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VIA ELECTRONIC FILING

U.S. Environmental Protection Agency
EPA Docket Center
1200 Pennsylvania Ave., NW
Washington, DC 20460

Attn: Docket ID No. EPA-HQ-OAR-2021-0668

Re: Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard; Proposed Rule (April 6, 2022)

Environmental Defense Fund (EDF) appreciates the opportunity to provide comments on the proposal from the Environmental Protection Agency (EPA) for a Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard ("Good Neighbor proposal"). 87 Fed. Reg. 20,036 (Apr. 6, 2022). EDF is a national non-profit, non-partisan, non-governmental environmental organization representing over two million members and supporters nationwide. Since 1967, EDF has linked law, policy, science, and economics to create innovative and cost-effective solutions to today's most pressing environmental problems. EDF and its members are deeply concerned about harmful air pollution, including ground-level ozone and the nitrogen oxides (NOx) emissions that are precursors to ozone formation. Unabated NOx emissions from upwind states are inhibiting the ability of downwind states to meet the 2015 ozone National Ambient Air Quality Standard (NAAQS), a science-based standard designed to save lives and protect American families. Accordingly, we strongly support EPA's proposal to issue a Federal Implementation Plan (FIP) requiring key sources in upwind states to reduce their harmful NOx pollution as necessary under the "Good Neighbor Provision" of section 110(a)(2)(D) of the Clean Air Act (CAA), 42 U.S.C. § 7410(a)(2)(D).

This proposed rule offers a well-designed program to protect the millions of people in downwind states who are adversely impacted by NOx emissions from upwind sources not effectively operating modern pollution controls. The proposal builds on the elements of prior transport rules for electric generating units (EGUs) that have been approved by the courts, and it includes important new safeguards to ensure that emissions reductions required under the Good Neighbor Provision are consistently implemented by the power sector throughout each ozone season and over many years. The proposal is also vital for public health because it imposes NOx limits on the many non-EGU sources that are significant sources of interstate pollution and long overdue for regulation. In addition, the proposal rightly expands the geographic scope from prior transport rules to cover more upwind states in our nation.

EDF fully supports the comments submitted jointly with our colleague environmental organizations and public health organizations on the Good Neighbor proposal. In these comments, we provide further detail on several points demonstrating the importance and reasonableness of EPA's proposal and its consistency with the Clean Air Act:

- A longstanding body of scientific evidence demonstrates that ground-level ozone harms human health and the environment.
- Downwind states like Connecticut and Colorado have taken aggressive measures to limit NOx emissions within their borders.
- Many EGUs are not optimizing their pollution controls consistently throughout each day of the ozone season and are thus failing to achieve the emissions reductions necessary to aid downwind states as required under the Good Neighbor Provision.
- EPA's proposal to establish safeguards ensuring continued implementation of the necessary emissions reductions is consistent with EPA's broad FIP authority under the Clean Air Act and is critical to securing the required emissions reductions from upwind states and sources.
- The use of Notices of Data Availability to implement EPA's proposed dynamic budgeting mechanism is consistent with the agency's use of periodic ministerial actions in other contexts.

I. Ground-level ozone harms public health and the environment.

Harms to Human Health

An extensive body of evidence, including numerous EPA assessments, demonstrates that ground-level ozone significantly harms human health. Ozone, the principal component of smog, is formed when NOx and volatile organic compounds (VOCs) interact in heat and sunlight. Reducing NOx emissions generally reduces exposure to ozone and ozone-related health effects.[1] Ozone is a caustic pollutant that irritates the lungs, aggravates asthma and other respiratory conditions, and is associated with a wide array of heart and lung diseases. Exposure to ozone causes numerous short- and long-term health impacts, ranging from shortness of breath and coughing, to increased risk of premature death. EPA has estimated that in 2026, the Good Neighbor proposal would prevent approximately 1,000 premature deaths, 2,400 hospital and emergency room visits, 1.3 million cases of asthma symptoms, and 470,000 school absence

[1] U.S. EPA, *Regulatory Impact Analysis for Proposed Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard* at ES-14 (Feb. 2022), https://www.epa.gov/system/files/documents/2022-03/transport_ria_proposal_fip_2015_ozone_naaqs_2022-02.pdf.

days.[2] Ozone pollution is particularly harmful for children, seniors, people with asthma and other respiratory diseases, and outdoor workers, and the burdens of ozone pollution are disproportionately borne by low wealth communities and communities of color.

Both short- and long-term ozone exposure can have critical health implications. EPA has concluded that "there is a causal relationship between short-term ozone exposure and respiratory health effects."[3] Health impacts associated with short-term ozone exposure include heart disease, reduced lung function, pulmonary inflammation and susceptibility to infection, exacerbation of asthma, and premature death from heart and lung diseases.[4] EPA's most recent review of the scientific evidence confirms that adverse health effects occur at levels as low as 60 parts per billion (ppb).[5] Additionally, recent studies show that ozone exposure is associated with an increased risk of death.[6] Assessing ozone impacts on roughly 61 million Medicare beneficiaries across 13 years, one study found a significant association between short- and long-term ozone exposure and total mortality, particularly among communities of color and low-income communities. The associated risk of death persisted as exposures below 70 ppb.[7]

Long-term exposure to ozone pollution can lead to particularly severe health impacts. EPA has concluded that "a likely to be a causal relationship exists between long-term ozone exposure and respiratory effects"[8] and has indicated that "recent evidence is suggestive of a causal relationship between long-term [ozone] exposures and total mortality."[9] Some longitudinal studies have further demonstrated that "long-term [ozone] exposure influences the risk of asthma development in children,"[10] and a recent study following 5,780 adults for a decade across six U.S. metropolitan regions found that long-term ozone exposure was associated with development of emphysema.[11] In a study of 11 million Medicare participants across the Southeast U.S., long-term ozone was associated with increased risk of first hospital admissions for stroke, chronic obstructive pulmonary disease, pneumonia, myocardial infarction, lung cancer, and heart failure.[12]

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[2] U.S. EPA, *EPA's Proposed "Good Neighbor" Plan to Address Ozone Pollution – Overview* at 1, https://www.epa.gov/system/files/documents/2022-03/fact-sheet_2015-ozone-proposed-good-neighbor-rule.pdf.
[3] U.S. EPA, *2020 Integrated Science Assessment for Ozone and Related Photochemical Oxidants* ("2020 ISA") at 3-83; *see also* U.S. EPA, *2013 Final Report: Integrated Science Assessment of Ozone and Related Photochemical Oxidants* ("2013 ISA") at 1-6.
[4] 2020 ISA at IS-24–IS-31.
[5] *Id.* at IS-31, 3-1; *see also* 80 Fed. Reg. 65,363 (Oct. 26, 2015) (noting that ozone concentrations as low as 60 ppb have been shown to decrease lung function and to increase airway inflammation).
[6] *See* 2013 ISA at 1-14 (indicating there is "likely to be a causal relationship between short-term exposures to [ozone] and total mortality").
[7] Di et al., *Air Pollution and Mortality in the Medicare Population*, 376 New England J. Med. 2513–2522 (2017), doi:10.1056/NEJMoa1702747; Di et al., *Association of Short-term Exposure to Air Pollution with Mortality in Older Adults*, 318 JAMA 2446–2456 (2017), doi:10.1001/jama.2017.17923.
[8] 2020 ISA at 3-116.
[9] 2013 ISA at 1-15; *see also* 2020 ISA at 6-42.
[10] 2013 ISA at 7-2; *see also* 2020 ISA at IS-31, 3-94.
[11] Wang et al., *Association between long-term exposure to ambient air pollution and change in quantitatively assessed emphysema and lung function*, 322 JAMA 546–556 (2019), doi:10.1001/jama.2019.10255.
[12] Yazdi et al., *Long-term exposure to PM2. 5 and ozone and hospital admissions of*

The adverse health effects of ozone exposure are even more pronounced for children, people with asthma and other lung diseases, the elderly, and people active outdoors. Compared to healthy individuals, people with asthma suffer more severe impacts from ozone exposure and are more vulnerable at lower levels of exposure. According to the Centers for Disease Control and Prevention, asthma affects over 25 million Americans, including over 4.2 million children, and results in over 1.8 million emergency room visits and over 4 thousand deaths.[13] Asthma also disproportionately burdens children, families with lower incomes, and people of color.[14] Children are among those at highest risk from ozone exposure because their lungs are still developing, they breathe more air per unit of bodyweight, are more likely to have asthma, and are more likely to be active outdoors.[15] Children with asthma face further elevated risk from ozone exposure. Numerous studies have shown that children with asthma experience decreased lung function and exacerbated respiratory symptoms when exposed to ozone pollution.[16]

In addition, ozone pollution is disproportionately harmful to low-income communities and communities of color. People of color, and especially Black people, are more likely to live in areas with higher levels of harmful air pollution, including ozone. According to the American Lung Association's 2022 State of the Air Report, people of color are 3.6 times more likely than white people to live in counties with the worst air pollution.[17] The asthma burden also falls disproportionately on people of color, and these disparities are particularly evident in mortality and hospitalization rates.[18]

Health harms from ozone pollution are not limited to cardiovascular and respiratory systems. Exposure to ozone may contribute to or exacerbate metabolic syndrome,[19] and long-term ozone concentrations have been linked to increased hazard ratios for incident diabetes.[20] A recent longitudinal study following 1,090 Mexican Americans in the Sacramento metropolitan

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Medicare participants in the Southeast USA, 130 Environment International 104879 (2019), doi:10.1016/j.envint.2019.05.073.

[13] Centers for Disease Control and Prevention, Most Recent National Asthma Data available at https://www.cdc.gov/asthma/most_recent_national_asthma_data.htm (last accessed June 10, 2022).

[14] U.S. Environmental Protection Agency, Fact Sheet, *Overview of EPA's Updates to the Air Quality Standards for Ground-Level Ozone* at 3 ("2015 Ozone Standard Fact Sheet"), *available at* https://www.epa.gov/sites/production/files/2015-10/documents/overview_of_2015_rule.pdf.

[15] 2015 Ozone Standard Fact Sheet at 2–3; EPA's Children's Health Protection Advisory Committee, Review of Ozone NAAQS ("Children suffer a disproportionate burden of ozone-related health impacts due to critical developmental periods of lung growth in childhood and adolescence that can result in permanent disability."), https://www.epa.gov/sites/production/files/2014-12/documents/2014.05.19_chpac_ozone_naaqs.pdf.

[16] *See, e.g.,* Mortimer et al., *The Effect of Air Pollution on Inner-City Children with Asthma*, 19 Eur. Respiratory J. 699 (2002); 2020 ISA at IS-24–IS-32; 2013 ISA at 6-120–21, 6-160.

[17] American Lung Association, *State of the Air 2022* 11 (2022) ("2022 State of the Air"), available at https://www.lung.org/getmedia/74b3d3d3-88d1-4335-95d8-c4e47d0282c1/sota-2022.pdf.

[18] Asthma and Allergy Foundation of America, *Asthma Disparities in America: A Roadmap to Reducing Burden on Racial and Ethnic Minorities* (2020) at 10–12, https://www.aafa.org/media/2743/asthma-disparities-in-america-burden-on-racial-ethnic-minorities.pdf.

[19] 2020 ISA at 5-7, 5-46–5-47.

[20] 2020 ISA at 5-46; Renzi et al., *Air pollution and occurrence of type 2 diabetes in a large cohort study*, 112 Environment International 68–76 (2017) https://doi.org/10.1016/j.envint.2017.12.007; Jerrett et al., *Ambient ozone and incident diabetes: A prospective analysis in a large cohort of African American women*, 102 Environment International 42–47 (2017) https://doi.org/10.1016/j.envint.2016.12.011.

area investigated the role of ozone exposure and outdoor physical activity in diabetes development and found that ozone exposure contributes to the development of type 2 diabetes.[21] Prolonged exposure to ozone may also accelerate cognitive decline in the initial stages of dementia.[22] Findings of a 2017 study indicated that both chronic and acute ozone exposure increased stillbirth risk and that ozone exposure may be linked to approximately 8,000 stillbirths per year in the U.S.[23] Another two studies carried out in California and Florida, each of over 400,000 births, found elevated exposure to ozone during pregnancy was associated with higher risk of preterm birth.[24]

Harms to the Environment

In addition to significant harms to human health, ozone is damaging to ecosystems. Exposure to ozone is associated with a wide array of vegetation and ecosystem effects, including reduced growth and productivity, tree deaths, visible leaf injury, reduced carbon storage, reduced crop yields and crop quality, species composition shift, and changes in ecosystem services.[25] "In terms of forest productivity and ecosystem diversity, ozone may be the pollutant with the greatest potential for region-scale forest impacts."[26] Ozone exposure decreases vegetation growth and biomass accumulation in a variety of plant life, including the yield and quality agricultural crops.[27] In addition to productivity impacts, ozone exposure decreases resilience and heightens susceptibility to stressors such as disease and extreme temperatures. Ozone's harm to vegetation and plant life can damage entire ecosystems, impacting wildlife, soil biogeochemical cycles, biodiversity, and overall ecosystem functioning.[28]

Ozone is also a potent greenhouse gas and contributes to climate change impacts already threatening the natural environment and the welfare of communities across the country. In addition to its warming effects, ozone contributes to the climate crisis by inhibiting the growth and natural carbon sequestration potential of plants.[29] Moreover, climate change is expected to increase tropospheric ozone, further amplifying the ecosystem and public health harms of ozone.

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[21] Yu et al., *Ozone Exposure, Outdoor Physical Activity, and Incident Type 2 Diabetes in the SALSA Cohort of Older Mexican Americans*, 129 Environmental Health Perspectives (2021) https://doi.org/10.1289/EHP8620.

[22] Galkina Cleary et al., *Association of Low-Level Ozone with Cognitive Decline in Older Adults*, 61 J. Alzheimer's Disease 67–78 (2018), doi: 10.3233/JAD-170658.

[23] Mendola et al., *Chronic and Acute Ozone Exposure in the Week Prior to Delivery is Associated with the Risk of Stillbirth*, 14 Int'l J. Envt'l Research and Pub. Health 731 (2017).

[24] Laurent et al., *A statewide nested case-control study of preterm birth and air pollution by source and composition: California, 2001-2008,* 124 Evt'l Health Perspectives 1479–1486 (2016); Ha S, Hu H, Roussos-Ross D, Haidong K, Roth J, Xu X, *The effects of air pollution on adverse birth Outcomes*, 134 Environ Res. 198-204 (2014).

[25] 2020 ISA at 8-3; U.S. EPA, *Regulatory Impact Analysis for Proposed Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard* at 5-25 (Feb. 2022); U.S. EPA, *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* at 4-1 (May 2020), https://www.epa.gov/sites/default/files/2020-05/documents/o3-final_pa-05-29-20compressed.pdf.

[26] U.S. EPA, *Regulatory Impact Analysis of the Final Revisions to the NAAQS for Ground-Level Ozone*, EPA-452/R-15-007, at ES-13, 7-3 (Sep. 2015), https://www3.epa.gov/ttnecas1/docs/20151001ria.pdf.

[27] 2013 ISA at 1-9

[28] *See* Agathokleous et al., *Ozone affects plant, insect, and soil microbial communities: A threat to terrestrial ecosystems and biodiversity*, 6 Science Advances (2020) doi:10.1126/sciadv.abc1176.

[29] 2020 ISA 8-36–8-37.

As communities across the United States grapple with warming temperatures, devastating wildfires, more intense hurricanes, biodiversity loss, rising sea levels, and other climate impacts, it is imperative to limit interstate ozone pollution and mitigate the worst impacts of warming on public health and ecosystems.

EPA has identified numerous environmental benefits of reducing NOx emissions, linking reductions to decreases in acidic deposition, visibility impairment, and nutrient enrichment.[30] Acidic deposition can cause biodiversity loss, increase species vulnerability to other stressors, and reduce aesthetic quality and productivity of both terrestrial and aquatic ecosystems.[31] Nitrogen deposition also contributes to excess nutrient enrichment and eutrophication, which can disrupt fish and shellfish production, reduce biodiversity in terrestrial systems, and disrupt cultural ecosystem services.[32] EPA must finalize a strong Good Neighbor proposal that protects communities and ecosystems from the damaging effects of interstate ozone pollution.

II. Downwind states have been and are still taking aggressive steps to reduce NOx emissions from sources within their borders.

As the Supreme Court has explained, the purpose of the CAA's Good Neighbor Provision, 42 U.S.C. § 7410(a)(2)(D), is to address the complex problem of interstate air pollution in which upwind states "reap[] the benefits of the economic activity causing the pollution" while downwind states bear the burden of "out-of-state pollution they lack authority to control." *EPA v. EME Homer City Generation, L.P.*, 572 U.S. 489, 495 (2014). The Court upheld EPA's 2011 "Transport Rule," an earlier rule that is the foundation for this proposal, as an "efficient and equitable" implementation of the Good Neighbor Provision, noting that upwind states "will have to bring down their emissions by installing devices of the kind in which neighboring states have already invested." *Id.* at 519.

Downwind states, indeed, have been taking aggressive measures to reduce NOx emissions within their borders. Colorado and Connecticut provide good examples.

<u>Colorado</u>

In Colorado, NOx emissions from coal-fired EGUs dropped by a dramatic 65% over the last 10 years. *See* Attachment A: Colorado Coal Units NOx Emissions 2012–2021. That drop occurred primarily because several coal-fired power plants were retired and another converted to natural gas. Of even greater importance, *all* remaining coal-fired EGUs in Colorado are planned for retirement, including three units alone in 2023 (Martin Drake Units 6 and 7 and Comanche Unit 1), one in 2025 (Craig Unit C1), and one in 2026 (Comanche Unit 2). In addition, Pawnee Unit 1 will convert to natural gas by 2026. Other retirements are scheduled to begin in short order after that year, and by the end of 2030 there will only be one remaining unit that burns coal

[30] U.S. EPA, *Regulatory Impact Analysis for Proposed Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard* at 5-35–5-36 (Feb. 2022).
[31] *Id.*
[32] *Id.*

in the state (Comanche Unit 3). *See* Attachment B: Colorado Coal Units Summary and Attachment C: Colorado Coal Units Spreadsheets.

Of the 13 active coal-fired units in Colorado, five are already running SCR and have NOx emissions well below the 0.08 pounds per million Btus (lb/MMBtu) rate that EPA expects for optimized SCR in upwind states beginning in the 2023 ozone season. *See* Attachments B and C. Of the remaining eight coal-fired units that are not currently operating SCR, six of them are the retirements and fuel conversion by 2026 mentioned above, meaning that by that year most of the Colorado coal fleet will be running SCR.

In short, Colorado has seen a dramatic decrease in its NOx emissions from coal-fired EGUs over the last decade, and it will continue to see an important decrease in the next few years as more units retire. In the meantime, coal plants running SCR are generally obtaining significant NOx reductions.

Connecticut

Connecticut has already eliminated *all* coal-fired power plants. The last remaining unit was retired in 2021 (Bridgeport Harbor Station).[33] In addition, more than half of the oil-fired EGUs in Connecticut already have SCR (seven out of 13).[34] Of those seven, four are emitting far below the NOx emissions rate of 0.03 lb/MMBtu that EPA expects from optimizing SCR at these types of facilities in upwind states. In particular, the Devon Units 15 through 18 had 2021 ozone season NOx rates ranging from 0.006 to 0.008 lb/MMBtu, an order of magnitude below the EPA rate. The three remaining oil-fired EGUs with SCR at New Haven Harbor had a 2021 ozone season NOx rate just above EPA's expected rate (0.039, for example, for Unit NHHS2), meaning that with some modest operational changes those facilities could be achieving reductions similar to what EPA is expecting from upwind EGUs, even though these Connecticut facilities are not subject to this rule. Likewise, the vast majority of gas plants already have SCR and are operating at levels below EPA's expected emissions rates in upwind states.

Conclusion

Colorado and Connecticut have made great strides in reducing NOx emissions from EGUs, especially by retiring coal-fired plants. Under EPA's modeling, both Colorado and Connecticut are not projected to contribute NOx pollution to any downwind states. Yet they are projected to receive significant NOx contributions from upwind states. As a result, these downwind states cannot protect their citizens from harmful ozone pollution, despite their aggressive regulation of NOx sources within their borders.

[33] *See PSEG Ends Coal Era with Bridgeport Harbor Station Retirement* (June 3, 2021) https://www.powerengineeringint.com/world-regions/north-america/pseg-ends-coal-era-with-bridgeport-harbor-station-retirement/#:~:text=The%20final%20coal%2Dfired%20power,on%20Monday%201%20June%202021.

[34] For 2021 emissions rates, plant type, and SCR status, see Attachment D: Connecticut EGU Summary.

III. There is ample evidence that many EGUs are not operating their pollution controls at optimal levels throughout each day of the ozone season.

EPA correctly recognizes that many EGUs are not optimizing their pollution controls consistently throughout each day of the ozone season and, thus, are not achieving the emissions reductions necessary to aid downwind states as required under the Good Neighbor Provision. *See* 87 Fed. Reg. at 20,110–111. Attachments E and F present an analysis by Megan Williams, Technical Consultant for EDF, of the emissions data from the 2019–2021 ozone seasons for the 40 coal-fired EGUs in the regulated upwind states that EPA flagged for potential optimization when designing the current proposal. *See* Ozone Transport Policy Analysis Proposed Rule TSD, Appendix A: Proposed Rule State Emission Budget Calculations and Engineering Analytics, Unit 2024 Tab. The attached analysis demonstrates that, indeed, many EGUs did not optimize their existing SCR controls for substantial portions of recent ozone seasons. Attachment E summarizes the findings of the analysis. Attachment F provides the spreadsheet with the underlying analysis.[35] The remaining Attachments provide the plant-specific data. Key details are discussed further below.

The attached analysis relies on the same metrics EPA used in the "Discussion of Short-Term Limits document," which is cited in footnote 257 on page 20111 of the proposal, and which is in this docket as item EPA-HQ-OAR-2021-0668-0124. That undated and unsigned memo analyzes 2017 emissions data to determine whether coal-fired EGUs were idling their SCR controls or sub-optimally operating them (what the memo refers to as "turning them off or down").

EPA cites the memo to address a narrow question: whether EGUs would likely idle their SCRs at peak demand times to sell the auxiliary electricity that would otherwise go to running the SCR. 87 Fed. Reg. 20,111 n. 257. EPA concludes that this behavior is unlikely because the diverted electricity would represent an insignificant portion of a unit's overall power supply: approximately 0.6%. EPA, Discussion of Short-term limits, EPA-HQ-OAR-2021-0668-0124.

Aside from that conclusion, the agency fails to explain the other metrics and statements employed throughout the memo, and the memo's conclusions are entirely unpersuasive. For one, the memo only analyzes 2017 emissions data, the first season subject to the Cross-State Air Pollution Rule (CSAPR) Update (81 Fed. Reg. 74,504 (Oct. 26, 2016)). Data from the first year of the CSAPR Update is not indicative of later years, when the number of banked allowances increased, and sources could buy less expensive allowances to cover increased emissions. To remedy this deficiency, the attached analysis uses emissions data from the three most recent years of 2019–2021.

In addition, the various metrics EPA used in the memo to analyze SCR operations have significant weaknesses, as discussed below. Yet, as the data in the attached analysis indicate,

[35] The Notes tab in the Attachment F spreadsheet gives helpful descriptions of the data sources, the methodology, and the EPA metrics used here.

even assuming some of EPA's own flawed methodology, many coal-fired EGUs are idling or sub-optimally operating their SCR controls for many hours and many days of the ozone seasons.

To begin, EPA declared that units with ozone season average NOx rates below 0.2 lb/MMBtu "were likely operating their [SCR] controls throughout the ozone season." EPA, Discussion of Short-term limits, EPA-HQ-OAR-2021-0668-0124. EPA provided no explanation of why that 0.2 emissions rate—which was *double* the expected rate under the CSAPR Update in effect in 2017—indicated SCR operation throughout the ozone season. This flawed metric is even harder to justify under the current proposal where the expected ozone season average emissions rate for optimized SCR is lowered to 0.08 lb/MMBtu. Using this updated figure, the attached analysis finds that 34 out of the 40 units had average seasonal emissions rates over 0.08 lb/MMBtu in 2021, with similar results in 2020 and 2019. *See* Attachment E.

As a second metric, EPA pointed to hourly NOx emissions rates more than 20% higher than a unit's seasonal average as evidence that the unit was not operating its SCR at optimal levels. EPA provided no rationale for the 20% cut-off. Moreover, EPA only ran this test on EGUs in a *subset* of states, mostly in the mid-Atlantic (Pennsylvania, New Jersey, New York, Delaware, Connecticut, and Maryland). In doing so, EPA found only two units that satisfied this arbitrary metric.

Setting aside concerns regarding the merits of the underlying metric, the attached analysis applies the same methodology to the 40 units EPA flagged for potential optimization when it developed this proposal. Those units span multiple regions of the country, not just the mid-Atlantic, but also the South, Midwest and West. The analysis finds that almost half the units had significant periods of time during the 2019–2021 ozone seasons when their emissions in any hour were 20% higher than their respective ozone season average NOx emissions rates, indicating idling or sub-optimal operation of SCRs. As just one example, for the Thomas Hill Unit MB2 in Missouri, almost half of the 2021 ozone season met that test. For several units in Pennsylvania, between one third and one half of the ozone season met that test. *See* Attachment E (summary); *see also* Attachments G–GG (individual units).

As a third metric in the memo, EPA looked at whether a unit's hourly NOx rate doubled during the course of a single calendar day, indicating that the SCRs were turned down or off periodically. A doubling of the hourly rate could very well be one indication of an SCR idled or sub-optimally run, but EPA, without explanation, went on to flag only those units that had at least *20 days* with an hourly rate doubling. EPA gives no explanation for why it looked at 20 days or more. Even with such a forgiving (and unexplained) test, EPA still found that 15 units had at least 20 days of SCR cycling in 2017.

The attached analysis, using 2019–2021 data and even accepting EPA's artificial 20-day threshold, finds the following percentages of units cycling their SCRs:

2021 – 67.5% (27 out of 40 units)

2020 – 55% (22 out of 40)

2019 – 65% (26 out of 40)

Moreover, the number of days of SCR cycling for some of these units is very high. In 2021, for example, the East Bend Unit 2 in Kentucky cycled its SCR on 88 days, out of an ozone season of 152 days. In 2020, the Keystone Unit 1 in Pennsylvania cycled its SCR on 105 days, and in 2019, the John E Amos Unit 3 in West Virginia cycled for 98 days. These are just a few examples; there are many others in the Attachment E summary.

Even units that had seasonal NOx emissions rates meeting EPA's proposed limit of 0.08 lb/MMBtu cycled their SCR for many days each season, demonstrating that only a *daily* rate will end this harmful practice. For example, in 2021 the DB Wilson unit in Kentucky had an average seasonal rate of 0.08 lb/MMBtu, and yet it cycled its SCR for 48 days, and seven days exceeded the proposed daily limit of 0.14 lb/MMBtu.[36] Similarly, the Miami Fort Unit 8 in Ohio also had an average seasonal rate of 0.08 lb/MMBtu in 2021, but it had a remarkable 32 days that exceeded 0.14 lb/MMBtu, emphasizing that a sufficiently rigorous daily emissions constraint will significantly alter how units operate.

Finally, the attached analysis applies its same methodology to an expanded set of coal-fired EGUs, looking beyond those flagged by EPA for optimization to additional units that are currently equipped with SCR. *See* the Attachment F spreadsheet tabs labeled "Additional SCR Units" and "Additional SCR Units Summary." This important analysis demonstrates that there are potentially many other EGUs that are not optimizing their SCRs.[37] As just one example, even though in 2021 the Gibson Unit 5 in Indiana had an average NOx seasonal emissions rate of 0.06 lb/MMBtu (below EPA's expected rate of 0.08), the unit had 11 days that exceeded the proposed daily limit of 0.14 lb/MMBtu, and it cycled its SCR an extraordinary 59 days.

EPA suggested that the SCR idling or sub-optimal operation it found under its own flawed methodology was mostly occurring "during low demand times" and not in the afternoons when electricity demand is high and ozone formation peaks. EPA, Discussion of Short-term limits, EPA-HQ-OAR-2021-0668-0124. Yet the 2015 ozone NAAQS is a daily standard, not an "afternoon" standard. It applies every hour of every day of the ozone season because public health needs to be protected continually throughout the day. Moreover, even at times of low capacity, coal-fired EGUs are able to achieve NOx emissions rates below 0.075 lb/MMBtu. *See* Ranajit Sahu, US Coal Fleet Selective Catalytic Reduction (SCR) Performance Analysis, at 5-15 (Jan. 2022)., attached to the Comments of EarthJustice, et al., in this docket.

In sum, the attached analysis, using 2019–2021 emissions data and, for the sake of argument, EPA's own metrics, demonstrates that many EGUs all across the country are not optimizing their SCR controls consistently throughout every hour of every day of the ozone season. A daily emissions rate limit will help incentivize SCR optimization to secure the emissions reductions required by the Good Neighbor Provision.

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[36] The days of SCR cycling often overlap with the days exceeding 0.14 lb/MMBtu, but not always.

[37] See the Notes tab of Attachment F, line 15, for a description of how the additional SCR units were identified. There are a total of 111 additional units that EPA could have analyzed. See the tab labeled "additional SCR units" in Attachment F listing them all. Our analysis focused on 15 of those units, shown in the "additional SCR units summary" tab. EPA could easily continue the analysis for the remaining 96 units and would likely find many others that are not optimizing their SCR controls.

IV. EPA's proposal to include safeguards ensuring continued implementation of the necessary emissions reductions is consistent with EPA's broad FIP authority.

We strongly support EPA's decision to include safeguards in this proposal designed to maintain the stringency of the program over time even as the EGU fleet's composition and usage changes and to ensure that EGUs implement the expected emissions controls continuously throughout each day of the ozone season. Those safeguards include the dynamic adjustments of the emissions budgets annually, the recalibration of the allowance banks, the unit-specific backstop daily emissions rates, and the secondary emissions limits to implement the state-wide assurance levels. See 87 Fed. Reg. at 20,105–110. These safeguards are critical to securing the emissions reductions from upwind states and sources that are necessary to satisfy the Good Neighbor Provision.

Those safeguards are also entirely consistent with EPA's broad FIP authority. After disapproving a state implementation plan (SIP) or finding a state failed to submit a SIP, EPA must issue a FIP "to fill all or a portion of a gap or otherwise correct all or a portion of an inadequacy in a state implementation plan." 42 U.S.C. §§ 7410(c), 7602(y). Indeed, the CAA authorizes a FIP to include "enforceable emission limitations or other control measures, means, or techniques . . . [that] provide[] for attainment of the relevant [NAAQS]." *Id.* § 7602(y).

As the caselaw makes clear, "[w]hen the EPA disapproves a SIP and proposes a FIP, it stands in the position of the state with all the same requirements and powers the state had in initially drafting its SIP." *Texas v. EPA*, 829 F.3d 405, 429 (5th Cir. 2016). When the Agency promulgates a FIP, "EPA stands in the shoes of the defaulting State, and all of the rights and duties that would otherwise fall to the State accrue instead to EPA." *Central Arizona Water Conservation District v. EPA*, 990 F.2d 1531, 1541 (9th Cir. 1993). Likewise, courts do not adopt a "crippling interpretation" of EPA's FIP authority because "the statutory scheme would be unworkable were it read as giving to EPA, when promulgating an implementation plan for a state, less than those necessary measures allowed by Congress to a state to accomplish federal clean air goals." *South Terminal Corp. v. EPA*, 504 F.2d 646, 668 (1st Cir. 1974) (analyzing 42 U.S.C. § 1857c-5(c), the precursor to section 7410(c), the current FIP provision).

States are free to adopt backstop measures to guarantee that emissions limits imposed on sources are actually achieved. For example, states can impose rate-based limits as backstops to mass-based limits (or vice versa), and states can also impose on their sources reporting obligations, periodic recalibrations of limits, schedules for compliance, and the like. *See* 42 U.S.C. § 7410(a)(2)(A) (authorizing SIPs to include "enforceable emission limitations and other control measures, means, or techniques," in language mirroring the FIP definition in § 7602(y)); *see also Env't Def. v. EPA*, 369 F. 3d 193, 209 (2d Cir. 2004) (noting "the breadth of the essential language" permitting vast discretion in the measures employed by states); *BCCA Appeal Group v. EPA*, 355 F. 3d 817, 840 (5th Cir. 2003), *as amended on denial of reh'g and reh'g en banc* (Jan 8. 2004) (deferring to the agency's reasonable construction of the phrase "other control measures, means or techniques" in the context of SIP approval).

In a similar vein, here in this FIP EPA is proposing the dynamic budgets, the daily emissions rate limits, and the other safeguards to ensure that the emissions reductions needed under the Good Neighbor Provision to aid downwind states are consistently achieved. Because EPA has authority in a FIP to "fill . . . a gap" left by the state, 42 U.S.C. § 7602(y), and the agency "stands in the shoes of the defaulting [s]tate," *Central Arizona*, 990 F.2d at 1541, EPA has authority to adopt the proposed safeguard measures.

V. EPA's proposal to use Notices of Data Availability to update the annual budgets is consistent with its practice in other contexts.

EDF supports EPA's proposal to utilize dynamic budgeting to ensure future state budgets reflect up-to-date fleet composition and heat input data. To implement the dynamic budgets, EPA proposes to calculate the emissions budgets for the 2025 control period and each year thereafter through Notices of Data Availability (NODAs). *See* 87 Fed. Reg. at 20,115. The budget for each year will be based on the emissions rates and formulas finalized in this rule, applied to the latest reported operational data for the EGU fleet. *Id.* at 20,116. Interested parties will have the opportunity to seek corrections if they believe any data used in the calculations, or the calculations themselves, are in error. *Id*. at 20,115. By incorporating the latest available data on the composition and utilization of the EGU fleet, the dynamic budget mechanism serves to ensure that the selected control stringency continues to be implemented.

The use of NODAs to implement EPA's proposed dynamic budgeting mechanism is consistent with the agency's use of periodic ministerial actions in other contexts. Using NODAs to update state emissions budgets to reflect recently reported operational data is similar to the established process for calculating and announcing unit-level allowance allocations from new unit set-asides (NUSAs). *See* 87 Fed. Reg. 20,117. Under that approach, default NUSA allocations are determined based on current and prior emissions data using a set methodology laid out in the regulatory text. Based on this established methodology, specific allocations are announced periodically via NODAs and provide commenters the opportunity to identify any concerns in the posted data before being finalized.[38] Similar notice procedures have also been used to administer the assurance provisions of the trading programs. Where emissions levels exceed the respective state assurance levels for the control period, EPA apportions responsibility for the exceedance according to regulatory procedures and publishes notice of the calculations in the Federal Register with the opportunity to submit objections to the information published.[39] In other contexts, a similar mechanism has been employed to issue allowance allocations for the production and consumption of hydrofluorocarbons under the 2020 American Innovation and Manufacturing Act.[40]

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[38] *See* 40 CFR §§ 97.412, 97.512, 97.612, 97.712, 97.812, 97.1012. *See also* 40 CFR § 97.153(e) (directing Administrator to record CAIR NOx NUSA allowance allocations); Final Notice of Data Availability Concerning 2010 CAIR NOx, 75 Fed. Reg. 52,940 (Aug. 30, 2010); 86 Fed. Reg. 23,145–23,147. Prior to the 2021 control period, NUSA allocations were completed in two rounds. The current one-round process was adopted in the Revised CSAPR Update. *See* 86 Fed. Reg. 23,054 (April 30, 2021).

[39] *See* Administration of Cross-State Air Pollution Rule Trading Program Assurance Provisions for 2019 Control Periods, 85 Fed. Reg. 53,364 (Aug. 28, 2020).

[40] *See* Phasedown of Hydrofluorocarbons: Establishing the Allowance Allocation and Trading Program Under the American Innovation and Manufacturing Act, 86 Fed. Reg. 55,203–55,204 (Oct. 5, 2021); 40 CFR §§ 84.7, 84.9,

EPA's dynamic budgeting proposal would similarly retain the substantive emissions control strategies identified in a final rule, maintaining a constant stringency and updating state budgets to accurately reflect fleet composition and utilization. As EPA notes, "the annually updated information would concern only the composition and utilization of the EGU fleet and not the emissions rate data also used in the emissions budget computations." 87 Fed. Reg. 20,109. Thus, the budget calculations "for all years would reflect only the specific emissions control strategies used to determine states' good neighbor obligations as determined in this rulemaking, along with fixed historical emissions rates for units that are not assumed to implement additional control strategies." *Id.* As with the use of similar ministerial actions in other contexts, the core component of the budget calculation—EPA's determination of necessary control strategies—remains constant. Indeed, failing to incorporate up-to-date heat input data through dynamic budgeting would otherwise result in future state budgets that do not reflect the deployment of selected control technologies at all covered EGUs in operation.

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We appreciate the opportunity to provide comments on this important rulemaking. All prior written and oral testimony and submissions to the Agency in this matter, including all citations and attachments, as well as all the documents cited in these comments and attached hereto are hereby incorporated by reference as part of the administrative record in this EPA action, Docket ID No. EPA-HQ-OAR-2021-0668.

Please direct any inquiries regarding these comments to Michael Panfil, Senior Director and Lead Counsel, Climate Risk + Clean Power, EDF.

Respectfully submitted,

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84.11. In issuing allocations under the AIM Act, EPA rejected requests that the agency issue future allocations in advance, explaining the need to make adjustments annually and clarifying that shares of the general allowance pool will remain consistent based on the established methodology. 86 Fed. Reg. 55,143.

Attachments (42):

A) Colorado Coal Units NOx Emissions 2012–2021
B) Colorado Coal Units Summary
C) Colorado Coal Units Spreadsheets
D) Connecticut EGU Summary
E) Summary of EGUs Flagged by EPA for Optimization, Analysis by Megan Williams
F) Spreadsheets on Optimize SCRs and Additional Units, Analysis by Megan Williams

Williams Analysis of EGUs Flagged by EPA for Optimization

G) A B Brown Analysis
H) Alcoa Analysis
I) Allen S King Analysis
J) Bull Run Analysis
K) Conemaugh Analysis
L) Cumberland Analysis
M) D B Wilson Analysis
N) E C Gaston Analysis
O) East Bend Analysis
P) F B Culley Analysis
Q) Gen J M Gavin Analysis
R) H L Spurlock Analysis
S) Homer City Analysis
T) Indian River Analysis
U) IPL-Petersburg Analysis
V) John E Amos Analysis
W) John Twitty Energy Center Analysis
X) Keystone Analysis
Y) Miami Fort Power Station Analysis
Z) Michigan City Analysis
AA) Montour Analysis
BB) Mountaineer Analysis
CC) New Madrid Analysis
DD) Pleasants Power Station Analysis
EE) Plum Point Analysis
FF) Thomas Hill Energy Center Analysis
GG) Wygen I Analysis

Williams Analysis of Additional Units with SCR

HH) A B Brown 2 Analysis
II) Clifty Creek Analysis
JJ) Columbia Analysis

KK) Ghent Analysis
LL) Gibson Analysis
MM) John S Cooper Analysis
NN) Miami Fort Power Station 3 Analysis
OO) Rockport Analysis
PP) Shawnee Analysis