



March 10, 2023

The Honorable Michael S. Regan
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

Mr. Joseph Goffman
Principal Deputy Assistant Administrator, Office of Air and Radiation
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

RE: Docket ID No. EPA-HQ-OAR-2022-0723

**Evergreen Action's Comments on Reducing Greenhouse Gas Emissions
from New and Existing Fossil Fuel-Fired Electric Generating Units**

Dear Administrator Regan,

Evergreen Action is pleased to comment in support of strong greenhouse gas pollution standards for new and existing power plants, in response to EPA's Questions for Consideration regarding these rules. Evergreen is a non-profit environmental organization focused on addressing climate change and building a thriving, just and inclusive clean energy economy, with particular experience in policies related to the electricity sector.

Evergreen urges the Environmental Protection Agency (EPA) to quickly finalize stringent new source performance standards for gas power plants, under Section 111(b) of the Clean Air Act, and existing source emissions guidelines, under Section 111(d), for both coal and gas power plants. These rules should reduce greenhouse gas pollution to the maximum extent possible, consistent with the Agency's legal obligations under the Clean Air Act.

The Design and Basis of Strong Rules

A strong Section 111(b) rule for new gas plants is essential to meeting the EPA's legal obligation to protect Americans' health and welfare from unacceptably large new sources of carbon pollution. To achieve maximum benefit from these standards in the form of maximum pollution reduction, EPA must set standards based on a level of

reductions that can be achieved through installation of modern abatement technologies at new power plants. EPA must also set strong Section 111(d) emissions guidelines that will require both existing coal and existing gas power plants to achieve significant carbon pollution reductions.

Under the construct of the Clean Air Act, and the constraints upon EPA authority delineated by the Supreme Court in *West Virginia v. EPA*, the Agency must set the level of a carbon pollution standards and guidelines based upon the pollution-control measures that can be installed at the power plant itself (sometimes called “inside-the-fenceline” measures). Once set, states and companies will have flexibility to determine how best to meet the standard, which may include other measures.

To fulfill the Agency’s obligations to protect the nation’s air resources and promote the public health and welfare, this forthcoming 111(b) standard should be set at the most stringent levels achievable via adequately demonstrated technology applicable inside the fenceline, and must therefore be based on the low emission levels that power plant operators can achieve through deployment of carbon capture, utilization and sequestration (CCUS), with very high rates of capture. EPA should set a stringent rate-based new source performance standard equivalent to a 90% emission reduction from combined-cycle gas power plants (at around 90 lb CO₂/MWh).

EPA must also set stringent 111(d) emissions guidelines for both existing coal and existing gas plants. Over 60% of the potential total carbon emissions reductions possible through these three rules come from standards for existing gas plants, according to modeling published in a January 2023 report by Evergreen and the Natural Resources Defense Council (NRDC).¹ If existing gas is left unregulated, modeling shows *increased* emissions from uncontrolled gas plants as other sources are regulated. With its forthcoming announcement of proposed rules, EPA must demonstrate unequivocally that it intends to protect Americans from pollution from existing gas plants, one of our nation’s largest sources of carbon emissions.

The 111(d) rule should, similar to the 111(b) standard, be based on a Best System of Emissions Reductions (BSER) available using CCUS that reflects a very high rate of carbon capture. Emissions reductions of 90% are achievable for both coal-fired and gas-fired power plants.

CCUS is a cost-reasonable and adequately demonstrated technology that could serve as the basis of the 111(b) and 111(d) rules. According to the CO₂RE database of CCUS facilities from the Global CCS Institute, a leading think tank on CCUS technology, 119 CCUS projects around the world are already operational, operating, or completed as

¹ Harper, Charles, et al. “Powering Toward 100 Percent Clean Power by 2035.” *Evergreen Action and NRDC*. January 23, 2023.
<https://collaborative.evergreenaction.com/policy-hub/Powering-Towards-100-Clean-Power.pdf>.

of March 2023.² This includes both pilot and demonstration projects and also large-scale commercial facilities. This number includes 40 operational, operating, or completed projects that specifically capture carbon dioxide from power generation facilities—some of which began operating decades ago.

Many power companies are already considering installing CCUS, with or without new EPA rulemaking. A February 2023 report from the Clean Air Task Force identifies at least 14 natural gas combined cycle power plants that are currently undertaking detailed engineering work called Front End Engineering Design (FEED) studies to thoroughly plan CCUS projects for their facilities.³ As the report says, “these FEED studies demonstrate real interest and ability of industry to adopt carbon capture. These are no mere theoretical exercises: FEED studies use currently-available equipment and know-how to provide engineering plans and cost estimates for substantial investment decisions.” The report also identifies six coal-fired power plants conducting CCUS FEED studies.⁴

As of 2023, the U.S. captures and sequesters about 16 million metric tons of carbon dioxide each year from industrial sources. If each of these 20 gas and coal power plants install CCS, they will capture nearly 50 million metric tons of carbon capture per year.⁵ Another database from Clean Air Task Force, the US Carbon Capture Activity and Project Map, illustrates that CCUS projects are already distributed geographically around the country and are not available only in one or a few regions.⁶

The Need to Release these Rules Quickly

EPA should release its proposed rules absolutely no later than the currently posed timeline of April 2023. And it should finalize its 111(d) and 111(b) rules by March 2024—faster than the June 2024 timeline proposed by the administration in its [Fall 2022 Unified Agenda](#). These faster timelines are critical to ensuring that these essential rules take effect soon to protect Americans’ health and welfare.

Other Important Considerations

When considering what compliance pathways are available to states and power plants for these rules, EPA must not ignore upstream and downstream carbon emissions. That includes upstream greenhouse gas emissions related to hydrogen production (if

² “CO₂RE Facilities Database.” *Global CCS Institute*. Accessed March 3, 2023. <https://co2re.co/FacilityData>.

³ Duffy, Jay, and John Thompson. “The time is now: The Biden administration must adopt strict CO₂ emission standards for the power sector.” *Clean Air Task Force*. February 7, 2023. <https://www.catf.us/2023/02/time-now-biden-administration-must-adopt-strict-co2-emission-standards-power-sector/>.

⁴ *Ibid.*

⁵ *Ibid.*

⁶ “US Carbon Capture Activity and Project Map.” *Clean Air Task Force*. Accessed March 3, 2023. <https://www.catf.us/ccsmapus/>.

hydrogen co-firing or fuel switching is used to comply) and methane emissions from natural gas production (if co-firing or fuel switching to gas is used to comply). EPA should also consider downstream emissions related to CCUS—including long-term monitoring and significant enforcement of carbon dioxide leakage to ensure permanent sequestration of carbon dioxide (if CCUS is used to comply).

EPA should also work with other agencies and states to ensure that environmental injustice is not worsened by 111(b) or 111(d) standards. EPA should endeavor to avoid actions that would increase the capacity factor or extend the lifetime of polluting power plants, or increase local air pollutants. That should include additional actions under other sections of the Clean Air Act to prevent significant deterioration of air quality or violations of environmental laws and permits because of compliance with these rules.

We also encourage EPA to continue engaging directly with environmental justice organizations and leaders and include the perspectives of environmental justice communities when developing these rules.

Answers to EPA's Questions for Consideration

We have also provided answers to EPA's specific Questions for Consideration. EPA's questions are provided in italics, with our answers included as bullet points underneath each question.

1. *In both the ACE and CPP proposals, EPA identified options for systems of emission reduction that included fuel-switching or co-firing; carbon capture, utilization, and sequestration; and improvements in operating efficiency. We would welcome your input on whether EPA should consider these systems in developing proposed emission guidelines under section 111(d).*
 - a. *What are your views on the feasibility, cost, air pollution impacts, energy impacts, or other advantages and disadvantages of these systems?*
- CCUS and efficiency are adequately demonstrated technologies, but efficiency improvements are woefully inadequate in terms of emissions reductions potential.
- Co-firing/fuel switching (including hydrogen with gas/coal, and coal with gas) could allow unacceptably high levels of greenhouse gas emissions and local air pollution. Hydrogen co-firing with gas could lead to increases in emissions of nitrogen oxides from power plants.⁷

⁷ See: Cellek, Mehmet Salih. "Investigations on performance and emission characteristics of an industrial low swirl burner while burning natural gas, methane, hydrogen-enriched natural gas and hydrogen as fuels." *International Journal of Hydrogen Energy*. January 11, 2018. <https://www.sciencedirect.com/science/article/abs/pii/S0360319917319791>.

- We strongly encourage an emissions standard based on very high rates of carbon capture with permanent sequestration for coal and gas plants.

b. Are there particular types or subcategories of EGUs for which one or more of these systems would be particularly appropriate or inappropriate?

- It would be appropriate to set a stringent standard for all types of EGUs based on the emissions reductions achievable through deployment of CCUS, which is an adequately demonstrated and cost-reasonable technology—emissions reductions of 90% are achievable for both coal and gas power plants.
- Efficiency improvements provide only unacceptably inadequate potential emissions reductions.
- Gas or hydrogen (ammonia) co-firing/fuel switching for coal plants is an unacceptable technology choice given the weak potential emissions reductions available through this technology. Note: the current 111(b) standard for new coal plants is based on a BSER using CCUS technology.
- Hydrogen co-firing/fuel switching for gas plants would not deliver enough carbon emissions reductions and could lead to increases in other health-harming air pollutants, including in disadvantaged communities.

c. Are there particular conditions, criteria, or limitations that EPA should consider with respect to any of these systems to address climate, public health or environmental justice considerations?

- EPA should give consideration to upstream and downstream emissions, including upstream emissions from hydrogen production (i.e, blue/gray/green hydrogen), upstream methane leakage from fossil gas, and downstream emissions from CCUS (e.g., utilization for enhanced oil recovery or lack of environmental safeguards and monitoring at sequestration sites).
 - EPA should also give consideration to non-carbon emissions impacts, including criteria air pollutants, and the cumulative impacts affecting communities.
 - EPA should also work with other agencies and states to ensure that environmental injustice is not worsened by 111(b) or 111(d) standards. EPA should avoid rules that would increase the capacity factor or extend the lifetime of plants or increase local air pollutants.
 - We encourage EPA to continue engaging directly with environmental justice organizations and leaders on these issues to include the perspectives of environmental justice communities when developing these rules.
2. *Standards under section 111 have typically taken the form of a “rate-based” limit expressed in terms of a quantity of pollution per unit of product produced or per unit of energy consumed (for example, lb/kWh or lb/mmBTU). What options*

should EPA be considering in expressing proposed limits on CO₂ from existing power plants?

- EPA should use rate-based standards in setting new source performance standards for new gas plants and existing source emissions guidelines for existing coal and gas plants.
 - CCUS is an adequately demonstrated and cost-reasonable technology, and EPA should set a stringent rate-based new source performance standard, of approximately 90 lb CO₂/MWh, which is equivalent to a 90% emission reduction from combined-cycle gas power plants.
 - Emissions reductions of 90% are achievable for both coal-fired and gas-fired power plants, and EPA should set stringent rate-based emissions guidelines for existing coal and gas that reflect equivalent emissions reductions.
3. *Section 111(d) gives states responsibility for designing state plans that establish, implement and enforce standards of performance for CO₂ from existing power plants.*
- a. *What flexibilities should EPA offer to states with regard to designing such plans? How much time should an emission guideline provide for states to develop and submit plans to EPA?*
- Flexibility should be allowed, with a backstop federal implementation plan if the state plan is insufficient.
 - States should have no more than one year to develop and submit their plans.
- b. *Can EPA allow states to design alternative forms of emission limitations (e.g., state-wide emissions budgets) and what limitations, conditions, or criteria should EPA establish to ensure such plans are satisfactory?*
- EPA should provide states with ample flexibility, but should exercise scrupulous oversight in ensuring state implementation plans will deliver the necessary emissions reductions.
 - EPA guidelines should also provide states with direction to consider, and to avoid, creating pollution hotspots—including from criteria air pollutants—especially in disadvantaged communities. This should include support for the consideration of cumulative impacts of multiple pollution sources, as states are currently pursuing.⁸
- c. *What requirements, guidance, or tools and resources can EPA provide to ensure state plans improve air quality and reduce emissions in communities with environmental justice concerns?*

⁸ “New York Enacts Cumulative Impacts Bill,” *National Caucus of Environmental Legislators*, January 3, 2023. <http://www.nceleenviro.org/articles/new-york-legislature-passes-cumulative-impacts-bill/>

- EPA should provide guidance that state plans should not increase other air pollutants (i.e., that PSD and significant modification requirements still apply).
- EPA should provide states with guidance in identifying disadvantaged and environmental justice communities—e.g., states could utilize the Climate & Environmental Justice Screening Tool, EJScreen, state definitions, or other systems/criteria.

d. Section 111(d) provides that states must be allowed to consider “remaining useful life and other factors” in developing state plans. What requirements or guidance should EPA provide with respect to how such factors can be considered in the context of CO₂ from existing power plants?

- CCUS is an adequately demonstrated and cost-reasonable technology upon which EPA should base its emission-level requirement guidelines to states to set a stringent emissions standard that will result in the necessary pollution reductions from this sector. EPA guidelines should also encourage states to avoid actions that would increase the capacity factor or extend the lifetime of polluting power plants, or increase local air pollutants.
4. *EPA’s regulations will be proposed and finalized in the context of transition within the power sector, which makes it important to ensure that any regulatory approach captures the most current information about investment decisions in the sector. Are there any significant recent announcements or commitments to transitioning generation of which the Agency should be aware?*
- We expect that EPA is giving thorough consideration to the new investments in power sector decarbonization enacted by Congress and President Biden in the Inflation Reduction Act (IRA) and Infrastructure Investment and Jobs Act (IIJA) including the incentives for carbon-free electricity generation and carbon abatement technologies.
 - In promulgating these rules EPA should also consider, and should be simultaneously working to finalize, rules that limit other conventional air, water, solid waste pollutants from some facilities (e.g. coal plants) that will also be impacted by Section 111(b)/111(d) carbon standards.
5. *In the spring, OAR released a draft whitepaper on GHG control technologies for combustion turbines. It included discussion of a range of technologies including efficient combustion, carbon capture storage and utilization and hydrogen. What are your thoughts regarding how EPA should consider those technologies as we consider developing a 111(b) rule. In addition, what other factors do you think we should consider as we develop the 111(b) proposal.*

- EPA should look to promulgate a 111(b) rule that uses an adequately demonstrated BSER to produce the maximum emissions reductions.
- EPA should set a stringent rate-based new source performance standard equivalent to a 90% emission reduction from gas power plants (~90 lb CO₂/MWh), which is possible using CCUS.

Thank you for your consideration of our comments, and for your efforts to protect Americans' health and well-being against the greenhouse gas pollution that is driving climate change.

Sincerely,
Sam Ricketts
Co-founder and Senior Advisor
Evergreen Action