Via electronic submission to www.regulations.gov
ATTN: Docket ID No. EPA-HQ-OAR-2018-0695
Andrew Wheeler
Acting Administrator
United States Environmental Protection Agency
Office of the Administrator Code 1101A
1200 Pennsylvania Ave NW
Washington, D.C. 20460

Re: Comments on Proposed Rule, Adopting Subpart Ba Requirements in Emission Guidelines for Municipal Solid Waste Landfills

Dear Acting Administrator Wheeler:


Had EPA complied with its mandatory duties to implement the Landfill Emission Guidelines, every state would have had an approved state or federal plan to reduce emissions from existing municipal solid waste landfills by November 30, 2017. 40 C.F.R. §§ 60.30f(b), 60.27(b) & (d). Now already one year overdue, EPA here proposes to further delay implementing the Guidelines by an additional four years. EPA characterizes the proposed Delay Rule as a “procedural change” and denies that it will have any substantive impacts. See 83 Fed. Reg. at 54,532 (“This regulatory action is a procedural change and does not have any impact on human health or the environment.”). In fact, the adverse impacts of the proposed Delay Rule on human health and welfare—the very things Congress has tasked EPA with safeguarding—will be significant.

This proposal is particularly troubling in that it is only the latest in a series of EPA’s efforts to do what it is not allowed to do: stay the Guidelines while it reconsiders them. See, e.g.,

1 Under EPA’s proposal, the deadline for the agency to impose a federal plan for states without an approved state plan would not be until March 2023—six years and three months after the current deadline.
Clean Air Council v. Pruitt, 862 F.3d 1, 9 (D.C. Cir. 2017) (“[A]n agency issuing a legislative rule is itself bound by the rule until that rule is amended or revoked.”) (quoting Nat’l Family Planning & Repro. Health Ass’n v. Sullivan, 979 F.2d 227, 234 (D.C. Cir. 1992)). After EPA illegally stayed and then failed to enforce the Landfill Emission Guidelines, a coalition of states sued to enforce them; the proposed Delay Rule surfaced only when EPA was confronted with that litigation, days before a hearing that would resolve a critical legal issue going to EPA’s liability for its regulatory violations. The district court has since rejected EPA’s efforts to rely upon this proposal to defer or defeat judicial review. But EPA’s history of using improper procedural mechanisms to avoid implementing the Guidelines raises serious concerns about the agency’s compliance with law, and the integrity of its rationale for this latest proposal.

Certainly, there is no substantive reason to further delay protections now in place (albeit not properly enforced by EPA). When EPA issued the Landfill Emission Guidelines in 2016, it found that they would “significantly reduce” emissions of landfill gas. 81 Fed. Reg. at 59,279. Specifically, EPA estimated that the Guidelines would achieve reductions of 1,810 megagrams per year (Mg/year) in smog-forming, non-methane organic compounds (NMOC) (including volatile organic compounds, or VOCs, and hazardous air pollutants) and 285,000 metric tons of methane per year. Id. at 59,280. The latter is a powerful greenhouse gas (GHG); these emissions are the equivalent of more than 7.1 million metric tons of carbon dioxide (CO2e) per year. Id. That is the annual equivalent of the GHGs emitted by more than 1.5 million cars.2 The rule is expected to further reduce GHG emissions by displacing fossil fuel-generated electricity with electricity generated by the captured methane gas. 81 Fed. Reg. at 59,280. The expected benefits of the Landfill Emission Guidelines far outweigh the costs: EPA estimated that, by 2025, the annual net benefits Guidelines would be $390 million (2012$). Id. at 59,280. By delaying implementation of the Guidelines another four years, EPA is forfeiting reductions of tens of millions of metric tons of GHG emissions and at least $1.5 billion in net benefits.

EPA’s proposed delay comes at a time when there is overwhelming and ever-growing evidence of the need for immediate reductions of GHG emissions. In October 2018, the leading international body of climate scientists—the Nobel-prize-winning Intergovernmental Panel on Climate Change (IPCC)—issued a new report finding that, absent substantial GHG reductions by 2030 and net zero emissions by 2050, warming above 1.5° C (2.7° F) is likely and would have wide-ranging and devastating consequences.3 And in November 2018, experts from thirteen federal agencies, including EPA, issued the second volume of the Fourth National Climate Assessment (the Assessment),4 which sounded yet another alarm about the devastating

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4 U.S. Global Change Research Program, Fourth National Climate Assessment Impacts, Volume II: Risks, and Adaptation in the United States (D.R. Reidmiller et al., eds., 2018),
consequences of climate change on the United States and the imperative to take action *now*. The Assessment confirms that climate change is already having a serious impact on communities throughout the country and emphasizes that “more immediate and substantial global emissions reductions” are necessary to avoid the most severe long-term consequences.\(^5\)

The sobering findings set forth in these and other reports should serve as a call to action to EPA and all other governmental entities to expedite measures to reduce GHG emissions. Instead, EPA—arguably the single most important government actor in this area, with significant authority, ability, and expertise to meaningfully address this issue—here proposes to delay until March 2023 implementing regulations that not only would achieve meaningful, near-term reductions, but that *should already have been implemented*.

The Supreme Court has said, “reasonable regulation ordinarily requires paying attention to the advantages *and* the disadvantages of agency decisions.” *Michigan v. E.P.A.*, __ U.S. __, 135 S. Ct. 2699, 2707 (2015). By that simple metric, EPA’s proposed Delay Rule is demonstrably unreasonable. But more than that, the proposed Delay Rule is unlawful:

- First, the proposed Delay Rule flies in the face of EPA’s statutory responsibility under the Clean Air Act to reduce the emissions of air pollutants that endanger human health and the environment, particularly given the clear evidence showing that time is of the essence in implementing GHG reduction measures;
- Second, EPA fails to provide a reasoned explanation for its change of course, delaying by four more years implementation of the Landfill Emission Guidelines rather than complying with its long-overdue duties to implement them. And under the circumstances, the proposed Delay Rule is both *unjustified* and *unjustifiable* by reasoned explanation. Indeed, the timing of this proposal, and EPA’s past procedural history, strongly suggest that EPA is simply seeking to avoid enforcing the rule at all, contrary to the law. Further, EPA leaves unexplained the inconsistencies with its prior factual findings, rendering the rule arbitrary and capricious. *See, e.g., F.C.C. v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009) (agency must provide detailed justification where it bases a new policy on facts that contradict prior policy); *Nat’l Cable & Telecommns. Ass’n, et al. v. Brand X Internet Servs., et al.*, 545 U.S. 967, 981 (2005) (agency must adequately explain reason for reversal of policy).
- Third, EPA failed to conduct a regulatory impact analysis or to otherwise analyze the foregone benefits resulting from the proposed Delay Rule (as it is required to do), dismissing the costs as “minimal” when in fact they are substantial;
- Fourth, EPA predicates the proposed Delay Rule on another proposed rule that does not on its face apply and is likely unlawful; and

\[\text{https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf (Assessment). We hereby incorporate this report by reference and request that the full report (which is attached) be included in the administrative record.}\]

\(^{5}\) *Id.* at 27 (Summary Findings, emphasis added).
Finally, in proposing the Delay Rule, EPA failed to comply with various executive orders, including that it failed to determine whether the Rule would disproportionately impact low-income or minority populations.

The proposed Delay Rule is thus arbitrary, capricious, and unsupported by law. It would serve only to further EPA’s blatant abdication of its statutory duties by enabling it to continue evading its clear duties to implement the Landfill Emission Guidelines. The States request that EPA withdraw the proposal and comply with its mandatory and long-overdue duty to implement the Guidelines immediately.

I. BACKGROUND

A. The Clean Air Act

The fundamental goal of the Clean Air Act (or CAA) is “to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.” 42 U.S.C. § 7401(b). The Act provides broad governing principles, such as the supremacy of public health. Nat’l Res. Defense Counsel v. EPA, 896 F.3d 459, 464 n.4 (D.C. Cir. 2018), citing 42 U.S.C. § 7619(b)(3) (in promulgating regulations relating to air quality monitoring, “the Administrator shall follow the principle that protection of public health is the highest priority”). It is understood that deference to this principle “could place some limits on EPA’s choice of rules.” Id.

Congress amended the Clean Air Act in 1970. As EPA itself has stated, this was because “Congress was dissatisfied with air pollution control at all levels of government and was convinced that relatively drastic measures were necessary to protect public health and welfare. The result was a series of far-reaching amendments which, coupled with virtually unprecedented statutory deadlines, required EPA and the States to take swift and aggressive action.” 40 Fed. Reg. 53,340, 53,342-43 (emphasis added).

One feature of the 1970 amendments was the addition of Section 111, which addresses pollutants from stationary sources that are not regulated as criteria pollutants under Section 110 or hazardous pollutants under Section 112. Section 111 directs the EPA Administrator to list categories of stationary sources that “cause[], or contribute[] significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” 42 U.S.C. § 7411(b)(1)(A)). EPA must then prescribe federal “standards of performance” for emissions of pollutants from new sources in each category (that is, those sources newly built or significantly modified after the date the standards of performance are promulgated). Id. § 7411(b)(1)(B). EPA is required to review and if appropriate revise those rules every eight years. Id. As to existing sources (to which a standard of performance would apply if the sources were new), Congress directed EPA to “prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title [Clean Air Act section 110]” under which states would submit implementation plans to EPA. Id. § 7411(d). In keeping with that mandate, EPA promulgates

6 Air Programs; Standards of Performance for New Stationary Sources; State Plans for Control of Certain Pollutants from Existing Facilities (Nov. 17, 1975).
standards of performance for existing sources in “emission guidelines,” which it issues “concurrently upon or after proposal of standards of performance” for new sources. 40 C.F.R. §§ 60.21(e), 60.22(a).

The emission guidelines provide procedures for states to submit, and for EPA to approve or disapprove, individualized state plans, which specify the standards applicable to sources within a state, along with implementation measures. If a state elects not to submit a state plan, or does not submit a “satisfactory” plan, EPA must promulgate a federal plan that directly limits emissions from the state’s sources. 42 U.S.C. § 7411(d)(2).

EPA finalized the regulations implementing Section 111(d) in 1975, and they have remained largely unchanged since then. 40 C.F.R. part 60, subpart B (§§ 60.20-60.29). In keeping with Congress’s directive, EPA ensured that the Section 111(d) implementing regulations would be “similar to” the procedures set forth by Congress in Section 110. State Plans for the Control of Certain Pollutants from Existing Facilities, 40 Fed. Reg. at 53,341 (“The plan submittal, approval/disapproval, and promulgation procedures are basically patterned after section 110 of the Act and 40 CFR Part 51 (concerning adoption and submittal of State implementation plans under section 110).”) In the 1990 amendments to the Clean Air Act, Congress revised the timeline for submission and review of state implementation plans under Section 110, because, in the words of one report, “[e]xperience since passage of the Clean Air [Act] Amendments of 1970 has shown that nine months is not adequate time for States to prepare and submit implementation plans for new or revised ambient air quality standards.” However, Congress expressed no intent for EPA to make corresponding changes to Section 111(d)’s implementing regulations.

B. Landfill Emissions

Landfills are the third largest source of anthropogenic methane in the United States. Methane is a particularly powerful GHG: While short-lived, methane is 84 to 87 times more potent than CO₂ over a 20-year timeframe, which is to say one ton of methane contributes as much to climate change as 84 metric tons of CO₂. A twenty-five percent reduction in methane emissions by 2030 would reduce average surface warming by 0.2° C around 2040.

In addition to reducing GHG emissions, the Guidelines would reduce emissions of volatile organic compounds (VOCs), and hazardous air pollutants, which EPA has found harm human health and welfare. 81 Fed. Reg. at 59,281. VOCs form ozone, which negatively impacts respiratory and cardiovascular health. Id.; see also National Ambient Air Quality Standards for Ozone, 80 Fed. Reg. 65,292, 65,322 (Oct. 26, 2015) (detailing adverse health impacts of ozone

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8 See https://www.epa.gov/lmop/basic-information-about-landfill-gas (last visited Dec. 27, 2018).
exposure, particularly to children, older adults, and people with lung diseases). Similarly, exposure to hazardous air pollutants increases the risk of many cancer and noncancer health impacts, including respiratory and neurological illnesses. See Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources, 81 Fed. Reg. 35,824, 35,837 (June 3, 2016).

C. The Landfill Emission Guidelines

EPA first proposed rules regulating landfill emissions in 1991. In 1996, EPA listed landfills as a source category that contributes significantly to air pollution that may reasonably be anticipated to endanger public health and welfare, and concurrently promulgated new source performance standards (NSPS) and existing-source emission guidelines for states’ development of implementation plans. This was even before EPA’s finding in 2009 that GHGs—the primary constituents of landfill emissions—endanger public health and welfare through their contribution to climate change. A review of the 1996 rules was ten years overdue by 2014, when EPA first noticed the rulemaking that led to the Guidelines that are the subject of the proposed Delay Rule.

The Landfill Emission Guidelines are largely patterned after the regulations they supercede. The most salient changes made by the new regulations are that they change the timeframes used to classify landfills as “new” versus “existing,” lower the NMOC emission threshold at which a gas collection and control system (GCCS) must be installed (from 50 Mg/year to 34 Mg/year), and add a new method by which landfills can measure emissions for purposes of determining whether they must install controls. 81 Fed. Reg. at 59,278-79.

The Emission Guidelines require states to submit compliance plans by May 30, 2017 (nine months after the Guidelines were finalized), 40 C.F.R. § 60.30f(b), and require EPA to approve or disapprove those plans within four months of state submission—by September 30, 2017. Id. § 60.27(b). For states that failed to submit an approvable implementation plan, EPA has up to six months from the state submission deadline, or until November 30, 2017, to promulgate an adequate federal plan. Id. § 60.27(d).

D. Initial Stay and Lawsuit

Shortly after the Landfill Emission Guidelines went into effect, industry groups submitted petitions for reconsideration, which the Obama administration EPA did not grant. On May 5, 2017, however, the Trump administration EPA sent a letter to industry groups, stating its intent to grant their petition for reconsideration of the Guidelines on the basis that “the petition has raised several objections . . . that arose after the comment period or were impracticable to

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raise during the comment period” and that “are of central relevance to the outcome of the rule[s].” EPA also stated its intent to issue a 90-day stay of the Guidelines. EPA formally published notice of the stay on May 31, 2017 (one day after the May 30 deadline for states to submit compliance plans). 82 Fed. Reg. 24,878. (In the proposed Delay Rule, EPA notes at footnote 8 that its reconsideration proceeding is “ongoing.” 83 Fed. Reg. at 54,531.)

Two weeks later, Natural Resources Defense Council (NRDC) and the Clean Air Council (Petitioners) filed suit in the D.C. Circuit challenging EPA’s 90-day stay under Clean Air Act section 307(b)(1). NRDC v. Pruitt, No. 17-1157 (D.C. Cir. filed June 15, 2017). Petitioners argued that, contrary to EPA’s assertion, the criteria for mandatory reconsideration under Section 307(d)(7)(B) were not met, so EPA lacked legal authority to stay the Guidelines. Id., Pet. Stmt. Of Issues, ECF No. 1685199 at 1-2 (July 20, 2017); see also Pet. Initial Opening Br., ECF No. 1705177 at 21-22 (Nov. 20, 2017). Shortly after that action was filed, in July 2017, EPA submitted to the Office of Management and Budget (OMB) a proposed rulemaking regarding the Guidelines, publicly stating, “EPA intends to further extend the [90-day] stay in this action. Sources will not need to comply with any requirements under these rules while the stay is in effect.” (Ultimately, EPA did not issue the proposal—which it would have lacked authority to do.)

Notwithstanding EPA’s statement in its rulemaking proposal to OMB, in its response to Petitioners’ brief in NRDC v. Pruitt, EPA argued that the case was moot because the 90-day stay had no impact on any of the Landfill Emission Guidelines’ compliance deadlines. Specifically, EPA stated, with regard to its obligations to implement the Guidelines, it had “four months, until September 31 [sic], 2017, to approve or disapprove any state plans that were timely submitted by May 30, and six months, until November 30, 2017, to promulgate a federal plan for states that did not timely submit state plans.” Respondents’ Initial Br., ECF No. 1714147 at 36 (Jan. 22, 2018). EPA acknowledged that these deadlines “have come and gone, and the Stay Decision had no effect on them.” Id. EPA also conceded it “has neither approved nor disapproved the state plans that were timely submitted, nor promulgated any federal [implementation] plans” and noted, citing 42 U.S.C. § 7604(a)(2), that “any remedy for EPA’s failure to act in this regard would lie in district court.” Id. at 37. On January 31, 2018, in light of EPA’s representations, Petitioners and EPA stipulated to voluntary dismissal of the case. NRDC v. Pruitt, Stip. Of

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16 On essentially the same facts, the D.C. Circuit had just invalidated EPA’s 90-day stay of regulations addressing methane emissions from oil and gas operations, because the court found the criteria for reconsideration were not met. Clean Air Council v. EPA (D.C. Cir. 2017) 862 F.3d 1.


E. Pending Lawsuit Challenging EPA’s Failure to Enforce

Two states—California and New Mexico—timely submitted state plans by the May 30, 2017 deadline. (Arizona submitted its state plan on July 24, 2018, and, according to comments submitted in this proceeding, West Virginia submitted its state plan on September 13, 2018. See Dkt. No. EPA-HQ-OAR-2018-0696-0006 at 2 (Nov. 8, 2018).) To date, EPA has not responded to those state plans, nor did EPA promulgate a federal plan within the six-month deadline for those states that did not submit a state plan. EPA’s failure to comply with these mandatory deadlines prompted several states to file a lawsuit under the Citizen Suit provision of the Clean Air Act. State of California v. EPA, Case No. 4:18-cv-03237-HSG (N.D. Cal. May 31, 2018).

EPA has not denied it committed the alleged violations. Rather, in a motion to dismiss, EPA admitted that its sole defense is that only statutory mandates can support an action under the Citizen Suit provision, and that the court therefore lacked jurisdiction to order EPA to perform its nondiscretionary regulatory duties. (This assertion is inconsistent with its statement to the court in NRDC v. Pruitt that any remedy for its failure to comply with the regulatory deadlines would lie in district court.) Shortly after the October 25, 2018 hearing on EPA’s motion, but before the court issued its ruling, EPA moved to stay the action while it pursued this rulemaking, wherein the agency proposes to extend into the future the regulatory deadlines that plaintiff States seek to enforce in that action.

In a ruling issued on December 21, 2018, the court denied EPA’s motion to stay and also its motion to dismiss, finding that Congress’s intent to hold EPA accountable for failing to perform duties set forth in regulations under the Clean Air Act was “readily discernable.” California v. EPA, Order Denying Defs.’ Mot. to Dismiss and Mot. to Stay Case, Dkt. 82 at 7, citing Sierra Club v. Leavitt, 355 F. Supp. 2d 544, 555 (D.D.C. 2015). That ruling resolves the legal issue underlying EPA’s liability for the regulatory violations. On the merits of the plaintiff States’ claims, all that remains is to determine the appropriate remedy. The court set a briefing schedule for the States’ motion and EPA’s cross-motion for summary judgment, with a hearing on April 25, 2019.

F. Climate Change

Our States are already experiencing the deleterious impacts of climate change. In an appendix to these comments (Appendix A), we describe in detail the climate change-related harms our individual states are already experiencing or face in the near future. These harms include successive record-breaking fire seasons in California resulting in unprecedented loss of life and billions of dollars in damages and economic harm; dramatic increases in the frequency and intensity of extreme rain storms across Rhode Island and Vermont that have caused severe

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18 See, e.g., NRDC v. Pruitt, Respondents’ Initial Br., ECF No. 1714147 at 37 (Jan. 22, 2018) (“EPA has neither approved nor disapproved the state plans that were timely submitted, nor has EPA promulgated any federal plans . . . .”).
flooding; extreme precipitation swings in Illinois and Pennsylvania that threaten agricultural yields; a sharp increase in unhealthy air days since 2013 in Oregon due to forest fires; sea level rise affecting the coasts of California, Maryland, Oregon, New Jersey, Oregon, Pennsylvania, and Rhode Island and expected to result in billions of dollars of damage to property and critical infrastructure; and extensive anticipated tree and forest mortality across New Mexico from increased temperatures, to name a few.

Recent reports confirm that we must act immediately to reduce GHG emissions to avoid their most serious consequences. On November 23, 2018, EPA and twelve other U.S. government agencies released the second volume of the Fourth National Climate Assessment (Assessment),19 which provides a thorough evaluation of the harmful impacts of climate change that different regions of the country are experiencing and the projected risks climate change poses to our health, environment, economy and national security.

The Assessment confirms that “[c]limate-related changes in weather patterns and associated changes in air, water, food, and the environment are affecting the health and well-being of the American people, causing injuries, illnesses, and death.”20 It makes clear that we need to act now to reduce GHG emissions: “Early and substantial mitigation offers a greater chance for achieving a long-term goal, whereas delayed and potentially much steeper emissions reductions jeopardize achieving any long-term goal given uncertainties in the physical response of the climate system to changing atmospheric CO2, mitigation deployment uncertainties, and the potential for abrupt consequences.”21 The Assessment cautions that “[i]n the absence of significant global mitigation action and regional adaptation efforts, rising temperatures, sea level rise, and changes in extreme events are expected to increasingly disrupt and damage critical infrastructure and property, labor productivity, and the vitality of our communities.”22 Furthermore, “[b]y the end of this century, thousands of American lives could be saved and hundreds of billions of dollars in health-related economic benefits gained each year under a pathway of lower GHG emissions.”23

The Assessment represents the federal government’s most up-to-date and comprehensive analysis of climate science and the impacts of climate change on the United States.24 It reflects the work of more than 300 governmental and non-governmental experts, was externally peer-reviewed by a committee of the National Academies of Sciences, Engineering and Medicine, and underwent several rounds of technical and policy review by the thirteen federal member agencies of the U.S. Global Change Research Program, including EPA.25

A month before the Assessment was released, in October 2018, the IPCC issued a Special Report titled Global Warming of 1.5 C, wherein the IPCC concludes that global warming is

19 See Assessment, supra, n.4.
20 Id. at 541.
21 Id. at 1351.
22 Id. at 25 (Summary Findings).
23 Id. at 541.
25 Assessment at iii, 2.
likely to reach 1.5° C between 2030 and 2052 if emissions continue to increase at the current rate. We are already seeing the consequences of the 1° C of warming to date as demonstrated by more extreme weather, rising sea levels and diminishing arctic sea ice. The IPCC projects major damage to marine ecosystems such as coral reefs which are projected to decline 70–90 percent at 1.5°C, while essentially being eliminated worldwide at 2° C.

Several other recent findings are noteworthy:

- Global carbon emissions reached an all-time high in 2018. (One article aptly characterized this as “an extraordinary watermark in Earth’s history that underscores the need for faster and stronger action to address accelerating climate change.”)

- In 2018, atmospheric CO₂ levels measured at the National Oceanic and Atmospheric Administration’s (NOAA) Mauna Loa Observatory exceeded the 410 parts per million (ppm) threshold for the first time, reaching 411 ppm in May 2018.

- The growth rate of global CO₂ levels is accelerating, averaging about 1.6 ppm per year in the 1980s and 1.5 ppm per year in the 1990s, but increasing to 2.2 ppm per year during the last decade.

- Global temperatures during the first half of 2018 were the hottest on record during a La Niña year.

There is also evidence to show that many of the record-setting phenomena we have recently seen will become the new normal, or are likely to become even more extreme:

- A study of agricultural crop response to climate warming indicates that insect pests will consume important U.S. grain crops—wheat, rice and corn—at an increasing rate: While insects already consume 5-20 percent of major grain crops, models show yield lost to insects will increase by 10-25 percent per degree Celsius of warming.

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26 See IPCC Special Report (supra, n.3) at 65.
27 Id. at 230 (Box 3.4).
29 Chelsea Harvey, More CO2 Released in 2018 Than Ever Before, E&E News (Dec. 6, 2018); https://www.eenews.net/climatewire/2018/12/06/stories/1060108875.
30 See https://research.noaa.gov/article/ArtMID/587/ArticleID/2362/Another-climate-milestone-falls-at-NOAA%E2%80%99s-Mauna-Loa-observatory [website currently unavailable due to government shutdown].
32 Deutsch, C. et al., Increase in crop losses to insect pests in a warming climate, 361 SCIENCE 916 (Aug. 31, 2018) (abstract); http://science.sciencemag.org/content/361/6405/916.
• Future hurricanes will have stronger maximum winds, move slower and drop more precipitation according to a modeling analysis by U.S. government scientists of 22 recent hurricanes.\textsuperscript{33} The unprecedented rainfall totals associated with the “stall” of Hurricane Harvey over Texas in 2017 provide a notable example of the relationship between regional rainfall amounts and tropical-cyclone translation speed.\textsuperscript{34} Similarly, before Hurricane Florence came ashore over the Carolinas in 2018, U.S. government and academic scientists forecasted rainfall amounts would be increased by over 50 percent due to warmer sea surface temperatures and available atmospheric moisture attributable to climate change.\textsuperscript{35}

• Climate change is intensifying droughts, which decrease mountain snowpack and threaten crop yields.\textsuperscript{36} In 2015, “drought conditions caused about $5 billion in damages across the Southwest and Northwest,” due to fallow farmland and reduced crop yields.\textsuperscript{37} The occurrence of drought years in the past two decades has been greater in California than in the preceding century.\textsuperscript{38} And human-induced climate change is expected to increase the likelihood of future warm-dry conditions that lead to droughts.\textsuperscript{39} Climate change is also expected to increase the frequency of dry-to-wet precipitation events like California’s recent transition from multi-year drought to extreme wetness in 2016-2017. One study projects a 25-100% increase in these extreme dry-to-wet events.\textsuperscript{40}

• In August 2018—prior to the devastating Camp Fire—California released a report\textsuperscript{41} wherein, on the basis of numerous studies, it suggests large wildfires (greater than 25,000 acres) could become 50 percent more frequent by the end of century if GHG emissions are not reduced.\textsuperscript{42} The model produces more years with extremely high areas burned,
even compared to the historically destructive wildfires of 2017 and 2018. By the end of the century, California could experience wildfires that burn up to 178 percent more acres per year than current averages. Increased wildfire smoke will also lead to more respiratory illness.

Extreme weather events come at an extreme cost. For example, in 2017, Hurricanes Harvey, Maria, and Irma cost the U.S. approximately $265 billion ($125 billion, $90 billion, and $50 billion, respectively). Costs to the states are also significant: in California, the cost of firefighting has tripled since 2013, to $947.4 million at the end of the 2018 fiscal year. These are just a few examples. With all such disasters, the costs do not end when the skies clear; there are also the costs of cleanup and rebuilding—which burden individuals, communities, insurance companies, and state and federal agencies alike.

Every day that implementation of the Landfill Emission Guidelines is delayed is another day that excess emissions are released to the atmosphere to exacerbate climate change and associated harms. By avoiding emissions in the near term—particularly methane emissions—we are not merely delaying the onset of severe consequences; we are increasing the likelihood that we can avoid such consequences—and their associated costs—altogether. The delays proposed by EPA are thus time that we cannot get back in the fight against climate change.

II. DISCUSSION

EPA’s proposed Delay Rule is unlawful and should be withdrawn. EPA provides no explanation for how the proposed Delay Rule serves its mandate under the Clean Air Act, and, in fact, the proposed Delay Rule contravenes that mandate. Moreover, EPA fails to offer good reasons for replacing the current deadlines in the Landfill Emission Guidelines. None of the bases that EPA provides for its promulgation are supportable, including its manufactured need to “align” implementation of the Guidelines with the implementation timeline set forth in the proposed Affordable Clean Energy (ACE) rule that would replace the Clean Power Plan (83 Fed. Reg. at 54,529; see 83 Fed. Reg. 44,746). Indeed, many of EPA’s justifications are contradicted by facts EPA fails to address. In addition, EPA has failed to conduct a regulatory impact analysis. By ignoring this and other analyses and procedural steps required by executive orders, EPA has unlawfully avoided assessing and disclosing the foregone benefits and other impacts that would result from its delay of the Landfill Emission Guidelines.

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44 California Assessment at 30.
45 Id. at 38; Summary of Key Findings at 8.
For each of these reasons, explained further below, EPA’s proposed action is arbitrary and capricious and contrary to law.

**A. The Proposed Delay Rule Contravenes EPA’s Statutory Obligations Under the Clean Air Act**

Under the Administrative Procedure Act, courts will set aside an agency action that is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” 5 U.S.C. § 706(2)(A). Courts have held that rules may be arbitrary and capricious where they fail to accomplish their statutory objectives. See Chem. Mfrs. Ass’n v. EPA, 217 F.3d 861, 867 (D.C. Cir. 2000) (rule establishing schedule for new emission standards was arbitrary and capricious absent evidence it would benefit human health and the environment: “Given the absence of environmental benefits—indeed, the possibility of environmental harm—EPA violated the basic requirement that its actions must ‘not deviate from or ignore the ascertainable legislative intent.’”) (citing Small Refiner Lead Phase-Down Task Force v. EPA, 705 F.2d 506, 520 (D.C. Cir. 1983)).

The proposed Delay Rule contravenes EPA’s congressional mandate to “protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.” 42 U.S.C. § 7401(b). As established by a number of scientific reports—including the Assessment, which EPA itself contributed to and that it cannot ignore or downplay—there is significant evidence showing that climate change presents a grave threat to public health and welfare, both in the short and long term. Under those circumstances, EPA should be prioritizing implementation of measures such as the Landfill Emission Guidelines that will reduce GHG emissions, not delaying them.

In Telecomms. Research & Action Ctr. v. F.C.C. (TRAC), 750 F.2d 70, 80 (D.C. Cir. 1984), the Supreme Court articulated the “contours” of a standard for evaluating whether an agency action was unreasonably delayed. The context at issue here is different (where an agency proposes to intentionally cause delay via a rulemaking), but the criteria are instructive nonetheless.

As a preliminary matter, the time agencies take to act must be governed by a “rule of reason,” to be supported by reference to the statutory scheme. Id. (internal citations omitted). Here, as discussed in detail below, EPA has cited no valid basis for its proposed delay, and its proposal wholly contravenes the purpose of the statute, which, as EPA has acknowledged, was to force “swift and aggressive action” on matters critical to human health and welfare. 40 Fed. Reg. at 53,343. The Delay Rule thus violates the rule of reason.

TRAC also notes that delays that might be reasonable in the sphere of economic regulation are “less tolerable when human health and welfare are at stake.” 750 F.2d at 80. The extent to which human health and welfare is at stake in this matter is discussed above, and cannot be overstated. Climate change is one of the greatest and most pressing challenges of our time. The impacts are already being widely felt and present a high risk of imminent crisis in many areas of the world, including our States. Not only has EPA failed to justify the delay it proposes, but, in light of the volume of evidence showing that urgent action is needed, it is hard to imagine
how any delay could be justified here. EPA’s proposal is thus unlawful. See Ctr. for Biological Diversity v. Nat’l Hwy. Traffic Safety Admin., 538 F.3d 1172, 1197 (9th Cir. 2008) (invalidating “standards that are contrary to Congress’s purpose in enacting the [relevant statute]’’).

If anything, EPA should be working to hasten the Landfill Emission Guidelines’ implementation. The Guidelines, by their nature, seek to implement measures to control pollutants that EPA has determined endanger public health. It was Congress’s intent that such rules be implemented expeditiously. 40 Fed. Reg. at 53,343. Moreover, the plans at issue are not particularly complex: They address emissions from a single source (landfills), and the technology that can achieve the reductions (gas collection and capture systems, or GCCS) is already widely deployed.49 The only real change from the previous emission guidelines is that a landfill operator would be required to install GCCS at a lower emissions threshold. States already have plans in place that need only be updated or that can at the very least serve as a template for revised plans that meet the new requirements. Further, at this point, states have considerable experience and expertise in developing compliance plans for various Clean Air Act programs, and advances in communications and information-sharing technologies enable agencies to work more efficiently than they did in 1975.

It is true that Congress saw fit to extend the implementation timelines for Section 110. For reasons discussed below, however, this does not mean there is a reflexive need (or that it would be appropriate) to adjust the implementation timeline under Section 111(d) generally. In any case, there is no need to modify the implementation timeline for the Landfill Emission Guidelines. If Congress had intended for the amendments to Section 110 timelines to apply identically to Section 111(d), it could have made that intent clear. Without such a directive, EPA cannot justify extending the timelines for the Landfill Emission Guidelines, particularly given the environmental and human health harms that will result from such a delay.

The timing of EPA’s announcement and publication of the proposed Delay Rule highlights the stark divide between the goals of the Clean Air Act and EPA’s real intent here. EPA rushed this proposed Rule out just two days before oral argument in the States’ lawsuit challenging EPA’s failure to implement the Landfill Emission Guidelines. On the basis of this flawed proposal, EPA requested that the court stay its adjudication of the States’ allegations that EPA has violated its mandatory duties under the Act, in an effort to stave off an order that it perform them. The court rejected this invitation, but the timing of EPA’s proposal and the motion hearing strongly suggests that the proposal was motivated more by EPA’s desire to evade review than any substantive evidence in the record.

At bottom, EPA’s apparent disinclination to act cannot trump Congress’s directive to address dangerous emissions sources, especially in light of overwhelming evidence of harm that EPA has itself acknowledged.50 The courts have repeatedly cautioned EPA that “well-intentioned policy objectives” do not on their own support agency deviations from statute. See, e.g.,

49 638 landfills across the country already control their emissions using some form of GCCS. See 81 Fed. Reg. at 59,305, table 2.
50 See 74 Fed. Reg. 66,496.
Mexichem Fluor, Inc. v. EPA, 866 F.3d 451, 460 (D.C. Cir. 2017) (Kavanaugh, J.). Here, Congress established Section 111(d) to ensure that both new and existing sources of dangerous pollutants would be properly controlled. EPA’s invented policy rationales to junk the current implementation framework may not even be well-intentioned, given its history of procedural delays. But the substantive content of the proposal—removing current deadlines, and then delaying emission protections from existing sources for half a decade or more—is inconsistent with Congress’s direction to put these protections in place. EPA’s proposal thus appears intended both to frustrate judicial review and to shirk Congressional obligations. Administrative agencies may not freelance based on their own policy preferences in this manner.

B. EPA Fails to Offer Valid Reasons for Reversing Course in the Proposed Delay Rule

An agency action is also arbitrary and capricious and subject to being set aside where the agency (i) has relied on factors which Congress has not intended it to consider; (ii) entirely failed to consider an important aspect of the problem; (iii) offered an explanation for its decision that runs counter to the evidence before the agency; or (iv) is so implausible that it could not be ascribed to a difference of view or the product of agency expertise. Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) (“State Farm”).

An “agency changing its course . . . is obligated to supply a reasoned analysis for the change.” Id. at 42. The Supreme Court has clarified that while an agency need not show that a new rule is better than the rule it replaced, it must demonstrate that “there are good reasons” for the replacement. F.C.C. v. Fox, 556 U.S. at 515. Further, an agency must “provide a more detailed justification than what would suffice for a new policy created on a blank slate” when “its new policy rests upon factual findings that contradict those which underlay its prior policy.” Id. Any “unexplained inconsistency” between an existing rule and a proposal to delay it is “a reason for holding an interpretation to be an arbitrary and capricious change.” Nat’l Cable & Telecomms. Ass’n, 545 U.S. at 981. Moreover, an agency cannot suspend a validly promulgated rule without first “pursu[ing] available alternatives that might have corrected the deficiencies in the program which the agency relied upon to justify the suspension.” Pub. Citizen v. Steed, 733 F.2d 93, 103 (D.C. Cir. 1984); see also Organized Village of Kake v. U.S. Dept. of Agric., 795 F.3d 956, 966-68 (9th Cir. 2015) (invalidating rule where agency failed to provide the “reasoned explanation” required by Fox for disregarding the facts and circumstances underlying prior rule).

1. There is no legal or practical need to align the Landfill Emission Guidelines’ implementation with the timeline set forth in Section 110

EPA’s primary justification for the Subpart Ba changes in the ACE Rule, and for the changes proposed here, is that they are necessary to align the Section 111(d) timeline with the statutory timeline for State Implementation Plans (SIPs) under Section 110. EPA thus implies that the changes are willed by Congress, but there is no evidence to support that proposition. The Clean Air Act requires that EPA regulations under Section 111(d) be “similar to” the provisions under Section 110, but nothing requires that they be identical. As EPA notes, “similar to” requires only that EPA “carefully consider the major structural features of CAA section 110 and,
where appropriate, adopt similar provisions in its regulations implementing CAA section 111(d).” 83 Fed. Reg. at 54,530 n.4 (emphasis added). We agree: Congress implicitly directed EPA to ensure the implementation framework under Section 111—while “similar” to that under Section 110—reflected the unique goals and approach of Section 111.

Absent a legal mandate to change the implementation timeline here, EPA relies on unsupportable claims concerning the “time, work, and effort” required to prepare a state plan to comply with the Landfill Emission Guidelines and suggests it is equivalent to the time, work, and effort required to develop a SIP under Section 110. Id. at 54,530. This is unavailing. It is not reasonable to base the Guidelines’ deadlines on SIP deadlines. While both programs rely on a model of cooperative federalism, SIPs are inherently more complex than most Section 111(d) plans, and particularly the Guidelines at issue here. For one, SIPs require different and often extensive levels of controls across a broad range of sources to collectively reduce emissions as necessary to achieve a uniform health-based standard. The analyses supporting a SIP thus require significant coordination across sectors and complex modeling. The Landfill Emission Guidelines, on the other hand, address pollution from a single source category—landfills—and are based on a particular system of pollution control; the emission-reduction goals can be achieved by using the system that EPA relied on in developing the Guideline in the first place. Finally, the state plans here will not require certain elements that can further complicate the development of SIPs, including, for example, New Source Review permitting provisions or motor vehicle emission budgets.

EPA itself has conceded that the SIPs in Section 110 are generally far more complex than the state plans under Section 111(d). See id., n.4 (“The EPA acknowledges that the procedural and substantive requirements established by Congress for the SIP process under CAA section 110 are considerably more detailed than the corresponding requirements established by Congress for the state existing-source performance standards plans under CAA section 111(d),” (emphasis added)); see also 40 Fed. Reg. at 53,345 (“Section 111(d) plans will be much less complex than the SIPs”). The difference in complexity between Sections 110 and 111(d) inherently warrants distinct timelines and more rigorous reviews to confirm completeness of state plan submissions. In the case of emission guidelines that are more complex, there may well be a need to allow more time to complete a state plan. For example, in its emission guidelines to control CO₂ emissions from existing power plants (the Clean Power Plan), EPA allowed states one year to submit their plans and also gave them the option of obtaining a two-year extension of that deadline. See 80 Fed. Reg. 64,662, 64,855. 51

Moreover, while “experience” showed that nine months was not adequate time for states to submit SIPs under Section 110, such evidence is lacking in the context of Section 111(d). In the ACE Rule, EPA cites “years of experience with working with states to develop SIPs under section 110” (83 Fed. Reg. 44,769; see also 83 Fed. Reg. 54,530) but fails to explain why its experience with SIPs under Section 110 justifies more time under Section 111(d). In the proposed Delay Rule, EPA cites the fact that the majority of states failed to timely submit plans;

51 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (Oct. 23. 2015).
as discussed below, the better explanation for this is that EPA all but urged them not to because it was reconsidering (and thus, likely to change) the rules.

2. EPA has not adequately justified any single proposed extension; nor could it, based on the evidence

Implementation of the Landfill Emission Guidelines is a multistep process. The Delay Rule proposes an extension of every discrete deadline in that process, resulting in an aggregate delay of more than five years. EPA has not justified any of those discrete delays; nor could it based on the evidence. Moreover, EPA’s addition of a six-month “completeness review” period is a transparent tactic for further unnecessary delay.

a. State plan submissions

When EPA finalized the 2016 Emissions Guidelines, it had confidence that “the majority of states will be able complete the process within the prescribed 9 months.” EPA, Response to Public Comments at 31 (July 2016).\(^{52}\) It specifically denied the request of a few commenters for an extended timeline, explaining that while a “state may not be able to submit a revised plan within this timeframe due to the specific circumstances of the state’s rulemaking process … such circumstances will be the exception rather than the rule.” \(Id\). EPA now proposes to extend the present nine-month period for states to submit implementation plans to three years, but it offers no valid justification for this change of course. As bases for the proposed Delay Rule, EPA cites “the reasons proposed in the ACE Rule” (namely, to “harmonize” the implementation timeline for Clean Air Act section 111(d) with section 110, 83 Fed. Reg. at 44,748), and comments received on the 2015 proposed guidelines. 83 Fed. Reg. at 54,530, n.4. Neither of these justifies the proposed extension or explains the inconsistency between the proposed Delay Rule and EPA’s prior policy, rendering the proposal arbitrary and capricious. \(Nat’l Cable & Telecomms. Ass ’n\), 545 U.S. at 981.

First, EPA has offered no reasoned explanation in this proposal or in the ACE Rule proposal as to why it is appropriate to change course and adopt the maximum period allowed for SIP development under Section 110 (which allows for shorter periods as determined by EPA), in light of its concession that Section 111(d) plans are generally subject to considerably less detailed requirements than SIPs under Section 110. This is particularly true in the case of the Landfill Emission Guidelines: States already have existing state plans to comply with the prior emission guidelines; all that is required is to modify them to reflect the regulatory changes imposed by the Landfill Emission Guidelines, which, as noted above, are largely patterned after the prior guidelines. As a result, states do not need to write their compliance plans from scratch; rather, they can modify their existing plans to accommodate the new regulatory requirements.

Second, contrary to EPA’s bald assertion, the circumstances surrounding the Landfill Emission Guidelines do not demonstrate that “states need more time to submit a plan.” 83 Fed. Reg. at 54,530. Two states—California and New Mexico—timely submitted plans within the applicable nine-month deadline. Arizona and West Virginia have also since submitted their

plans, well ahead of the proposed three-year deadline. More importantly, on May 5, 2016—more than three weeks before states were required to submit their plans—EPA sent a letter to industry groups indicating its intent to grant their petition to reconsider the Guidelines, and to stay the rule “in [its] entirety” for 90 days while it did so. (The 90-day stay was made formal on May 31, 2017.53) At the time, Arizona, Colorado, Delaware, Florida and likely a number of other states were in the process of developing plans; many had even completed a draft plan and had provided requisite notice of a public hearing.54 They likely decided not to expend further resources on the effort given EPA’s announced intention to, at a minimum, delay implementation of the Guidelines.

Nowhere in the proposed Delay Rule does EPA address the effects of its own actions in discouraging the submittal of state plans. Regardless, EPA has no way of knowing why other states did not timely submit their plans and no basis to assert that it was because they had insufficient time to do so. Because EPA announced its intent to stay the 2016 rule before the nine-month period had expired, and has continued to advise states that they need not submit plans, it cannot be inferred from the non-submittal of plans that states could not have timely submitted plans. Again, where EPA genuinely believes that states need more time to complete plans for a particular emission guideline, it can give them more time across the board, as it did for the Clean Power Plan. See 80 Fed. Reg. at 64,855. Or EPA could extend the deadline on an individual basis where it finds, based upon the factual record before it, that a state has demonstrated the need for more time to submit its plan. 40 C.F.R. § 60.27(a) (“The Administrator may, whenever he determines necessary, extend the period for submission of any plan or plan revision or portion thereof.”)

Nor do comments submitted in response to the 2015 proposed guidelines provide any support for the notion that three years are necessary to develop state plans. The proposed Delay Rule cites the fact that “some” commenters objected to the nine-month period, due to time needed for rule development and required public processes. In fact, only four of the fifty states made such comments, and none of them requested three years to submit a plan. See 83 Fed. Reg. at 54,530 (citing July 2016 EPA Responses to Public Comments document, pp. 30-33). Specifically, Idaho requested two years, Iowa one year, Pennsylvania one year, and New Mexico one to one-and-a-half years. The National Association of Clean Air Agencies (NACAA), a nonpartisan organization representing air pollution control agencies in 40 states, the District of

Columbia, four territories and 116 metropolitan areas, recommended one year. Notably, despite its request for more time, New Mexico was in fact able to develop, approve, and submit a plan within the nine-month period. This is not to dismiss the legitimate concerns raised by the states with respect to the time required to conduct their requisite public process. But it is evidence that even in the face of such process requirements, the Landfill Emission Guidelines state plan is not so complex or burdensome that it cannot be prepared in less than a year. In any case, EPA has provided no reasons for establishing a period that is significantly longer than any state requested.

Creating a three-year delay before EPA could begin the process of federal implementation is particularly unnecessary where some states likely have no intention of ever submitting a state plan. Fifteen states currently operate under the federal plan (see 81 Fed. Reg. at 59,287) and although a number of states likely would have submitted plans but for EPA’s stay of the rule, a number of others doubtless would not. In light of the fact that EPA has not shown a need to provide three years for states that do intend to submit plans, waiting three years before commencing action for states that do not intend to submit plans accomplishes nothing but unnecessary delay in addressing significant sources of GHGs and other pollutants. This delay is all the more egregious when combined with EPA’s proposal to expand the time for federal implementation from six months to two years, discussed below.

Finally, EPA manufactures a newfound discomfort with its prior finding that nine months was sufficient time because there is a “federal backstop”—that is, where a state cannot meet the deadline, it is simply subject to a federal plan. See 83 Fed. Reg. 54530 (noting that its prior reliance on the “federal backstop” was “inadequate” to explain why nine months was sufficient time to prepare a state plan). This is unavailing. For one, EPA need not have relied on the “federal backstop” argument to explain why nine months’ time is sufficient to prepare a state plan. There are other justifications for a nine-month timeline, including that plans under Section 111(d) are not particularly complex. At bottom, however, it is incumbent on EPA to secure reductions of harmful pollutants as quickly as possible, not to assist states in avoiding a “federal backstop.” It was the clear goal of Congress, in promulgating the 1970 amendments to the Clean Air Act, to ensure “swift and aggressive action” on the part of both EPA and the states to implement air pollution-control measures that protect public health and welfare. 40 Fed. Reg. at 53,342-43. If a state did not want to be subject to a federal plan, it could prioritize development of its own plan. But where a state either chooses not to do so, or fails to act within a reasonable period of time, Congress wanted to ensure that public health and safety would not be compromised. Furthermore, just because a state is subject to a federal plan does not mean it is precluded from developing its own plan; it just means there is an incentive to “expedite[] a State’s or Tribe’s responsibility for implementing the emission guidelines as intended by Congress.” 64 Fed. Reg. 60,689, 60,699.55 And as discussed above, there is a relief valve where

55 When it promulgated the current federal plan, EPA clarified, “Landfills covered in the State or Tribal plan are subject to the Federal plan until the State or Tribal plan is approved and becomes effective. Upon the effective date of the State or Tribal plan, the Federal plan no longer applies to landfills covered by the State or Tribal plan and the State, Tribe or local agency will implement and enforce the State or Tribal plan in lieu of the Federal plan.” Federal Plan Requirements for Municipal Solid Waste Landfills That
EPA finds that a state has demonstrated the need for more time to submit its plan. See 40 C.F.R. § 60.27(a).

b. Resubmittal of already-submitted state plans

In addition to proposing to extend arbitrarily the deadline for state plan submissions, EPA also proposes to require states that have already submitted their plans (California, New Mexico, Arizona, and West Virginia) to resubmit them and requests comment on that proposal. 83 Fed. Reg. at 54,530. EPA asserts that such a requirement “would ensure consistent treatment of all states and state plans, avoid confusion regarding deadlines, and allow the EPA to undertake a completeness review for state plans already submitted to the EPA.” Id. None of these rationales for requiring resubmission and further delaying EPA’s approval of submitted state plans has merit.

As a preliminary matter, EPA denies or at least fails to acknowledge that the completeness criteria impose an additional burden on states. EPA claims the proposed Delay Rule (including its addition of completeness criteria) would “not alter any of the submission requirements states already have under any applicable emission guideline.” 83 Fed. Reg. at 54,530, n.6. But contrary to EPA’s inference, the proposed completeness criteria would alter the submission requirements by imposing additional requirements. As discussed below, these additional requirements are arbitrary and capricious and should not be imposed on any states, let alone those that have already submitted their plans.

Regardless of whether the criteria do or do not impose additional requirements, requiring states that have already submitted state plans to resubmit places a burden on these states that EPA fails to justify. For one, EPA has not explained how requiring resubmission would ensure “consistent treatment” across states or “avoid confusion regarding deadlines,” or why either alleged result justifies the added burden on compliant states. Given that the deadline for EPA’s review of three of the four submitted state plans has already passed (and in the case of West Virginia, a response is due on or about January 13, 2019), it becomes clear that the sole function of requiring compliant states to resubmit their state plans is to enable EPA to avoid liability for failing to timely review them.

EPA also solicits comment on whether, if EPA does not require resubmission, it should still evaluate the already-submitted plans for compliance with the proposed new completeness criteria. 83 Fed. Reg. at 54,530. This alternative is baseless for similar reasons. EPA already should have completed its review of these state plans. Applying the completeness criteria to the already-submitted plans would effectively result in the unlawful retroactive application of new, more burdensome criteria. In any event, as discussed below, EPA’s proposed completeness criteria are unwarranted and should not be applied to any state plans, let alone those already submitted.

c. Completeness Review

In the ACE Rule, EPA proposes to take six months to apply criteria to determine the completeness of state plans, separate and distinct from EPA’s substantive evaluation of whether a state plan is “satisfactory.” 83 Fed. Reg. at 44,772. EPA proposes to apply this “completeness review” to the Landfill Emission Guidelines. 83 Fed. Reg. at 54,530. There has been no need of a completeness review in the past, and EPA fails to justify it now, particularly as applied to the Guidelines.

The primary basis for EPA’s proposal to conduct a separate “completeness review” is that a “similar” review is required under Section 110. 83 Fed. Reg. at 44,772. This is not a valid justification: Again, SIPs under Section 110 are inherently more complex, and “similar” does not mean “the same.” The mere fact that EPA proposes to use “criteria” to determine whether a submission is complete is certainly no basis for an additional six months’ delay. See 83 Fed. Reg. 54,530 (“Because the EPA is proposing to apply the completeness criteria [here] . . . it is important that the EPA have the opportunity to undertake a completeness review for all state plans.”).

The fact that there is no valid basis for the proposed completeness review suggests it is nothing more than a delay tactic. For one, EPA claims, “the addition of completeness criteria in the framework regulations does not alter any of the submission requirements states already have under any applicable emission guideline.” 83 Fed. Reg. at 54,530 n.6. While this is incorrect—as discussed below, the proposed criteria actually add several substantive requirements to what is currently required—if it were true, it would only demonstrate that the completeness criteria serve no purpose. And where EPA fails to conduct a review or to affirmatively deem a plan complete within the six-month period, there is no consequence; the submission is simply deemed complete by operation of law, and EPA’s substantive review ensues. As noted in their comments on the proposed ACE Rule, the States have reason to be skeptical of EPA’s intentions: Under the 2008 ozone NAAQS, for example, EPA has systematically disregarded deadlines for completeness determinations. See, e.g., Order Granting in Part Motions and Cross-Motions for Summary Judgment, Sierra Club v. McCarthy, Case No. 4:14-cv-05091-YGR, 2015 WL 3666419, at *3-4 (N.D. Cal. May 7, 2015). In that case, EPA only complied with its mandatory duty to issue findings of failure to submit completed SIPs (which would trigger subsequent implementation deadlines under the statute) after a court ordered it to do so, causing long delays to an already lengthy process.

As noted above, contrary to EPA’s claim, the completeness criteria actually impose several additional substantive requirements on states. Several of the criteria have no application in the context of the Landfill Emission Guidelines.56 Others simply impose an undue burden to

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56 For example, under the proposed Delay Rule, states would be required to, among many other things, “[d]emonstrat[e] that the state plan submission is projected to achieve emissions performance under the applicable emissions guidelines” and “[i)dentify] emissions standards for each designated facility.” Subpart Ba Completeness Criteria, 8(d) & (b). For SIPs and state plans under some emission guidelines, this information might be useful, but it has no value here, where EPA has proposed an emission guideline on the basis of a best system of emission reduction (BSER) that essentially sets an emission standard that
no practical effect. For example, criterion 1 requires that a state include a “formal letter of submittal from the Governor or the Governor’s designee requesting EPA approval,” and criterion 5 requires that it provide “[e]vidence that the State followed all of the procedural requirements of the State’s laws and constitution in conducting and completing the adoption/issuance of the plan.” 83 Fed. Reg. 44,772. Another example is the requirement that a state show that each emission standard is “nonduplicative,” among other things (id., criterion 8(f)), which requires the state to prove a negative—an impossible requirement to meet. EPA indicates no specific need for any of this information, nor does it explain how it furthers the statute’s purpose. The only purpose the additional requirements conceivably serve is to provide manufactured cover for EPA’s argument that the states need more time to complete their state plans and that EPA needs more time to review them.

Under the circumstances—where there is no demonstrated need to impose requirements that will only complicate and delay what should be a “swift and aggressive” process—the criteria are arbitrary and capricious. EPA should continue to evaluate whether a plan is “complete” within the scope of its substantive review and commit to issuing a decision on the submission within four months rather than the 18 months it proposes to give itself. Where, in the course of its substantive review, EPA notes that an element of the plan is incomplete or insufficient, it can—as it has always done—communicate the deficiency to the state and either proceed with the review while the state works concurrently to address the deficiency or, if necessary, suspend its review pending cure.

Finally, without justification, EPA has arbitrarily changed the trigger for subsequent deadlines from the date a state plan’s submittal is due—which is established by regulation—to the date EPA determines such submission is complete. It is wholly inappropriate to tether the successful implementation of emission guidelines to dates un-certain. (Were this the rule now, EPA would likely assert that it was not obligated to impose a federal plan on any state that failed to timely submit a state plan, because that clock—which is ultimately tied to EPA’s completeness determination—never started running.)

d. **EPA review of state plans**

In addition to creating an unjustified six-month period for completeness review, EPA also proposes to extend its deadline for reviewing and approving or disapproving submitted state plans from four months (including reviewing for completeness) to 12 months (following the new six-month completeness review period). This proposed delay is unsupported and unjustified and therefore arbitrary and capricious.

EPA attempts to justify this delay by first reiterating its explanation in the ACE Rule: “given the flexibilities that CAA section 111(d) and emission guidelines generally accord to states, and the EPA’s prior experience on reviewing and acting on SIPs under CAA section 110, it is appropriate to extend the period for the EPA’s review . . . .” 83 Fed. Reg. at 54,530. But as all affected facilities must meet. Compliance with the emission guideline will not be demonstrated by the attainment of a particular ambient air quality standard, but by monitoring emissions from each facility. *See, e.g.*, 40 C.F.R. § 60.39f(b).
explained above, it is unreasonable for EPA to equate the Section 111(d) timelines to the SIP timelines under Section 110 given the vastly different complexities of the state submissions under each section. And, as also explained above, such an extension is particularly unjustified here, where states are merely updating existing submissions, not starting from scratch.

EPA’s remaining justification for extending its review period also lacks merit. EPA claims the delay “would provide adequate time for the EPA to review plans and follow notice-and-comment rulemaking procedures to ensure an opportunity for public comment on the EPA’s proposed action on a state plan.” *Id.* EPA thus implies (without support) that its proposed approval or disapproval of a state plan would fall within the scope of a notice-and-comment rulemaking under Clean Air Act section 307(d) (42 U.S.C. § 7607). To the extent EPA asserts this as basis for the proposed delay, it must justify that characterization.\(^57\) Since EPA has provided no explanation to support its proposed extension here, its proposal is arbitrary and capricious.

e. Promulgation of federal plans

EPA states that it is “reiterating the rationale in the proposed ACE rule” for quadrupling from six months to two years the time for promulgating a federal plan if a state fails to submit an approvable plan. 83 Fed. Reg. at 54,531. The rationale asserted in the ACE rule is unavailing in the abstract, and particularly inappropriate as applied to the Landfill Emission Guidelines.

In the one paragraph devoted to the issue in the ACE proposal, EPA’s only explanation for the proposed 18-month extension is that it is consistent with the deadline in Section 110 for Federal Implementation Plans (FIPs) under the NAAQS for criteria pollutants. 83 Fed. Reg. at 44,771. However, as discussed above, an implementation plan for a Section 111(d) guideline applicable to a single source category is not comparable in complexity to a NAAQS implementation plan. Timelines applicable to NAAQS SIPs and FIPs are therefore not inherently appropriate for Section 111(d) plans.

EPA attempts to justify the two-year period for federal plan development in the Landfill Emission Guidelines context, asserting that “the federal plan . . . may be more complex and time intensive since it must be tailored to meet the needs of many states.” 83 Fed. Reg. at 54,531. However, EPA offers no explanation of the nature of such tailoring. The existing federal plan (codified at 40 C.F.R. Part 62, Subpart GGG) contains no provisions explicitly referencing the special needs of any particular state, and does not identify with particularity the affected facilities. Instead, it defines “designated facilities” generically, 40 C.F.R. § 62.14352, and

\(^57\) EPA’s approval or disapproval of state plans is not listed in Section 7607(d). States are required to provide a hearing on their proposed plans (with 30 days’ notice). 40 C.F.R. §§ 60.23(c)(1), (d). They are further required to submit to EPA a list of all witnesses who appeared at the hearing and a summary of their testimony, and to retain for two years a record of the full text of any testimony. *Id.*, §§ 60.23(e), (f). There is no requirement that EPA provide a public hearing where it proposes to approve or disapprove a state plan. (In contrast, where EPA promulgates a federal plan for a state or proposes to revise the state’s plan, notice and hearing are required. *See id.*, §§ 27(f), 60.29.)
provides that the federal plan applies to each designated facility that is not covered by an EPA-approved and currently effective state or tribal plan. 40 C.F.R. § 62.14350. EPA does not explain why a similar approach cannot be used for the current Landfill Emissions Guidelines.

3. **It is irrelevant that the proposed Delay Rule is “beneficial” to EPA**

EPA also justifies its proposed delay on the basis that this “would be beneficial to the EPA.” This is a wholly inappropriate justification for delaying the implementation of critical measures to control emissions of pollutants that EPA has found endanger human health and welfare. For one, nowhere does Congress indicate that EPA is to consider what might be “beneficial” to it in developing, implementing and enforcing the regulations that implement the Clean Air Act’s statutory mandates. For EPA to assert its own benefit generally is arbitrary and capricious under *State Farm*, 463 U.S. at 43. But it is beyond the pale under the circumstances here, where EPA has already flouted its nondiscretionary duties to implement valid measures to protect human health and welfare even though it is clear that time is of the essence in implementing such measures.

To the extent EPA is suggesting it lacks agency resources to timely implement the Landfill Emission Guidelines, this is improper justification for it to codify an otherwise unreasonable delay. See *Am. Hosp. Ass’n v. Burwell*, 812 F.3d 183, 191 (D.C. Cir 2016) (lack of agency resources is not a sufficient reason to delay required agency action).

4. **The possibility that market forces might compel early compliance does not justify regulatory delay**

EPA further attempts to justify the proposed Delay Rule by stating that facilities have an incentive to install controls prior to being required to do so, as that would enable them to begin monetizing recovered gas sooner, decreasing the net costs of the controls. See 83 Fed. Reg. at 54,531. But as EPA acknowledges, “some sources may choose to wait until requirements are enacted prior to installing controls.” *Id.* Moreover, EPA cannot simply abdicate its responsibility to implement a regulation on the basis that market forces may eventually generate a result similar to what the regulation seeks to achieve. Indeed, regulatory action is generally needed to address market failures. It is improper to delay regulation on the assumption that the invisible hand will make the market function perfectly (contrary to how it has functioned in the past without regulation) and therefore not regulate.

C. **EPA Has Not Conducted a Requisite Regulatory Impact Analysis and Has Therefore Ignored the Substantial Environmental and Human Health Costs That the Proposed Delay Rule Will Create**

In the proposed rule, EPA declines to conduct a regulatory impact analysis (RIA) on the ground that, “although the costs and benefits of harmonizing the timing requirements of state plans cannot be quantified due to inherent uncertainties, the EPA believes that they will be minimal and requests comment on this.” 83 Fed. Reg. at 54,531. Indeed, EPA denies that the proposed Delay Rule will have any health and safety impacts whatsoever. See *id.* at 54,532 (concluding that this action is not subject to Executive Order 13045, which concerns the
protection of children from environmental health and safety risks, in part because the proposed Delay Rule “is a procedural change and does not have any impact on human health or the environment.”). But EPA cannot prejudge the outcome of any RIA as a means to justify not conducting one. That is especially true here, where the evidence overwhelmingly shows that any delay in reducing GHG emissions is likely to have catastrophic—and costly—consequences.

Pursuant to Executive Order 12291, an RIA is required for significant and economically significant regulatory actions, as defined under sections 3(d)-(f) of Executive Order 12866. An economically significant regulatory action is one that is likely to impose costs, benefits, or transfers of $100 million or more in any given year, or “adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities.” Id. § 3(f)(1).

EPA’s first error is in focusing only on the costs to states in delaying submission of their compliance plans. But those are not the only costs EPA must consider. “In addition, ‘cost’ includes more than the expense of complying with regulations; any disadvantage could be termed a cost … including, for instance, harms that regulation might do to human health or the environment.” Michigan v. EPA, 135 S. Ct. at 2707; see also OMB Circular A–94, Guidelines and Discount Rates for Benefit–Cost Analysis of Federal Programs, Appendix A (1992) (defining “benefit-cost analysis” as “[a] systematic quantitative method of assessing the desirability of government projects or policies when it is important to take a long view of future effects and a broad view of possible side-effects”).

By EPA’s own assessment, the monetized benefits of the Landfill Emission Guidelines—and thus the costs of the proposed Delay Rule—would be significant, and at any rate, greater than $100 million annually. EPA stated, “the final rule’s estimated methane emission reductions and secondary CO₂ emission reductions in the year 2025 would yield global monetized climate benefits of $200 million to approximately $1.2 billion, depending on the discount rate. Using the average social cost of methane (SC–CH₄) and the average social cost of CO₂ (SC–CO₂), each at a 3-percent discount rate, results in an estimate of about $440 million in 2025 (2012$).” See 81 Fed. Reg. at 59,280. EPA further estimated the net annual benefits of the rule to be $390 million by 2025. Id. at 59,280. (According to Table 1 in EPA’s 2016 RIA for the Guidelines, the average annual net benefits of the Guidelines from 2019 to 2025 would actually be greater—$397 million.) Accordingly, the costs of the “disadvantages” imposed by the Delay Rule would thus be at least $1.5 billion in forfeited net benefits over the course of the delay (four years additional.

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58 Given the flaws in EPA’s analysis of the applicability of Executive Order 13045, EPA has not adequately justified why this proposed Delay Rule is not subject to that Executive Order.
61 “The SC–CH₄ and SC–CO₂ are the monetary values of impacts associated with marginal changes in methane and CO₂ emissions, respectively, in a given year. It includes a wide range of anticipated climate impacts, such as net changes in agricultural productivity, property damage from increased flood risk, and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning.” 81 Fed. Reg. at 59,280.
delay x $390 million per year), and potentially a great deal more. This is not, as EPA suggests, “minimal.”

Without an RIA that properly accounts for benefits and costs, EPA’s proposal is procedurally flawed and must be withdrawn.

D. The Proposed Delay Rule Is Improperly Predicated on the Proposed ACE Rule

Contrary to EPA’s assertion, the proposed ACE Rule would not apply to the Landfill Emission Guidelines. In any event, the ACE Rule—including that part of the rule on which the proposed Delay Rule is predicated—is unlawful.

As proposed, the ACE Rule includes a new 40 C.F.R. Part 60, subpart Ba regulation that would “change the timing requirements for the submission of state plans, the EPA’s review of state plans, and the issuance of federal plans to more closely align the procedures to that provided under CAA section 110.” 83 Fed. Reg. at 54,529. EPA notes that the proposed Delay Rule is “predicated on the proposed timing requirements in 40 CFR part 60, subpart Ba,” and that it will need to “finalize the relevant sections of 40 CFR part 60, subpart Ba that pertain to this rule either prior to or concurrently with finalizing this rule.” 83 Fed. Reg. at 54,529.

1. As proposed, the ACE Rule’s implementation changes do not apply to the Landfill Emission Guidelines

EPA attempts to characterize the proposed Delay Rule as nothing more than a necessary housekeeping measure. Specifically, EPA asserts that the purpose of the proposed Delay Rule is simply to update the cross-references to the “old implementing regulations” in the Landfill Emission Guidelines and to “harmonize with the [ACE Rule’s] proposed new timing and completeness requirements for state and federal plans.” 83 Fed. Reg. at 54,527. “Without further action,” EPA continues, “the promulgation of the proposed new implementing regulations would not be sufficient to change the timing requirements for the [Emission Guidelines], even though it is an ongoing CAA section 111(d) action.” 83 Fed. Reg. at 54,527.

As proposed, the ACE Rule would not apply to the Landfill Emission Guidelines. See 83 Fed. Reg. at 44,803 (proposed 40 C.F.R. § 60.20a, which states: “Applicability. (a) The provisions of this subpart apply to States upon publication of a final emission guideline under § 60.22a(a), if such final guideline is published after [date of publication of final rule in the Federal Register].” (emphasis added)). The Landfill Emission Guidelines were published on August 29, 2016, two years (and counting) before the proposed ACE Rule will be published, if it is ever published. See 81 Fed. Reg. 59,276 (Aug. 29, 2016).

However, in the preamble to the proposed ACE Rule, EPA stated its intent to stretch the ACE Rule’s applicability to even final emission guidelines where state plans were still in the review process—rules that EPA characterized as “ongoing.” See 83 Fed. Reg. at 44,769 (“EPA is aware that there are a number of cases where state plan submittal and review processes are still ongoing for existing 111(d) emission guidelines. … EPA is proposing to apply the changes to timing requirements … to all ongoing emission guidelines already published under section 111(d).”).
To the extent EPA would characterize the Landfill Emission Guidelines as “ongoing” (because state plans have not yet been approved and thus “are still in the review process”), it would be capitalizing on its own wrongdoing: the only way the Guidelines could be considered ongoing at all is because EPA failed to comply with its mandatory duties to implement them. (This is likely another reason EPA would require compliant states to resubmit their state plans, to bolster EPA’s assertion that as to those states, too, the Guidelines are “ongoing.”) As California, Illinois, Maryland, New Mexico, Oregon, Rhode Island, Vermont, Pennsylvania, and the California Air Resources Board (ARB) have argued in California v. EPA, EPA’s failure to review and approve any submitted state plans or to promulgate a federal plan applicable to all other states by its own deadlines violates the Clean Air Act, 42 U.S.C. § 7604(a)(2). EPA cannot now rely on its unlawful failure to meet its own deadlines as a justification for applying the ACE Rule changes to the Landfill Emission Guidelines.

2. The proposed ACE Rule—and EPA’s proposed Subpart Ba regulations—are unlawful

Even if the ACE Rule would apply to the Landfill Emission Guidelines, it is unlawful as proposed. EPA cannot justify one proposed rule by relying on another, unlawful proposed rule. Both ARB and a coalition of 19 states and 8 other jurisdictions submitted extensive comments opposing the ACE Rule and articulating its legal and technical shortcomings. These comments highlight the logical fallacies, technical inaccuracies, and other issues that make the proposed ACE Rule unlawful and subject EPA to legal challenge if it were to finalize it, as proposed.

In federal court filings, EPA has stated that “even if EPA does not finalize the power plant portion of the ACE Rule proposal on the anticipated timeline, that does not preclude EPA from finalizing the potential changes to Subpart Ba separately by April 2019.” California v. EPA, EPA’s Reply ISO Mot. to Stay, Dkt. 76 at 7. This does not get EPA very far: Not only is the proposed ACE Rule unlawful as a whole, so too are the proposed Subpart Ba regulations that EPA now claims would be applicable to the Landfill Emission Guidelines. Thus, finalizing the proposed Subpart Ba regulation separately would not shield that regulation from legal challenge.

The proposed Subpart Ba regulation would make broad changes to the implementing requirements under Section 111(d). Some of these changes are patently unlawful, including EPA’s proposal to remove the term “emission guideline,” which “arguably required EPA to provide a presumptive emission standard,” and to use instead the term “guidance document,” which “does not require EPA to provide a presumptive emission standard.” See 83 Fed. Reg. at

62 See Comments of the Attorneys General of New York, California, Connecticut, Delaware, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota (by and through its Minnesota Pollution Control Agency), New Mexico, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, Washington, the District of Columbia, the cities of Boulder (CO), Chicago, Los Angeles, New York, Philadelphia, and South Miami (FL), and the County of Broward (FL) on [ACE Rule], Oct. 31, 2018, Doc. ID: EPA-HQ-OAR-2017-0355-21117; California Air Resources Board’s Comments on Proposed [ACE] Rule, Oct. 31, 2018, Doc. IDs: EPA-HQ-OAR-2017-0355-24806, EPA-HQ-OAR-2017-0355-24810. We hereby incorporate these comments by reference and request that the full comments (which are attached) be included in the administrative record.
Section 111(d) is designed to ensure that the best systems of emission reduction (BSER), as determined by EPA, are actually implemented, via state or, if necessary, federal plans. Yet, by shifting terminology, the proposed regulation instead appears to afford states improper authority to depart from EPA’s BSER conclusions and to potentially avoid imposing controls. Functionally, the proposed changes eviscerate Section 111(d)’s core purpose of driving state-level emissions planning in response to a firm federal emissions target, replacing it with a series of hortatory guidance documents that would likely fail to protect public health. The Subpart Ba proposal departs from statute and cannot be a basis for further illegal actions in this context.

EPA’s proposed changes to the Section 111(d) implementation timelines are also legally suspect, because EPA has not provided, nor could it provide, any valid justification for a change that will significantly delay EPA’s implementation of important air-pollution-control measures. EPA has stated that it is necessary to change the implementation timeline for emission guidelines to “appropriately align” with the timeline under Section 110. 83 Fed. Reg. 44,769. Yet, as discussed above, EPA itself has admitted this is not legally required; nor do any practical considerations counsel otherwise. Again, EPA cites the amount of “work, effort, and time” required to develop a state plan. But earlier, when EPA was not trying to write a get-out-of-jail-free card for itself, it recognized that “Section 111(d) plans [are] much less complex than the SIPs,” see 40 Fed. Reg. at 53,345, in part because “[e]xtensive control strategies are not required, and after the first plan is submitted, subsequent plans will mainly consist of adopted emission standards.” Id.

EPA has thus provided no valid justification for its proposal in the ACE Rule to delay implementation of Section 111(d) emission guidelines. And, because EPA’s proposed Subpart Ba regulations are arbitrary and capricious, they cannot support the proposed Delay Rule. For reasons discussed above, and in keeping with the purpose of the Clean Air Act, EPA should be working to implement emission guidelines more quickly, not less.

E. EPA Has Failed to Comply with its Executive Order Mandates

To satisfy its obligations to comply with various executive orders, EPA states that the proposed Delay Rule will not have certain “implications” that would subject it to those orders. But EPA’s conclusory statements, with no analyses, are insufficient and, in many respects, contravened by facts in the record. Further analyses are required.

1. EPA has failed to consider fundamental cooperative federalism principles, in violation of the Clean Air Act and Executive Order 13132

Although it is required to fully consider federalism implications under Executive Order 13132,63 EPA claims the proposed Delay Rule “does not have federalism implications” because “[i]t will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.” 83 Fed. Reg. at 54,532. In fact, the proposal—which leaves states without

a coherent federal framework for controlling landfill GHG emissions—improperly departs from the successful federalism structure of the Clean Air Act.

The Act’s current form reflects the importance of federal standards acting as critical adjuncts to state pollution control. The standards prevent races to the bottom on regulatory leniency, ensure a fair regulatory playing field among the states, and ensure states need not expend undue resources of their own working to address national problems. The Act recognizes the need for “Federal financial assistance and leadership” and is rooted in a cooperative federalism structure for these reasons; Section 111’s balanced state and federal planning process reflects this core cooperative federalism structure.

The proposed Delay Rule is inconsistent with this structure. It (1) fails to establish a meaningful and effective unified federal regulatory framework for years to come despite Section 111’s directive; (2) fails to curb harmful GHGs that are already having devastating impacts on our States; and (3) requires individual states to spend their own resources if they wish to control the emission of harmful pollutants in their jurisdictions in the absence of federal support, funds, and enforcement tools that would accompany a Section 111(d) planning process. In effect, the proposed Delay Rule shirks EPA’s federal duties while leaving states with a complex regulatory problem that will demand state resources and be more difficult to solve without federal leadership. These are substantial direct effects on the states that militate against proceeding with the proposal; at the very least, they should be properly disclosed.

EPA’s blanket statement that there are no impacts, without any analysis or consideration of these principles, does not satisfy the intent of the Clean Air Act or Executive Order 13132. Moreover, the proposed Delay Rule does in fact impact states, and arguing otherwise is illogical: it changes the time in which states must submit state plans, adds additional criteria states must meet to satisfy the “completeness criteria” requirements, could require states that have already submitted their state plans to resubmit them, and will result in increased emissions of NMOC and GHGs. The only conceivable benefit this proposed Delay Rule offers is for the regulated industry to postpone installing the required controls and for EPA to extend its unlawful de facto stay of the Guidelines.

2. EPA has arbitrarily dismissed the environmental justice impacts of the proposed Delay Rule, contravening the requirements of Executive Order 12898

Under Executive Order 12898, federal agencies such as EPA must identify and address “disproportionately high and adverse human health and environmental effects” of their actions on minority and low-income communities. EPA argues that the proposed Delay Rule is not subject to Executive Order 12898 in part because it “is only implementing a procedural change

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65 See, e.g., GenOn REMA LLC v. U.S. EPA, 722 F.3d 513, 516 (3d Cir. 2013) (collecting cases to this effect).
and EPA does not anticipate that it will have any material impact on human health or the environment.” 83 Fed. Reg. at 54,532. This assertion is not supported by the evidence.

As discussed above, emission reductions have already been delayed more than a year and would be delayed an additional four years under the proposed Delay Rule, resulting in the annual excess emission of 1,810 metric tons NMOC and 7.1 million metric tons CO$_2$e. Communities located in the vicinity of landfills would most directly and immediately benefit from implementation of the Guidelines (because of the adverse health effects associated with landfill gases) and thus be disproportionately impacted by the proposed delay. Such communities tend to be low-income and minority communities. These communities are also disproportionately impacted by the effects of climate change insofar as individuals may lack resources necessary to mitigate or avoid certain harms attributable to climate change. By failing to acknowledge that low-income and minority populations will be disproportionately impacted by the proposed Delay Rule and failing to analyze the extent of that impact, EPA has not met the requirements of Executive Order 12898.

3. EPA has failed to consult Native American Tribal Governments, as required by Executive Order 13175

Contrary to its obligation under Executive Order 13175, EPA has not consulted and/or coordinated with Native American Tribal Governments. EPA admits that there are three tribes with landfills but argues they are not impacted. EPA’s assertion is not supported by fact. EPA has failed to consult with tribes to determine whether the tribes with landfills on their lands are impacted. And EPA has failed to analyze impacts to tribal members that live near other landfills.

Adopting the proposed Delay Rule without consultation undermines Tribal sovereignty and is likely to decrease air quality on Tribal lands. Contrary to EPA’s conclusory and unsupported assertions, this proposal will impact native peoples by harming tribal health and accelerating climate change. Many tribal communities are impacted by air pollution and/or they are seeing the effects of climate change through increased storm surge, erosion, flooding, prolonged droughts, wildfires, and forests being devastated by insect pest outbreaks. Native people are likely to suffer disproportionately from the effects of climate change on wildlife, fish, and native plants, which they may depend on for subsistence and maintaining traditional cultural practices. Because the proposed Delay Rule may thus have disproportionately high, adverse impacts on native tribes and indigenous populations, EPA must consult with Native American Tribal Governments.

III. CONCLUSION

EPA notes in a footnote of the proposed Delay Rule that it is “separate and distinct from the ongoing reconsideration proceeding related to the [Guidelines].” 83 Fed. Reg. at 54,531. It is apparent that the function of the proposed Delay Rule is thus to enable EPA to avoid implementing the Landfill Emission Guidelines (and also to evade a judicial order requiring it to comply with its regulatory obligations) while it works to revise—and likely weaken—them. In

light of the overwhelming evidence that time is of the essence in addressing climate change, any action that will delay or weaken measures that will reduce GHG emissions and that has no valid justification is inherently arbitrary, capricious, and contrary to law.

In proceeding with this rulemaking, EPA must give full weight to the available evidence (including the scientific facts and findings presented in the Assessment and IPCC Special Report), and consider the implications of that evidence for its proposed action. It must also provide a “detailed justification” where it proposes to take action on the basis of factual findings that contradict previous findings. *F.C.C. v. Fox*, 556 U.S. at 515. EPA must also conduct a thorough regulatory impact analysis to fully disclose the actual costs of its actions and other analyses required by executive orders. It has failed to do all of those things here. The States strongly urge EPA to withdraw the Delay Rule and to comply with its mandatory duties to implement the Landfill Emission Guidelines immediately.

Sincerely,

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to
EPA’s Proposed Rule, Adopting Subpart Ba Requirements in Emission Guidelines for Municipal Solid Waste Landfills
Docket ID No. EPA-HQ-OAR-2018-0695; RIN 2060-AU09

Appendix A: Climate Change Impacts
Our States have already begun to experience adverse impacts from climate change. Based on the overwhelming scientific evidence, those harms are likely to increase in number and severity unless aggressive steps are taken to reduce emissions of carbon dioxide and other greenhouse gases. Summarized below are some of those most significant threats being faced by our States.

**CALIFORNIA**

Climate change’s adverse effects have become impossible to ignore in California. The state weathered a historic five-year drought only to face successive record-setting fire seasons and a variety of other unprecedented phenomena that have harmed (and are likely to increasingly harm) the health and prosperity of Californians from all walks of life and all parts of the state, as described in more detail in a recent report of the California Air Resources Board.1

Drought conditions beginning in 2012 left reservoirs across the state at record low levels, often no more than a quarter of their capacity. The Sierra snowpack—critical to California’s water supply, tourism industry, and hydroelectric power—was the smallest in at least 500 years.2 The resulting cutbacks threatened the livelihoods of farmers and fishermen alike. In the Central Valley, the drought cost California agriculture about $2.7 billion and more than 20,000 jobs in 2015 alone.3 In addition, the drought led to land subsidence, due to reduced precipitation and increased groundwater pumping, and the death of 129 million trees throughout the state.4

Even prior to the drought, the U.S. Forest Service had found that California was at risk of losing 12 percent—over 5.7 million acres—of the total area of forests and woodlands in the state due to insects and disease thriving in a hotter climate.5 Several pine species are projected to lose around half of their basal area.6 And a majority of the ponderosa pine in the foothills of the central and southern Sierra Nevada Mountains has already died, killed by the western pine beetle and other bark beetles.7 The increasing threat from these insects is driven in large part by warmer summer temperatures attributable to climate change.8 The very high levels of tree mortality led Governor Brown to issue an Emergency Proclamation on October 30, 2015, directing state

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3 _California’s 2017 Climate Change Scoping Plan Update, supra_, at 7.


5 _California’s 2017 Climate Change Scoping Plan Update, supra_, at 7.

6 Id.

7 Id.

agencies to identify and take action to reduce wildfire risk through the removal and use of the dead trees.9

Notwithstanding the Governor’s Proclamation, the hotter, drier weather and millions of dead trees have increasingly accelerated the damage from wildfires. The 2018 season—the worst on record—featured the Camp Fire, which devastated the town of Paradise, California, killing at last 85 people, destroying thousands of homes, forcing the entire regional community to evacuate, burning more than 150,000 acres,10 and severely impacting air quality across northern California.11 Prior to 2018, the worst year on record was 2017, and before that, 2015.12 Climate change is expected to make longer and more severe wildfire seasons “the new normal” for California.13 Besides the immediate threats they pose to life and property, wildfires significantly impair both air quality (via smoke and ash that can hospitalize residents) and water quality (via the erosion of hillsides stripped of their vegetation).

Off the coast, rising ocean temperatures and ocean acidification have spurred toxic algal blooms, resulting in high levels of the neurotoxin domoic acid.14 This toxin has hit California’s economically valuable Dungeness crab fishery particularly hard. From 2015 to 2017, domoic acid contamination forced California to close the fishery for parts of the season in order to protect consumers from serious health risks, with the 2015-16 season declared a federal disaster.15 Other fisheries have suffered a similar fate. The Dungeness crab fishery is expected to decline significantly in the future as acidification increases.16 In addition, high levels of domoic acid are poisoning marine mammals, and have been linked to reproductive failure (including high rates of miscarriage and premature birth) among California sea lions.17

10 See http://www.fire.ca.gov/current INCIDENTS/INCIDENTDETAILS/INDEX/2277.
13 California Department of Forestry and Fire Protection, California’s Forests and Rangelands: 2010 Assessment, Ch. 3-7 (2010).
14 S. Morgaine McKibben et al., Climatic Regulation of the Neurotoxin Domoic Acid, 114 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES 2 (2007).
California’s many miles of coastline, particularly coastal bluffs, make it uniquely vulnerable to sea-level rise and more intense storms. Even if storms do not become more intense or frequent, sea-level rise itself will magnify the adverse impact of any storm surge and high waves on the California coast. Some observational studies report that the largest waves are already getting higher and winds are getting stronger.\(^{18}\) California is likely to face greater than average sea-level rise, because of gravitational forces and the rotation of the Earth. Recent projections indicate that if no significant greenhouse gas mitigation efforts are taken, the San Francisco Bay Area may experience sea level rise between 1.6 to 3.4 feet, and in an extreme scenario involving the rapid loss of the Antarctic ice sheet, sea levels along California’s coastline could rise up to 10 feet by 2100.\(^{19}\)

In addition to damage to the physical environment, increased temperatures California will experience due to climate change will put the health of state residents at risk. Increased hospitalizations for multiple diseases, including cardiovascular disease, ischemic heart disease, ischemic stroke, respiratory disease, pneumonia, dehydration, heat stroke, diabetes, and acute renal failure are associated with increases in same-day temperature.\(^{20}\) Such temperature increases have also been found to be associated with increased risk of preterm delivery\(^{21}\) and stillbirths.\(^{22}\) Recent California studies suggest increased mortality risk not only with extreme heat, but also with increasing ambient temperature.\(^{23}\)

In 2018, the State of California produced two substantial reports on the impacts of climate change in California, which incorporate the latest scientific research on the impacts of climate change in California. The first report, published May 2018 titled “Indicators of Climate Change in California” examines thirty-six separate indicators and reflects the contributions of dozens of scientists from California’s universities, and state agencies, as well as the U.S.

National Oceanic and Atmospheric Administration and the U.S. Department of Energy’s Lawrence Berkeley National Laboratory. A copy of the full “Indicators” report is included in the attachments to the States’ comments.

The second report, published August 2018 titled “California’s Fourth Climate Assessment” includes thirty-three papers from State-funded research, and eleven papers from externally funded researchers, as well as regional summaries and a statewide summary of climate vulnerabilities, and a key findings paper. A copy of selected research papers and the regional and statewide summaries and key findings reports are included in the attachments to the States’ comments.

Key findings from those reports and other sources include the following:

**Temperature Changes and Air Quality Impacts**

“Since 1895, annual average air temperatures have increased throughout the state, with temperatures rising at a faster rate beginning in the 1980s. The last four years were notably warm, with 2014 being the warmest on record, followed by 2015, 2017, and 2016. Temperatures at night have increased more than during the day: minimum temperatures (which generally occur at night) increased at a rate of 2.3 degrees Fahrenheit (°F) per century, compared to 1.3 °F per century for maximum temperatures.”

“Extremely hot days and nights — that is, when temperatures are at or above the highest 2 percent of maximum and minimum daily temperatures, respectively — have become more frequent since 1950. Both extreme heat days and nights have increased at a faster rate in the past 30 years. Heat waves, defined as five or more consecutive extreme heat days or nights, are also increasing, especially at night. Nighttime heat waves, which were infrequent until the mid-1970s, have increased markedly over the past 40 years.”

In addition, rising temperatures “could lead to increases in ground-level ozone and reduce the effectiveness of emission reductions taken to achieve air quality standards…”

“A recent detailed analysis suggests that adoption of low-carbon energy in California to reduce GHG emissions 80 percent below 1990 levels would lead to a 55 percent

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26 California Climate Indicators 2018 at S-4.
27 Id. at S-5.
reduction in air pollution mortality rates relative to 2010 levels (Zapata et al., 2018). These public health improvements have a value of $11-20 billion/year in California (Zapata et al., 2018).”

Human Health Impacts

Climate change poses direct and indirect risks to public health, as people will experience earlier death and worsening illnesses.

“Nineteen heat-related events occurred from 1999 to 2009 that had significant impacts on human health, resulting in about 11,000 excess hospitalizations. However, the National Weather Service issued Heat Advisories for only six of the events. Heat-Health Events (HHEs), which better predict risk to populations vulnerable to heat, will worsen drastically throughout the state: by midcentury, the Central Valley is projected to experience average Heat-Health Events that are two weeks longer, and HHEs could occur four to ten times more often in the Northern Sierra region.”

“The 2006 heat wave killed over 600 people, resulted in 16,000 emergency department visits, and led to nearly $5.4 billion in damages. The human cost of these events is already immense, but research suggests that mortality risk for those 65 or older could increase ten-fold by the 2090s because of climate change.”

Environmental Justice Impacts

“Multiple studies of vulnerability and climate impacts indicate that existing inequities can be exacerbated by climate change. For example, the consequences of climate-related water impacts are particularly acute for communities already dealing with a legacy of inequalities. A recent study on drought and equity in California found that low-income households, people of color, and communities already burdened with environmental pollution suffered the most severe impacts caused by water supply shortages and rising cost of water (Feinstein et al., 2017). In a report prepared as part of the Fourth Assessment, Ekstrom et al. (2018) found that while all water districts faced similar challenges during the drought, small water districts (defined as those serving less than 10,000 people or less than approximately 3,300 connections) were less likely to have the resources and capacity to overcome those challenges. These districts are most likely to serve small, rural communities in California. Furthermore, for marginalized populations in rural areas of the state, agricultural actions in response to the drought, including increases in groundwater pumping and crop choices, are increasing and reshaping their vulnerability to drought and water shortage (Greene, 2018).”

“Inequities not only exist in varying exposures to climate risk, but also in the availability and implementation of potential adaptation or resilience solutions. Recent research analyzed differences in tree canopy, an important tool for adapting to the effects of extreme heat, at the census block group scale in coastal Los Angeles and found

29 Id. at 71.
30 Id. at 10.
31 Id.
32 California Statewide Summary at 36-37.
disparities between canopy in high-income and low-income neighborhoods (Locke et al., 2017). This disparity can have implications for communities because of the benefits tree canopy provides in reducing the negative effects of extreme heat events. A study prepared for the Fourth Assessment provides one of the first estimates of these benefits in one location (Taha et al., 2018).\textsuperscript{33}

**Tribal and Indigenous Communities Impacts**

“Tribes and Indigenous communities in California face unique challenges under a changing climate. Tribes maintain cultural lifeways and rely on traditional resources (e.g., salmon fisheries) for both social and economic purposes. However, tribes are no longer mobile across the landscape. For many tribes in California, seasonal movement and camps were a part of living with the environment. Today these nomadic options are not available or are limited. This is the result of Euro-American and U.S. policy and actions and underpins several climate vulnerabilities. Tribes with reservations/Rancherias/allotments are vulnerable to climate change in a specific way: tribal lands are essentially locked into fixed geographic locations and land status. Only relatively few tribal members are still able to engage in their cultural traditions as livelihoods.”\textsuperscript{34}

**Precipitation and Water Supply Impacts**

“California has the highest variability of year-to-year precipitation in the contiguous United States.”\textsuperscript{35} By 2050, “the average water supply from snowpack is projected to decline by 2/3 from historical levels.”\textsuperscript{36}

“Statewide precipitation has become increasingly variable from year to year. In seven of the last ten years, statewide precipitation has been below the statewide average (22.9 inches). In fact, California’s driest consecutive four-year period occurred from 2012 to 2015. In recent years, the fraction of precipitation that falls as rain (rather than snow) over the watersheds that provide most of California’s water supply has been increasing — another indication of warming temperatures.”\textsuperscript{37}

“Spring snowpack, aggregated over the Sierra Nevada and other mountain catchments in central and northern California, declines substantially under modeled climate changes (Figure 6). The mean snow water equivalent (SWE) declines to less than two-thirds of its historical average by 2050, averaged over several model projections under both RCP 4.5 and 8.5 scenarios. By 2100, SWE declines to less than half the historical median under RCP 4.5, and less than one-third under RCP 8.5. Importantly, the decline in spring snowpack occurs even if the amount of precipitation remains relatively stable over the

\textsuperscript{33} Id. at 37.
\textsuperscript{34} Id. at 10.
\textsuperscript{35} Id. at 24.
\textsuperscript{37} California Climate Indicators at S-5.
central and northern California region; the snow loss is the result of a progressively warmer climate. Furthermore, while the models indicate that strong year-to-year variation will continue to occur, the likelihood of attaining spring snowpack that reaches or exceeds historical average is projected to diminish markedly (Pierce et al., 2018) (Figure 6).  

Agriculture Impacts

“Agricultural production could face climate-related water shortages of up to 16% in certain regions. Regardless of whether California receives more or less annual precipitation in the future, the state will be dryer because hotter conditions will increase the loss of soil moisture.”

“Winter chill has been declining in certain areas of the Central Valley. This is the period of cold temperatures above freezing but below a threshold temperature needed by fruit and nut trees to become and remain dormant, bloom, and subsequently bear fruit. When tracked using “chill hours,” a metric used since the 1940s, more than half the sites studied showed declining trends; with the more recently developed “chill portions” metric, fewer sites showed declines.”

“[I]t is evident from recent droughts that agricultural production will be challenged by water shortages, higher temperatures, changing atmospheric conditions, and conversion of agricultural land to developed uses (Medellín-Azuara et al., 2018; Wilson et al., 2017). Agriculture is the economic foundation for many of California’s communities, particularly rural communities where other employment opportunities are limited. Roughly 6.7 percent of jobs statewide are generated by farms and farm processing, and in the Central Valley the figure is much higher (22 percent) (UC Agricultural Issues Center, 2012). This means that climate change impacts to agriculture, and even nuanced impacts such as shifting cropping patterns, may create hardships in the rural communities where agriculture is foundational. Different crops have different labor demands (Medellín-Azuara et al., 2016), and shifting crop patterns may result in changes in employment throughout the agricultural sector (Greene, 2018; Villarejo, 1996). A Fourth Assessment study found that in the 2012-2016 drought, to access higher market prices and compensate for the higher cost of water, many farms switched to higher value crops, for which cultivation and harvesting could be largely automated— leaving agricultural workers with employment shortages beyond the drought (Greene, 2018). A report by the University of California found that in 2016, the drought resulted in a $603 million loss to the economy and the loss of 4,700 jobs due to the impacts on agriculture (Medellín-Azuara et al., 2016).”

Forest Impacts

A new paper published on October 18, 2018, estimates that “human-caused climate change caused over half of the documented increase in fuel aridity since the 1970s and
doubled the cumulative forest fire area since 1984,” contributing an additional 4.2 million ha [hectares] of forest fire. As the paper notes, “[i]ncreased forest fire activity across the western United States in recent decades has contributed to widespread forest mortality, carbon emissions, periods of degraded air quality and substantial fire suppression expenditures.”

“A changing climate combined with anthropogenic factors has already contributed to more frequent and severe forest wildfires in the western U.S. as a whole (Abatzoglou & Williams, 2016; Mann et al., 2016; Westerling, 2016).”

“One Fourth Assessment model suggests large wildfires (greater than 25,000 acres) could become 50% more frequent by the end of century if emissions are not reduced. The model produces more years with extremely high areas burned, even compared to the historically destructive wildfires of 2017 and 2018.”

“By the end of the century, California could experience wildfires that burn up to a maximum of 178% more acres per year than current averages.” Increased wildfire smoke will also lead to more respiratory illness.

In addition, the changes in climate make trees more vulnerable to pest infestations.

“Moisture stress in conifer forests enhances tree vulnerability to insect infestation, particularly by bark beetles (Anderegg et al., 2015; Bentz et al., 2010; Berryman, 1976; Gaylord et al., 2013; Hart et al., 2014; Kolb et al., 2016; Raffa et al., 2008). Between 2010 and 2017, an estimated 129 million trees have died (Young et al., 2017). Bark beetle outbreaks may be promoted by warming for multiple reasons (Bentz et al., 2010). Warming may promote successful beetle overwintering (Weed et al., 2015) and may also promote earlier timing of adult emergence and flight in spring/early summer, which may enable beetles to increase the frequency at which they can mate, lay eggs, and emerge as adults (Bentz et al., 2016).”

Drought and Land Subsidence Impacts

“The recent 2012-2016 drought was exacerbated by unusual warmth (Williams, Seager, et al., 2015), and disproportionately low Sierra Nevada snowpack levels (Dettinger & Anderson, 2015). This drought has been described as a harbinger of projected dry spells in future decades, whose impacts will likely be worsened by increased heat (Mann & Gleick, 2015). A very wet winter in 2016-2017 followed this drought, a further indication

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43 Id.
44 California Statewide Summary at 28.
45 California Key Findings at 6.
46 Id.
47 Id. at 8.
48 California Statewide Summary at 64.
of potential continued climate volatility in the future (Berg & Hall, 2015; Polade, et al., 2017; Swain et al., 2018).”

“Warming air temperatures throughout the 21st century will increase moisture loss from soils, which will lead to drier seasonal conditions even if precipitation increases (Thorne et al., 2015). Warming air temperatures also amplify dryness caused by decreases in precipitation (Ault et al., 2016; Cayan et al., 2010; Diffenbaugh et al., 2015). These changes affect both seasonal dryness and drought events. Climate projections from the previous and present generation of GCMs (e.g. Pierce et al., 2014; Swain et al., 2018) show that seasonal summer dryness in California may become prolonged due to earlier spring soil drying that lasts longer into the fall and winter rainy season. The extreme warmth during the drought years of 2014 and 2015 intensified some aspects of the 2012-2016 drought (Griffin & Anchukaitis, 2014; Mao et al., 2015; Stephenson et al., 2018; Williams, Seager, et al., 2015) and may be analogous for future drought events (Diffenbaugh et al., 2015; Mann & Gleick, 2015; Williams, Seager, et al., 2015).”

In addition, a “secondary, but large, effect of droughts is the increased extraction of groundwater from aquifers in the Central Valley, primarily for agricultural uses. The pumping can lead to subsidence of ground levels, which around the San Joaquin-Sacramento Delta has been measured at over three-quarters of an inch per year.”

“This subsidence compounds the risk that sea-level rise and storms could cause overtopping or failure of the levees, exposing natural gas pipelines and other infrastructure to damage or structural failure. At this rate of subsidence, the levees may fail to meet the federal levee height standard (1.5 ft. freeboard above 100-year flood level) between 2050-2080, depending on the rate of sea-level rise.”

**Sea-Level Rise, Coastal Erosion and Infrastructure Impacts**

“Along the California coast, sea levels have generally risen. Since 1900, mean sea level has increased by about 180 millimeters (7 inches) at San Francisco and by about 150 millimeters (6 inches) since 1924 at La Jolla. In contrast, sea level at Crescent City has declined by about 70 millimeters (3 inches) since 1933 due to an uplift of the land surface from the movement of the Earth’s plates. Sea level rise threatens existing or planned infrastructure, development, and ecosystems along California’s coast.”

“If emissions continue at current rates, Fourth Assessment model results indicate that total sea-level rise by 2100 is expected to be 54 inches, almost twice the rise that would occur if greenhouse gas emissions are lowered to reduce risk.”

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49 Id. at 13.
50 Id. at 26.
51 Id. at 14.
52 California Statewide Summary at 12.
53 California Climate Indicators at S-7.
54 California Key Findings, at 6.
“31 to 67% of Southern California beaches may completely erode by 2100 without large-scale human interventions.”\textsuperscript{55}

“Flooding from sea-level rise and coastal wave events leads to bluff, cliff, and beach erosion, which could affect large geographic areas (hundreds of kilometers). In research conducted for the Fourth Assessment, Erikson et al. (2018) found that if a 100-year storm occurs under a future with 2m (6.6 feet) of SLR, resultant flooding in Southern California could affect 250,000 people and lead to damages of $50 billion worth of property and $39 billion worth of buildings.”\textsuperscript{56}

In addition, airports in major urban areas will be susceptible to major flooding from sea-level rise and storm surge by 2040-2080, and 370 miles of coastal highway will be susceptible to coastal flooding by 2100.\textsuperscript{57}

Ocean Acidity and Health Impacts

“Increasing evidence shows that climate change is degrading California’s coastal and marine environment. In recent years, several unusual events have occurred along the California coast and ocean, including a historic marine heat wave, record harmful algal bloom, fishery closures, and a significant loss of northern kelp forests.”\textsuperscript{58}

In addition:

“[o]cean acidification … is predicted to occur especially rapidly along the West Coast (e.g., Gruber et al., 2012). Ocean acidification presents a clear threat to coastal communities through its significant impacts on commercial fisheries and farmed shellfish (Ekstrom et al., 2015) as well as to ocean ecosystems on a broader scale. Ocean acidification affects many shell-forming species, including oysters, mussels, abalone, crabs, and the microscopic plankton that form the base of the oceanic food chain (Kroeker et al., 2013; Kroeker et al., 2010). Significant changes in behavior and physiology of fish and invertebrates due to rising CO2 and increased acidity have already been documented (e.g., Hamilton et al., 2017; Jellison et al., 2017; Kroeker et al., 2013; Munday et al., 2009). Species vulnerable to ocean acidification account for approximately half of total fisheries revenue on the West Coast (Marshall et al., 2017).”\textsuperscript{59}

ILLINOIS

Climate change is affecting Illinois in a number of ways—both by fundamentally altering the state’s environment in ways never seen before and by intensifying well-recognized weather hazards. The fundamental changes can be seen in Illinois’ farming industry and in the state’s greatest environmental asset, Lake Michigan.

\textsuperscript{55} Id. at 15.
\textsuperscript{56} California Statewide Summary at 31.
\textsuperscript{57} Id. at 54-55.
\textsuperscript{58} Id. at 12.
\textsuperscript{59} Id. at 66-67.
The farming sector is particularly vulnerable to extreme precipitation caused by climate change. 2012 was Illinois’ third driest summer on record. The very next year, heavy rainfall caused flooding in parts of the state that, together with the wettest January-to-June period ever recorded in Illinois, forced farmers to delay planting and lose revenue. Heat waves during the crop pollination season may reduce future yield: hotter weather and altered rain patterns could cause 15% loss in the next 5 to 25 years and up to a 73% average loss by the end of the next century. Milder winters will lead to more weeds, insects, and diseases surviving throughout winter, also hurting yield and quality.

Climate disruption also contributes to whipsawing water levels on Lake Michigan. In January 2013, the lake fell to an all-time low water level. In 2015, it climbed to its highest level since 1998, the second-largest recorded gain over a 24-month span. Rapidly swinging water levels hurt the commercial shipping industry, recreational boaters, wildlife, and beach-goers. For example, for every inch the lake loses, a freighter must forgo 270 tons of cargo. High water erodes beaches and damages property.

Climate change has already turned up the volume on well-recognized catastrophic extreme weather events, causing stronger storms, increased precipitation, and higher average temperatures. In recent years, the state has been struck by deadly tornadoes in November 2013 and the 2014 polar vortex.

Illinois also suffers from frequent flooding, and climate change has and will cause the frequency and strength of these floods to increase. For instance, flooding caused by increased precipitation causes dramatic damage to the lives and property of Illinois residents; this toll will increase as climate change intensifies. For example, in 2009, a freight train carrying ethanol derailed in Cherry Valley, Illinois due to washout of train tracks following heavy rains. Fourteen of the tanker cars carrying ethanol caught fire, killing a woman in her car waiting for

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61 Id.
62 Id.
64 Id.
the train to pass. Seven other people were injured and about 600 nearby homes were evacuated.67 A few days later, a 54-mile-long fish kill occurred on the Rock River when ethanol that was not consumed by the fire flowed downstream, killing over 70,000 fish.68

CHERRY VALLEY TRAIN DERAILMENT

Image from Rockford Register Star

In another instance, a major flood struck Jo Daviess County in northwestern Illinois in 2011 after 15 inches of rain fell during a 12-hour time period. The flood waters caused extensive damage to roads and train tracks and at least one fatality.69 Illinois has also struggled with urban flooding caused by heavy rains falling on impervious surfaces.70

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Furthermore, rising average temperatures injures Illinois residents. Hotter weather will inevitably harm public health and lead to heat-related deaths. For instance, over 700 Illinois residents died due to the historically intense heat wave in July 1995.\textsuperscript{71} Intensified drought conditions strengthen these impacts—the inverse of heavy precipitation.

Though catastrophes such as these have occurred from time to time throughout Illinois’ history, climate change will cause them to happen more frequently and with more ferocity than ever before, at the cost of the lives and health of Illinois residents.

MARYLAND

With more than 3,000 miles of coastline, Maryland’s coast is particularly vulnerable to rising sea levels and the more extreme weather events associated with climate change: shoreline erosion, coastal flooding, storm surges, inundation, and saltwater intrusion into groundwater supplies.

In 2007, the Maryland Commission on Climate Change (MCCC) was established by Executive Order 01.01.2007.07 and was charged with evaluating and recommending state goals to reduce Maryland’s greenhouse gas emissions to 1990 levels by 2020 and to reduce those emissions to 80 percent of their 2006 levels by 2050. The MCCC was also tasked with developing a plan of action that addressed the causes and impacts of climate change and included firm benchmarks and timetables for policy implementation. As a result of the work of more than 100 stakeholders and subject matter experts, the MCCC produced a climate action plan.

A plan was the impetus for Maryland’s Greenhouse Gas Emissions Reduction Act of 2009, an enhanced version of which became law in 2016.\textsuperscript{72}

As emphasized by the MCCC’s Science and Technical Working Group, estimates show that “Maryland is projected to experience between 2.1 and 5.7 feet of sea level rise over the next century. In fact, sea level could be as much as 2.1 feet higher in 2050 along Maryland’s shorelines than it was in 2000.”\textsuperscript{73}

Sea level rise could inundate some facilities of the Port of Baltimore, placing one of the most important ports along the East Coast at risk. In 2016, for instance, the Port generated nearly $3 billion in wages and salaries, supported over 13,000 direct jobs, and moved 31.8 million tons of international cargo.\textsuperscript{74}

The state’s tourism sector is also likely to feel the impact of climate change.\textsuperscript{75} In 2015, for instance, tourism resulted in $2.3 billion in tax revenue, which directly supported more than 140,000 jobs with a payroll of $5.7 billion.\textsuperscript{76} Rising sea levels, flooding, and heightened storm surges will place further strain on Maryland’s low-lying urban and coastal lands, making tourism less feasible and increasing the costs of maintaining bridges, roads, boardwalks, and other tourism infrastructure.\textsuperscript{77} Beaches, moreover, “will move inland at a rate 50 to 100 times faster than the rate of sea level elevation” and “the cost of replenishing the coastline after a 20-inch rise in sea level would be between $35 million and $200 million.”\textsuperscript{78}

Further, skiing and other snow sports “are at obvious risk from rising temperatures, with lower-elevation resorts facing progressively less reliable snowfalls and shorter seasons.”\textsuperscript{79} Wisp Mountain Park, for example, is a popular skiing destination in Western Maryland, and the only ski resort in the State. Even in late December of 2015, only one of the resort’s 35 trails was open because of the difficulty keeping snow on the ground in above-freezing temperatures.\textsuperscript{80}

\textsuperscript{77} MCCC 2015 Annual Report 14, supra.
\textsuperscript{78} MCCC 2017 Annual Report 16, supra.
\textsuperscript{79} MCCC 2016 Annual Report 18-19, supra.
\textsuperscript{80} MCCC 2017 Annual Report 15, supra.
Climate change may also adversely impact Maryland’s agricultural industry, which employs some 350,000 people. In 2015, the market value of agricultural products produced in Maryland was $2.2 billion, with net farm income exceeding $500 million. By 2050, absent additional action, rising summer temperatures could result in nearly $150 million in median annual losses for corn, soy, and wheat. Increased flooding could adversely affect the stability, salinity, drainage, and nutrient balance of soil in low-lying areas, causing declines in crop production and making farming less viable. Rising seas could lead salt water to flow into aquifers used for irrigation. Livestock could suffer from higher temperatures, too, and would need more access to cooler areas. By causing soil erosion and nutrient runoff, moreover, increased rainfall could adversely affect water quality, including in the Chesapeake Bay.

Climate change will have significant effects on forests, which contribute some $2.2 billion to the Maryland economy, as well as $24 billion in ecological services. Climate change will exacerbate species’ existing stressors and alter their distribution, with some species likely to leave or decline and others likely to arrive or increase. Further, the services that forests provide—such as temperature regulation and water filtration—may be affected by climate change.

Climate change also threatens the Chesapeake Bay, the largest estuary in the United States. Development and pollution have made the Bay and its ecosystems more vulnerable to stressors, including those resulting from climate change. Already, the Bay has warmed by three degrees Fahrenheit. Further temperature increases could change the composition of commercial fisheries and deprive aquatic life of the oxygen needed to survive. Some species are likely to move north towards cooler waters and more suitable habitats. Other forms of aquatic life, including invasive pests and diseases, are likely to arrive or proliferate in the Bay’s newly-warmed waters.

In terms of health impacts, Maryland is likely to experience increasing numbers of 90-degree days, markedly exacerbating heat-related illnesses and mortality, particularly among the elderly. A two-week heat wave in 2012, for instance, led to 12 deaths in Maryland. By mid-century, rising temperatures could cause 27 additional deaths each summer in Baltimore alone.

**NEW JERSEY**

New Jersey’s coastal geomorphology – its sandy beaches, flat coastal plain with a gradually sloping shoreline, low-lying barrier islands, and gradual subsidence – makes the risks of sea level rise from global warming particularly severe in the state. New Jersey’s nearly 1,800

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81 Id. at 13.
82 Id. at 14.
83 MCCC 2015 Annual Report 15, supra.
84 Id.
85 Id.
86 Id. at 15-16.
87 Id. at 16.
88 MCCC 2017 Annual Report 9, 17, supra.
89 MCCC 2016 Annual Report 18-19, supra.
90 Id.
miles of tidally-flowed shoreline, its 239 coastal communities, and its 2 million coastal county residents, are especially vulnerable to flooding, inundation, and erosion from sea level rise and the effects of stronger, fiercer storms.\textsuperscript{91} New Jersey has been ranked as one of the most threatened states in terms of the value of coastal real estate at risk from sea level rise and chronic flooding in the coming decades.\textsuperscript{92} Rising sea levels also endanger water supplies as saltwater intrusion of New Jersey’s coastal and lower Delaware River aquifers increases water salinity above drinking standards.\textsuperscript{93}

Sea levels in New Jersey are already rising by an average of 1.6 inches per decade, almost double the global rate.\textsuperscript{94} USEPA has projected that the global warming will cause sea levels to rise an additional 18 inches to 4 feet in New Jersey by 2100.\textsuperscript{95} Further sea level rise of even 12 inches could cause shorelines to recede by as much as 120 feet.\textsuperscript{96} Barrier islands on the state’s Atlantic Coast from Bay Head to Cape May could be broken up by new inlets or lost to erosion if sea level rises three feet by 2100.\textsuperscript{97} And up to 3 percent of New Jersey’s land area could be inundated by four-foot sea level rise,\textsuperscript{98} which would affect countless homes, businesses, hospitals, schools, and critical infrastructure.

These effects of sea level rise are magnified during storm events, which increase the severity of coastal flooding and erosion. For example, in 2012, Superstorm Sandy wreaked havoc in the state when a storm surge reached 9-10 feet above normal in some coastal areas. The extensive damage the State experienced from severe winds and coastal flooding reached an estimated $29.4 billion in repair, response and restoration costs.\textsuperscript{99} Sandy also cost the state an estimated $11.7 billion in lost gross domestic product, including $950 million in tourism losses.\textsuperscript{100} Sandy


\textsuperscript{96} Small-Lorenz et al., Building Ecological Solutions, supra, n.1, at 16.

\textsuperscript{97} USEPA, What Climate Change Means for New Jersey, supra, n.5, at 1.

\textsuperscript{98} Small-Lorenz et al., Building Ecological Solutions, supra, n.1, at 12.

\textsuperscript{99} NOAA, New Jersey Climate Summary, supra, n.4.

\textsuperscript{100} NJ Climate Adaptation Alliance, Summary of Climate Change Impacts and Preparedness Opportunities for the Coastal Communities (April 2014), at 5, available at https://njadapt.rutgers.edu/docman-lister/working-briefs/108-njcaa-coastal-communities/file (last accessed October 21, 2018).
had a catastrophic effect on regional electric and wastewater infrastructure: 73% of the state’s electric customers experienced outages\textsuperscript{101} and the state’s largest treatment plant was inundated and dumped 240 million gallons of sewage into the Newark Bay.\textsuperscript{102}

Sea level rise and coastal flooding also threaten to obliterate New Jersey’s extensive coastal wetlands. Its tidal marshes are one of the state’s defining features, valuable as a buffer for back-bay communities against erosion and tidal flooding, and as wildlife habitat. The state’s coastal wetlands are an important stopover point for about 1.5 million migratory birds, including rare and endangered species like the red knot, and the Delaware Bay’s tidal shores are the breeding grounds for the world’s largest population of horseshoe crabs.\textsuperscript{103}

With more frequent and intense storms and accelerated sea level rise, tidal flats and marshes could become open water, jeopardizing species that entirely depend on this ecosystem to feed and nest. In Barnegat Bay and Little Egg Harbor, the rising sea is already eroding and submerging small marsh islands, which are important nesting areas for many seabirds. USEPA found that the salt marshes all along the Atlantic Coast between Cape May and the Meadowlands could be entirely displaced by sea level rise of three feet. Coastal wetlands along Delaware Bay in Cumberland County are more vulnerable still and could be lost if the sea rises by only two feet.\textsuperscript{104}

**NEW MEXICO**

The Southwest and New Mexico are experiencing the effects of climate change at a rate much faster than the majority of U.S. states. Warming trends in the southwestern U.S. have exceeded global averages by nearly 50 percent since the 1970s, and average temperatures in New Mexico have been increasing 50 percent faster than the global average over the past century.\textsuperscript{105} Temperatures in the Upper Rio Grande River basin are increasing at a rate of roughly 0.7° F per decade, contributing to an average warming of 2.7° F since 1970.\textsuperscript{106} Mountains have shown a higher rate of temperature rise when compared to lower elevations.\textsuperscript{107} Both minimum and


\textsuperscript{106} Jason Funk et al., *Confronting Climate Change in New Mexico* at 6-7, 9 (Union of Concerned Scientists, April 2016); www.ucsusa.org/NewMexicoClimateChange (last visited Oct. 18, 2018).

maximum monthly temperatures also show rising trends. The number of very hot days and nights -- defined as temperatures above the warmest 10 percent of days on record -- has increased since 1950. Heat waves lasting longer than four days have also significantly increased since 1960.\(^{108}\) These occurrences do not only affect a specific part of the state; over 95 percent of New Mexico has experienced mean temperature increases.\(^{109}\)

Key findings from the Third U.S. National Climate Assessment (Assessment) for the Southwest include:

- Snowpack and streamflow amounts are projected to decline in parts of the Southwest, decreasing surface water supply reliability for cities, agriculture, and ecosystems.\(^{110}\) (This is a critical issue for New Mexico because the state’s social, economic and environmental systems are already water-scarce and thus vulnerable to the supply disruptions which are likely to accompany future climate changes.\(^{111}\)).

- Increased warming, drought, and insect outbreaks caused by or linked to climate change have increased the frequency of catastrophic wildfires impacting people and ecosystems in the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas.\(^{112}\)

- The Southwest’s 182 federally recognized tribes and communities share particularly high vulnerabilities to climate changes such as high temperatures, drought, forest fires, and severe storms. Tribes may face loss of traditional foods, medicines, and water supplies due to declining snowpack, increasing temperatures, increasing drought, forest fires, and subsequent flooding. Historic land settlements and high rates of poverty – more than double that of the general United States population – constrain tribes’ abilities to respond effectively to climate challenges.\(^{113}\)

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\(^{109}\) Nature Conservancy, *Implications of Recent Climate Change*, supra, at iii.


\(^{112}\) Id.

The Southwest produces more than half of the nation’s high-value specialty crops, which are irrigation-dependent and particularly vulnerable to extremes of moisture, cold, and heat. Reduced yields from increasing temperatures and increasing competition for scarce water supplies will displace jobs in some rural communities.114

Increased frost-free season length, especially in already hot and moisture-stressed regions like the Southwest, is projected to lead to further heat stress on plants and increased water demands for crops. Higher temperatures and more frost-free days during winter can lead to early bud burst or bloom of some perennial plants, resulting in frost damage when cold conditions occur in late spring; in addition, with higher winter temperatures, some agricultural pests can persist year-round, and new pests and diseases may become established.115

Key findings from the Assessment for New Mexico include:

- Streamflow totals in the Rio Grande and other rivers in the Southwest were 5 percent to 37 percent lower between 2001 and 2010 than average flows during the 20th century. Projections of further reduction of late-winter and spring snowpack and subsequent reductions in runoff and soil moisture pose increased risks to water supplies needed to maintain cities, agriculture, and ecosystems.116

- Drought and increased temperatures due to climate change have caused extensive tree death across the Southwest. Winter warming due to climate change has exacerbated bark beetle outbreaks by allowing more beetles, which normally die in cold weather, to survive and reproduce.117 Wildfire and bark beetles killed trees across one fifth of New Mexico and Arizona forests from 1984 to 2008.118 Climate changes caused extensive piñon pine mortality in New Mexico between 1989 and 2003.119

- Exposure to excessive heat can aggravate existing human health conditions, such as respiratory and heart disease. Increased temperatures can reduce air quality because atmospheric chemical reactions proceed faster in warmer conditions. As a result, heat waves are often accompanied by increased ground level ozone, which can cause respiratory distress. Increased temperatures and longer warm seasons will lead to shifts in the distribution of disease-transmitting mosquitoes.120

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115 Id.
116 Id.
117 Id.
118 Id. at 468.
119 Id. at 484.
120 What Climate Change Means for New Mexico and the Southwest, supra, at 2-3.
Additionally, a recent study led by Los Alamos National Laboratories found that greenhouse gas-driven warming may lead to the death of 72 percent of the Southwest’s evergreen forests by 2050, and nearly 100 percent mortality of these forests by 2100.121

If action is not taken to reduce greenhouse gas emissions, climate models project substantial changes in New Mexico’s climate over the next 50 to 100 years. Barring reduction efforts, projected climate changes by mid- to late 21st century include: air temperatures warming by 6-12 degrees Fahrenheit on average, but more so in winter, at night, and at high elevations; more episodes of extreme heat, fewer episodes of extreme cold; more intense storm events and flash floods; and winter precipitation falling more often as rain and less often as snow.122 Severe and sustained drought will stress water sources, already over-utilized in many areas, forcing increasing water-allocation competition among farmers, energy producers, urban dwellers, and ecosystems.123

OREGON

Oregon is already experiencing adverse impacts of climate change and these impacts are expected to become more pronounced in the future, significantly affecting Oregon's economy and environment:

Loss of Snowpack and Drought

The seasonal flow cycles of rivers and streams are changing due to warmer winters and decreased mountain snowpack accumulation, as more precipitation falls as rain, not snow.124 The Third Oregon Climate Assessment Report125 explained that events in 2015 demonstrated the kind of impacts this has already had, and will have in the future:

In 2015, Oregon was the warmest it has ever been since record keeping began in 1895 (NOAA, 2017). Precipitation during the winter of that year was near normal, but winter temperatures that were 5–6°F above average caused the precipitation that did fall to fall as rain instead of snow, reducing mountain snowpack accumulation (Mote et al., 2016). This resulted in record low snowpack across the state, earning official drought declarations for 25 of Oregon’s 36 counties. Drought impacts across Oregon were widespread and diverse:

122 Confronting Climate Change in New Mexico, supra, at 3.
123 What Climate Change Means for New Mexico and the Southwest, supra, at 1-2.
125 The Third Oregon Climate Assessment Report, Oregon Climate Change Research Institute, January 2017.
Farmers in eastern Oregon’s Treasure Valley received a third of their normal irrigation water because the Owyhee reservoir received inadequate supply for the third year in a row (Stevenson, 2016) …

People near the Upper Klamath Lake were warned not to touch the water as algal blooms that thrived in the low flows and warm waters produced extremely high toxin levels (Marris, 2015) …

More than half of the spring spawning salmon in the Columbia River perished, likely due to a disease that thrived in the unusually warm waters (Fears, 2015) …

The West Coast–wide drought developed alongside a naturally-driven large, persistent high-pressure ridge (Wise, 2016). However, anthropogenic warming exacerbated the drought, particularly in Oregon and Washington (Mote et al., 2016; Williams et al., 2015) …

Oregon’s temperatures, precipitation, and snowpack in 2015 are illustrative of conditions that, according to climate model projections, may be considered “normal” by mid-century.126

And there has been more bad news since 2015. In 2018, researcher John Abatzoglou reported that:

Drought impacts are being felt most notably in Oregon, which endured a period of substandard snowpack followed by unusually dry and warm conditions since May. The impacts cover the gamut from fire to farms to fish …

Fishing restrictions have been enacted in the Umpqua River in western Oregon due to critically warm stream temperatures for steelhead and salmon. The combination of very low flows—including recent daily record low flows—due to subpar precipitation and warm temperatures have allowed water temperatures to warm faster than usual.127

**Sea Level Rise**

Ocean sea levels will rise between four inches and four-and-a-half feet on the Oregon coast by the year 2100, and coastal residents, cities and towns along Oregon’s 300 miles of coastline and 1400 miles of tidal shoreline will be threatened by increased flooding

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and erosion as a result. Residential development, state highways, and municipal infrastructure are all at risk to such threats.\textsuperscript{128}

\textbf{Ocean Acidification and Hypoxia}

As a result of climate change, ocean waters are now more acidified, hypoxic (low oxygen), and warmer, and such impacts are projected to increase, with a particular detrimental impact on some marine organisms like oysters and other shellfish, which will threaten marine ecosystems, fisheries and seafood businesses that play a vital role in Oregon’s economy and culture.\textsuperscript{129} As the Third Oregon Climate Assessment Report observed, “[T]he West Coast has already reached a threshold and negative impacts are already evident, such as dissolved shells in pteropod populations … and impaired oyster hatchery operations …”\textsuperscript{130}

The Oregon Coordinating Council on Ocean Acidification and Hypoxia recently reported that “[n]ew research points to an ever-growing list of marine organisms that are now known to be vulnerable to the threats of ocean acidification and hypoxia (OAH). The list includes species such as Dungeness crabs, rockfishes and salmon that underpin livelihoods and connections to the sea for many Oregonians.”\textsuperscript{131}

In March of 2017, KVAL TV in Eugene, Oregon chronicled the experience of the Whiskey Creek Hatchery off Netarts Bay in Tillamook, Oregon. Manager Alan Barton said that “[w]e probably produce about a third of all oyster larvae on the West Coast.” But in 2007 and 2008, hatchery output collapsed by 75%. Working with scientists from Oregon State University, Whiskey Creek identified ocean acidification as the problem. They developed a way to treat the water at the hatchery, which has been successful. But Barton does not believe that treatment is a long-term solution:

“The short term prospects are pretty good. But within the next couple of decades we’re going to cross a line I don’t think we’re going to be able to come back from,” he says. “A lot of people have the luxury of being skeptics about climate change and ocean acidification. But we don’t have that choice. If we don’t change the chemistry of the water going into our tanks, we’ll be out of business. It’s that simple for us.”\textsuperscript{132}


\textsuperscript{130}Third Oregon Climate Assessment Report, supra, at 36.

\textsuperscript{131}Oregon Coordinating Council on Ocean Acidification and Hypoxia, 1\textsuperscript{st} Biennial Report, at 8, September 15, 2018.

\textsuperscript{132}KVAL-TV, ‘One morning we came in and everything was dead’: Climate Change and Oregon oysters, March 1, 2017.
Forests, Pests and Fires

Oregon is largely defined by its iconic forests, which climate change threatens in myriad ways, as the Third Oregon Climate Assessment Report detailed:

Future warming and changes in precipitation may considerably alter the spatial distribution of suitable climate for many important tree species and vegetation types in Oregon by the end of the 21st century. Changing climatic suitability and forest disturbances from wildfires, insects, diseases, and drought will drive changes to the forest landscape in the future. Conifer forests west of the Cascade Range may shift to mixed forests and subalpine forests would likely contract. Human-caused increases in greenhouse gases are partially responsible for recent increases in wildfire activity. Mountain pine beetle, western spruce budworm, and Swiss needle cast remain major disturbance agents in Oregon’s forests and are expected to expand under climate change. More frequent drought conditions projected for the future will likely increase forest susceptibility to other disturbance agents such as wildfires and insect outbreaks.

Future warming and changes in precipitation may considerably alter the spatial distribution of suitable climate for many important tree species and vegetation types in Oregon by the end of the 21st century (Littell et al., 2013). Furthermore, the cumulative effects of changes due to wildfire, insect infestation, tree diseases, and the interactions between them, will likely dominate changes in forest landscapes over the coming decades (Littell et al., 2013).

Over the last several decades, warmer and drier conditions during the summer months have contributed to an increase in fuel aridity and enabled more frequent large fires, an increase in the total area burned, and a longer fire season across the western United States, particularly in forested ecosystems (Dennison et al., 2014; Jolly et al., 2015; Westerling, 2016; Williams and Abatzoglou, 2016). The lengthening of the fire season is largely due to declining mountain snowpack and earlier spring snowmelt (Westerling, 2016). In the Pacific Northwest, the fire season length increased over each of the last four decades, from 23 days in the 1970s, to 43 days in the 1980s, 84 days in the 1990s, and 116 days in the 2000s (Westerling, 2016). Recent wildfire activity in forested ecosystems is partially attributed to human-caused climate change: during the period 1984–2015, about half of the observed increase in fuel aridity and 4.2 million hectares (or more than 16,000 square miles) of burned area in the western United States were due to human-caused climate change (Abatzoglou and Williams, 2016).133

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Health Effects

An increase in forest fire activity is one of the various ways in which climate change threatens human health. As the Third Oregon Climate Assessment noted, “Climate change threatens the health of Oregonians. More frequent heat waves are expected to increase heat-related illnesses and death. More frequent wildfires and poor air quality are expected to increase respiratory illnesses.”\(^{134}\) For example:

Climate change is expected to worsen outdoor air quality. Warmer temperatures may increase ground level ozone pollution, more wildfires may increase smoke and particulate matter, and longer, more potent pollen seasons may increase aeroallergens (Fann et al., 2016). Such poor air quality is expected to exacerbate allergy and asthma conditions and increase respiratory and cardiovascular illnesses and death (Fann et al., 2016).\(^{135}\)

Oregon has already experienced a dramatic increase in “unhealthy air days” due to forest fires. The Medford metro region experienced 20 air quality alert days due to fire from 1985 through 2001, 19 of those in one year. From 2002 through 2012, Medford had 22 such days. But since 2013, Medford has had 74 such days, including 20 in 2017 and 35 in 2018.\(^{136}\) Portland, meanwhile, had a total of two such days from 1985 through 2014 – but 13 such days from 2015 through 2018.\(^{137}\)

During the 2017 Eagle Creek fire, the Oregon Health Authority (OHA) reported a 29% increase in emergency room visits for respiratory symptoms in the Portland metro region.\(^{138}\)

In its 2014 Oregon Climate and Health Profile Report, OHA elaborated on the health effects of wildfire smoke:

Particulate matter (PM) in smoke from wildfires is associated with cancer, cardiopulmonary disease and respiratory illness … As a result of projected increases in wildfire, Spracklen et al. (2009) anticipate an increase in aerosol organic carbon of up to 40% and an increase in elemental carbon in the western U.S. of up to 20% in 2046–2055 compared to 1996–2005 … PM associated with wildfires in California has been shown to

\(^{134}\) Third Oregon Climate Assessment Report, supra, at 74.
\(^{136}\) In addition to the impact on human health, fires in the Medford area have punished a beloved Oregon institution, the Oregon Shakespeare Festival in Ashland. In 2018 alone, the Festival had to cancel – or move indoors, to smaller venues – 20 performances, costing the Festival money and ruining many theater-goers’ plans. Wildfire Smoke Disrupts Oregon Shakespeare Festival, New York Times, August 24, 2018.
\(^{137}\) Oregon DEQ, Forest Fire Smoke Impact on Air Quality Health Trends in Bend, Klamath Falls, Medford, and Portland (1985 to 2018), DEQ18-NWR-0066-TR (October 2018). It is worth noting that although air quality alerts are often limited to especially vulnerable populations – “unhealthy for sensitive groups” – Medford in 2017-18 has experienced 38 days in which the air was unhealthy for all populations, including five “very unhealthy” days and one “hazardous” day.
\(^{138}\) Statewide Fire Activation Surveillance Report (090517-090617), Oregon Health Authority.
be more toxic to the lungs than normal ambient PM … PM exposure from wildfire smoke is a risk beyond the immediate area of the fire, since high winds can carry the PM long distances … Increases in smoke are associated with hospital admissions for respiratory complaints, and long-term exposure worsens existing cardiopulmonary disease … bronchitis and pneumonia.  

**Impact on American Indian Tribes**

As the Legislative Summary of the Third Oregon Climate Assessment Report observed:  

Changes in terrestrial and aquatic ecosystems will affect resources and habitats that are important for the sovereignty, culture, economy, and community health of many American Indian tribes. Tribes that depend upon these ecosystems, both on and off reservation, are among the first to experience the impacts of climate change. Of particular concern are changes in the availability and timing of traditional foods such as salmon, shellfish, and berries, and other plant and animal species important to tribes’ traditional way of life.  

The threat that climate change poses to salmon populations is a particular source of concern for the tribes:

A 2015 study of Columbia River Basin tribes, including the Confederated Tribes of Warm Springs (CTWS) and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), found that the primary concerns regarding climate change impacts included the quantity and quality of water resources, snowpack, water temperatures for spawning conditions, and fishing rights (Sampson, 2015). Pacific salmon have great cultural, subsistence, and commercial value to tribes in the Pacific Northwest, and are central to tribal cultural identity, longhouse religious services, sense of place, livelihood, and the transfer of traditional values to the next generation (Dittmer, 2013). During the last 150 years, culturally important salmon populations have declined (Dittmer, 2013). Continuation of past trends of earlier spring peak, more extreme high flows and more frequent low flows in the low elevation basins of northeast Oregon, home to the CTWS

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140 *The Third Oregon Climate Assessment Report, supra,* (Legislative Summary).
and CTUIR, may force earlier migration of juvenile salmon, challenge returning adults in low flow conditions, and increase scour risk for emerging young salmon (Dittmer, 2013).141

Page 58:

The threat that climate change poses to forests is likewise a major concern for tribes:

Changes in forest ecosystems and disturbances will affect resources and habitats that are important for the cultural, medicinal, economic, and community health of tribes (Lynn et al., 2013). In Oregon, 62% of tribal reservation land is forested, and the US government has a trust responsibility toward such forests (Indian Forest Management Assessment Team, 2013). American Indian and Alaska Native tribes that depend on forest ecosystems, whether on or off reservations, are among the first to experience the impacts that climate change is having on forests, such as the expansion of invasive species, insects, diseases, and wildfires (Norton-Smith et al., 2016). Invasive species that displace native species can negatively affect tribal subsistence and ceremonial practices, although there is little knowledge about on how climate change will interact with invasive species (Norton-Smith et al., 2016). Increasing wildfire, insects, and diseases have jeopardized the economic and ecological sustainability of tribally managed forests and important tribal resources (Indian Forest Management Assessment Team, 2013; Norton-Smith et al., 2016). Collaborative adaptive forest management that integrates tribal traditional ecological knowledge can support socio-ecological resilience to climate change (Armatas et al., 2016).142

**Pennsylvania**

The Commonwealth of Pennsylvania faces two fundamental threats related to climate: (1) sea level rise and its impact on communities and cities in the Delaware River Basin, including the city of Philadelphia; and (2) more frequent extreme weather events, including large storms, periods of drought, heat waves, heavier snowfalls, and an increase in overall precipitation variability. Based on studies commissioned by the Pennsylvania Department of Environmental Protection, as part of its mandate under the Pennsylvania Climate Change Act, 71 P.S. §§ 1361.1 – 1361.8, Pennsylvania has undergone a long-term warming of more than 1°C over the past 110 years.143 The models used in the 2015 Climate Impacts Assessment Update

suggest this warming is a result of anthropogenic influence, and that this trend is accelerating. Projections in the 2015 Update show that by the middle of the 21st century, Pennsylvania will be about 3°C warmer than it was at the end of the 20th century.

Modeling charts from the 2015 Update show that in both the CMIP5 and statistically downscaled CMIP5 datasets, mid-century temperatures in the Philadelphia region are projected to be similar to historical temperatures in the Richmond, VA area. Similarly, Pittsburgh’s temperatures are projected to resemble the historically observed temperatures in the Baltimore-

Washington area. The mean warming across the state simulated by these models is generally 3.0-3.5 °C (5.4-6.3°F). The CMIP5 model mean change is 3.0-3.3 °C (5.4-6.0 °F) across nearly the entire state. The statistically downscaled CMIP5 model mean change is 3.3-3.5 °C (5.9-6.3°F) in the northern half of the state and 3.0-3.3 °C (5.4-6.0°F) in the southern half. Finally, the dynamically downscaled dataset model mean change is only 1.5-1.8 °C (2.7-3.2°F) across the western half of the state and 1.8-2.1 °C (3.2-3.8 °F) across the eastern half. The reduced warming is likely at least partially because these models rely on a different emissions scenario, in which the buildup of greenhouse gases in the atmosphere occurs at a slower rate than in the than in the scenarios that the CMIP5 models use.

The 2015 Climate Impacts Assessment Update also finds that this warming trend will threaten Pennsylvania in other ways:

- Pennsylvania agriculture will have to adapt to by greater extremes in temperature and precipitation. Pennsylvania dairy production is likely to be negatively affected by climate change due to losses in milk yields caused by heat stress, additional energy and capital expenditures to mitigate heat stress, and lower levels of forage quality.

- Pennsylvania’s forests will be subject to multiple stressors. The warming climate will cause tree species inhabiting decreasingly suitable habitat to become stressed. Mortality rates are likely to increase and regeneration success is expected to decline for these tree species, resulting in declining importance of those species in the state.

- Suitable habitat for plant and wildlife species is expected to shift to higher latitudes and elevations. This will reduce the amount of suitable habitat in Pennsylvania for species that are at the southern extent of their range in Pennsylvania or that are found primarily at high latitudes; the amount of habitat in the state that is suitable for species that are at the northern extent of their range in Pennsylvania will increase. The Canada lynx, which is already rare in Pennsylvania, will likely be extirpated from the state.

- The public health of Pennsylvanians is threatened because climate change will worsen air quality relative to what it would otherwise be, causing increased respiratory and cardiac illness. The linkage between climate change and air quality is most strongly established for ground-level ozone creation during summer, but there is some evidence that higher temperatures and higher precipitation will result in increased allergen (pollen and mold) levels as well.

- West Nile disease is endemic in Pennsylvania. It is currently most prevalent in Southeastern and Central parts of the state, and less prevalent in the Laurel Highlands and the Allegheny Plateau. However, climate change is expected to increase the prevalence of West Nile disease in the higher-elevation areas, due to higher temperatures. In addition

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144 2015 Climate Impacts Assessment Update, supra, at 63.
145 Id. at 114.
146 Id.
147 Id. at 321.
148 Id. at 135.
to its range, the duration of the transmission season for West Nile disease is sensitive to climate. Warmer temperatures result in a longer transmission season, and therefore greater infection risk.

- Climate change will have a severe, negative impact on winter recreation in Pennsylvania.\textsuperscript{149} Downhill ski and snowboard resorts are not expected to remain economically viable past mid-century. Snow cover to support cross country skiing and snowmobiling has been declining in Pennsylvania, and is expected to further decline by 20-60%, with greater percentage decreases in southeastern Pennsylvania, and smaller decreases in northern Pennsylvania.

- Climate change poses a threat to the fauna of the tidal freshwater portion of the Delaware estuary in Pennsylvania.\textsuperscript{150} One reason is that increased water temperatures with climate change decrease the solubility of oxygen in water and will increase respiration rates, both of which will result in declines in dissolved oxygen concentration. Thus, climate change will worsen the currently substandard water quality in the tidal freshwater region of the Delaware Estuary.

- The freshwater tidal wetlands along Pennsylvania’s southeastern coast are a rare, diverse, and ecologically important resource.\textsuperscript{151} Climate change poses a threat to these wetlands because of salinity intrusion and sea-level rise. Sea-level rise, however, has the potential to drown wetlands if their accretion rates are less than rates of sea-level rise.

**RHODE ISLAND**

Climate change is adversely impacting Rhode Island in many diverse ways, including warming air temperatures, warming ocean temperatures, rising sea level, increased acidity of ocean waters, increased rainfall amounts, and increased intensity of rainfall events.

Rhode Island has experienced a significant trend over the past 80 years toward a warmer and wetter climate. Trends are evident in annual temperatures, annual precipitation, and the frequency of intense rainfall events. Temperatures have been steadily climbing in the Ocean State since the early 1930s. The average annual temperature for the state is currently increasing at a rate of 1 degree Fahrenheit every 33 years. The frequency of days with high temperatures at or above 90 degrees has increased while the frequency of days with minimum temperatures at or below freezing has decreased.\textsuperscript{152}

\textsuperscript{149} *Id.* at 141.  
\textsuperscript{150} *Id.* at 152.  
\textsuperscript{151} *Id.*  
There has also been a pronounced increase in precipitation from 1930 to 2013. Increased precipitation has occurred as a result of large, slow moving storm systems, multiple events in the span of a few weeks (such as the 2010 spring floods), as well as an increase in the frequency of intense rain events. The average annual precipitation for Rhode Island is increasing at a rate of more than 1 inch every 10 years. The frequency of days having one inch of rainfall has nearly doubled. Intense rainfall events (heaviest 1 percent of all daily events from 1901 to 2012 in New England) have increased 71 percent since 1958. The increased amounts of precipitation since 1970 has resulted in a much wetter state in terms of soil moisture and the ground’s ability to absorb rainfall.\(^153\)

In addition, the water in Narragansett Bay is getting warmer. Over the past 50 years, the surface temperature of the Bay has increased 1.4° to 1.6° C (2.5° to 2.9° F). Winter water temperatures in the Bay have increased even more, from 1.6° to 2.0° C (2.9° to 3.6° F). Ocean temperatures are increasing world-wide, but temperature increases in the northwestern Atlantic Ocean are expected to be 2-3 times larger than the global average.\(^154\) Warmer water temperatures in Narragansett Bay are causing many changes in ecosystem dynamics, fish, invertebrates, and plankton. Cold-water iconic fishery species (cod, winter flounder, hake, lobster) are moving north out of RI waters and warm-water southern species are becoming more prevalent (scup, butterfish, squid). Rhode Island’s marine waters are also becoming more acidic due to increasing CO\(_2\). This may cause severe impacts to shellfish, especially in their larval life stages.\(^155\)

Sea levels have risen over 9 inches in Rhode Island since 1930 as measured at the Newport tide gauge. The historic rate of sea level rise at the Newport tide gauge from 1930 to 2015 is presently 2.72 mm/year, or more than an inch per decade.\(^156\) At present rates, sea levels will likely increase 1 inch between every 5 or 6 years in Rhode Island. NOAA is projecting as much as 6.6 feet of sea level rise by the end of this century in Rhode Island. In the shorter-term, NOAA predicts upwards of 1 foot by 2035 and 1.9 feet by 2050.\(^157\) This has critical implications for Rhode Island, as thousands of acres of Rhode Island’s coast will be affected.

Climate change is also altering the ecology and distribution of plants and animals in Rhode Island. In southern New England, spring is arriving sooner and plants are flowering earlier (one week earlier now when compared to the 1850s). For every degree of temperature rise in the spring and winter, plants flower 3.3 days earlier. For woody plants, leaf-out is occurring 18 days earlier now than in the 1850s. Changes in the timing of leaf-out, flowering, and fruiting in plants can be very disruptive to plant pollinators and seed dispersers.\(^158\)

Changes in the timing of annual cycles has been observed in Rhode Island birds. Based on a 45-year near-continuous record of monitoring fall migration times for passerine birds in

\(^{153}\) Id. at 4.
\(^{155}\) Id.
\(^{156}\) Id. at 28-30.
\(^{157}\) Id.
\(^{158}\) Id. at 38-40
Kingston, RI, Smith and Paton (2011) found a 3.0 days/decade delay in the departure time of 14 species of migratory birds.159

VERMONT

Climate change is causing an increase in temperatures and precipitation in Vermont. Average annual temperature has increased by 1.3º F since 1960, and is projected to rise by an additional 2-3.6 º F by 2050.160 Since 1960, average annual precipitation has increased by 5.9 inches.161

Heavy rainfall events are becoming more common.162 Increasingly frequent heavy rains threaten to flood communities located in Vermont’s many narrow river valleys. In 2011 Tropical Storm Irene dumped up to 11 inches of rain on Vermont, impacting 225 municipalities and causing $733 million in damage.163 More than 1,500 residences sustained significant damage, temporarily or permanently displacing more than 1400 households.164 More than 500 miles of state highway, 2000 municipal road segments, and 480 bridges were damaged.165 Farms, water supply and wastewater treatment facilities were also damaged, and the channels of many streams were enlarged and/or relocated.166

In addition to threatening human lives and property, increasingly frequent heavy rains present challenges for state and local land use planning. Further, storm water runoff carries pollutants to the state’s streams and lakes, and hinders the state’s efforts to address phosphorous pollution and resulting algal blooms in Lake Champlain.

Climate change also threatens Vermont’s environment and economy by affecting activities dependent on seasonal climate patterns, such as maple sugaring and winter sports.167 Vermont is the nation’s leading maple-syrup producing state168. Warmer temperatures are likely

159 Id.
161 Id.
162 Id.
165 Id.
166 Id.
to shift the suitable habitat for sugar maples farther north into Canada.\textsuperscript{169} Warmer winters may bring more rain and less snow to Vermont, harming the skiing, snowboarding, and snowmobiling industries and local economies that depend on them. \textit{Id.} During the winter of 2016-17, Vermont recorded more than 3.9 million skier visits, second only to Colorado among the states.\textsuperscript{170}

Climate change is also contributing to increased distribution and abundance of ticks and increased tickborne diseases, including Lyme disease and Anaplasmosis, in Vermont.\textsuperscript{171} Vermont has the nation’s highest per-capita incidence of Lyme Disease.\textsuperscript{172}

Attachment 3

Index of Supporting Documents for States’ Comments in Docket EPA-HQ-OAR-2018-0695, and FedEx Delivery Receipt

The States of California, Illinois, Maryland, New Jersey, New Mexico, Oregon, Pennsylvania, Rhode Island, and Vermont, and the California Air Resources Board submit the following documents in support of our comments opposing the proposed rule to adopt subpart Ba requirements in Emission Guidelines for Municipal Solid Waste Landfills. *We intend for these documents to be added to the administrative record in this proceeding.*

Exhibits A-O, below, were submitted on a DVD that was sent via FedEx to EPA on January 2, 2019. On January 3, 2019, we were advised that the DVD was not received due to the ongoing federal government shutdown. (We have included the FedEx receipt and notice of failed delivery at the end of this index.) In an abundance of caution, we are attaching the majority of those documents to our electronic submission on regulations.gov (Exhibits A-H as Attachments 4-11 and Exhibits K-O as Attachments 12-16). We were not able to upload two of the documents due to their large size (Exhibits I and J). Exhibits P-U were not included on the DVD. Those documents will be attached in a separate docket entry (as Attachments 17-22), as we are limited to 20 attachments.
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<td>05</td>
<td>IPCC 2018, Special Report, Global Warming of 1.5°C, Summary for Policymakers</td>
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<td>C</td>
<td>06</td>
<td>IPCC 2018, Special Report, Global Warming of 1.5°C, Chapter 1, Framing and Context</td>
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<td>12</td>
<td>California Natural Resources Agency, California's Fourth Climate Change Assessment California's Changing Climate 2018, A Summary of Key Findings</td>
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<td>M</td>
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<td>Comments of the Attorneys General of New York, California, Connecticut, Delaware, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota (by and through its Minnesota Pollution Control Agency), New Mexico, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, Washington, the District of Columbia, the cities of Boulder (CO), Chicago, Los Angeles, New York, Philadelphia, and South Miami (FL), and the County of Broward (FL) on [ACE Rule], Oct. 31, 2018, Doc. ID: EPA-HQ-OAR-2017-0355-21117</td>
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<td>18</td>
<td>EPA, Clean Air Act Advisory Counsel, Mobile Sources Technical Review Subcommittee Meeting (Oct. 29, 2013), Rachel Muncrief, Short Lived Climate Pollutants: Methane and Natural Gas [This document is being submitted only via regulations.gov.]</td>
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<tr>
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<td>Arizona Department of Environmental Quality, Submittal of State Plan for Implementing the Municipal Solid Waste Landfill Emission Guidelines for Arizona, July 24, 2018 [This document is being submitted only via regulations.gov.]</td>
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<td>21</td>
<td>Colorado Air Pollution Control Division, Landfill Rule Change FAQ, October 2016 [This document is being submitted only via regulations.gov.]</td>
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<td>Delaware Department of Natural Resources and Environmental Control, State Plan for the Regulation of Air Emissions from Municipal Solid Waste Landfills, May 11, 2017 [This document is being submitted only via regulations.gov.]</td>
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<td>Florida Department of Environmental Protection, Florida’s Proposed Section 111(d) State Plan Submittal, April 7, 2017 [This document is being submitted only via regulations.gov.]</td>
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See "Preparing for Delivery" for helpful tips

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JULIA K. FORGIE, DAG
CA ATTORNEY GENERALS OFFICE
LOS ANGELES, CA 90013 US

Resolving Delivery Issues
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