2020-was-el-pasos-second-hottest-year-on-record/. The alarming increase in temperatures in the El Paso area is likely contributing to the region's worsening ozone problem.

Finally, wildfires in the western United States have become more frequent and more severe in recent years, with an especially devastating wildfire season in 2020.

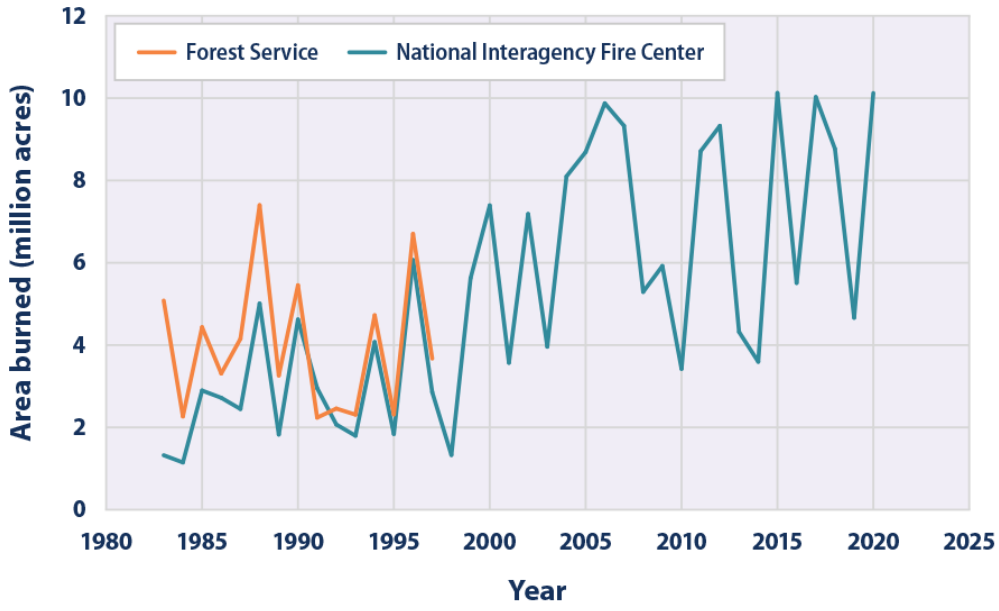

Figure D. Wildfire in the United States, 1983–2020. *Climate Change Indicators: Wildfires*, EPA (July 21, 2021), https://www.epa.gov/climate-indicators/climate-change-indicators-wildfires. These wildfires have caused or contributed to ozone exceedances across the western United States. *See, e.g.*, TCEQ, DALLAS-FORT WORTH AREA EXCEPTIONAL EVENT DEMONSTRATION FOR OZONE ON AUGUST 16, 17, AND 21, 2020 (2021).

1. The El Paso-Las Cruces NA Experiences Multiple Ozone Exceedances Each Year that Cannot be Linked to Emissions from Juarez

Even under TCEQ's flawed methodology, there are multiple exceedances in the El Paso-Las Cruces NA each year that cannot be attributed to emissions from Juarez. For example, the Skyline Park monitor reported two violations in 2018, four in 2019, and three in 2020 which are

not attributed to Juarez under TCEQ's methodology. Demo. at 32, Table 5-3. Notably, some of the *worst* exceedances have no discernable link to Juarez. *See id.* at 31, Table 5-2 (worst exceedance at Chamizal monitor in 2018 was not linked to Juarez). The presence of frequent, and severe, violations of the ozone NAAQS that have no link to Juarez undermines the suggestion that the El Paso-Las Cruces area would be attaining but for emissions from Juarez.

2. Source Apportionment Modeling Shows that Texas Contributes More to Ozone Exceedances in the El Paso-Las Cruces NA than does Juarez

EPA Guidance indicates that 179B demonstrations are more persuasive when they show a contribution from an international source that is "meaningfully larger" than the contribution from domestic sources. Guidance at 44. That is not the case here. To the contrary, the evidence shows that Texas contributes more to nonattainment in the El Paso area than does Juarez.

The 2016 Southern New Mexico Ozone Study cited by TCEQ shows that Texas contributed at least 6.4 to 8.6 ppb (9 to 12%) to the 2011 design value at the El Paso monitors, while north-central Mexico contributed 5.3 to 6.8 ppb (8 to 10%). Demo. at 36–37. This study projected that, by 2025, Texas' contribution would fall slightly to 4.4 to 5.9 ppb compared to 5.1 to 7.0 ppb that was projected from north-central Mexico. *Id.* This projection almost certainly underestimates Texas' contribution, since it did not account for the explosive growth in Permian emissions in the latter half of the last decade. SNMOS TSD at 21 (noting that the 2025 emissions inventory for the Permian Basin was based on 2014 production data). Even so, it does not show that emissions from the Juarez area are meaningfully larger than emissions from Texas.

Another study discussed in New Mexico's 179B demonstration compared in-boundary international contributions and domestic contributions on Sunland Park's ten highest ozone exceedance days. Sunland Park Demo. at 22, Figure 18. In-boundary international contributions were less than domestic contributions on a majority (6 of 10) of the exceedance days. *Id.* On

May 17, 2014, for example, in-boundary international sources contributed approximately 17 ppb less than domestic sources. *Id.* This evidence supports a finding that Juarez's contribution to nonattainment in the El Paso-Las Cruces area is not "meaningfully larger" than the contribution from domestic sources.

3. Anthropogenic Emissions in El Paso and Doña Ana Counties Contribute Meaningfully to Regional Ozone Levels

Although there is considerable evidence that emissions in the Permian are responsible for the *increase* in ozone levels in El Paso-Las Cruces NA, anthropogenic emissions in the violating counties themselves (i.e., El Paso and Doña Ana Counties) contribute meaningfully to the area's ozone problem. Anthropogenic sources in El Paso emit 14,640 tons of NOx and 11,166 tons of VOCs per year. Demo. at 14–15. Sources in Doña Ana County emit 7,968 tons of NOx and 5,555 tons of VOCs per year. *Id.* Combined, the two violating counties are responsible for about one-third of emissions in the Paso del Norte Basin. *Id.*

Air quality modeling provides further evidence of a meaningful contribution from the violating counties. The 2016 Southern New Mexico Ozone Study found that on-road mobile sources traveling through Texas contributed over 3 ppb to ozone levels at Desert View in 2011, more than any other source category; with on-road mobiles sources in New Mexico contributing another 1 ppb and non-road engines in Texas contributing about 0.75 ppb.[12] The New Mexico Ozone Attainment Initiative modeling indicates that mobile sources in New Mexico (including both on-road and nonroad) will contribute 0.8 ppb to design values at Desert View in 2028. NMOAI Study at 122, Figure 10-13. This is persuasive evidence that mobile sources in the violating counties contribute to the regional ozone problem.

[12] The contribution from Texas on-road mobile sources was projected to decrease to about 1.5 ppb by 2025, with contribution from New Mexico on-road sources decreasing to about 0.5 ppb and the contribution from Texas non-road sources also decreasing to about 0.5 ppb.

Finally, the violating counties contain numerous points sources that emit substantial amounts of ozone-precursor pollution. According to EPA's 2017 National Emissions Inventory, the largest NOx emitters in El Paso County are as follows:

Facility	**Facility Type**	**Tons per Year (2017)**
Newman Station	Gas-Fired Power Plant	1997.14
Marathon El Paso Refinery	Petroleum Refinery	421.58
El Paso International	Airport	344.52
El Paso Compressor Station	Compressor Station	292.20
Vinton Steel	Steel Mill	176.01

The largest point sources of VOCs are:

Facility	**Facility Type**	**Tons per Year (2017)**
Marathon El Paso Refinery	Petroleum Refinery	446.53
El Paso International	Airport	102.40
Newman Station[13]	Gas-Fired Power Plant	95.60
Fort Bliss Army Installation	Military Base	49.88
Vinton Steel	Steel Mill	24.78

[13] Emissions of VOCs from Newman Station are expected to increase with the construction of the Newman 6 unit.

Reducing emissions from these point sources, as well as from mobile sources in the violating counties, will certainly help reduce ozone levels in the region.

CONCLUSION

The weight of the evidence indicates that emissions from Juarez are not the but for cause of nonattainment in the El Paso-Las Cruces NA. Rather, the area would report a design value exceeding the NAAQS even if the contribution from Juarez were eliminated. Accordingly, we urge TCEQ to refrain from finalizing its 179B demonstration, and instead move forward with promulgating a state implementation plan to reduce emissions from new and existing sources of ozone-precursor pollution in El Paso and other parts of west Texas.

Respectfully submitted,

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