

FACT SHEET
CARBON POLLUTION STANDARDS FOR FOSSIL FUEL-FIRED POWER PLANTS
FINAL RULE

Summary

On April 25, 2024, the U.S. Environmental Protection Agency (EPA) announced final carbon pollution standards for existing coal-fired and new gas-fired power plants that will secure important climate benefits and protect public health. These rules will significantly reduce greenhouse gas (GHG) emissions from existing coal-fired power plants and from new natural gas turbines, ensuring that all long-term coal-fired plants and base load new gas-fired plants control 90% of their carbon pollution. Existing coal-fired power plants are the largest source of GHGs from the power sector. New natural gas-fired combustion turbines are some of the largest new sources of GHG being built today and these final standards will ensure that they are constructed to minimize their GHG emissions.

President Biden's policies have created momentum in the power sector to cut greenhouse gases and are moving America closer to avoiding the worst impacts of climate change. Together with other recent EPA actions to address health-harming pollution from the power sector, these final rules deliver on the Administration's commitment to reduce pollution from the power sector while providing long-term regulatory certainty and supporting operational flexibility. These rules will also work in concert with the historic investments in carbon pollution reduction and clean energy deployment that are taking place under President Biden's Inflation Reduction Act and the Bipartisan Infrastructure Law.

Consistent with EPA's traditional approach to establishing pollution standards under the Clean Air Act, the final limits and emission guidelines are based on proven pollution control technologies that can be applied directly to power plants and can achieve substantial reductions in carbon pollution at reasonable cost. Emission guidelines for the longest-running existing coal units and performance standards for new base load combustion turbines are based on the use of carbon capture and sequestration/storage (CCS) – an available and cost-effective control technology that can be applied directly to power plants.

EPA has evaluated the emissions reductions, benefits, and costs of the final carbon pollution standards in a Regulatory Impact Analysis (RIA). The RIA projects reductions of 1.38 billion metric tons of CO₂ systemwide through 2047 along with tens of thousands of tons of PM_{2.5}, SO₂, and NO_x – harmful air pollutants that are known to endanger public health. The RIA projects widespread reductions in fine particle and ozone concentrations in virtually all areas of the country, providing health protections for all communities, including communities with environmental justice concerns, many of which are located near power plants. States, in developing plans for existing coal sources, will need to undertake meaningful engagement with pertinent stakeholders, including communities with environmental justice concerns, as well the energy communities and workers who have powered our nation for generations. The final rules also provide utilities and power companies options for meeting these standards as well as ample time to plan and invest for compliance and continue to support a reliable supply of affordable electricity. In addition to subcategories and compliance timeframes, the final rule includes two optional reliability-related instruments that states can consider including in their state plans.

Overview

- EPA is issuing final Clean Air Act performance standards and emission guidelines for carbon dioxide (CO₂) from existing coal-fired power plants and new gas power plants. The power sector is the largest stationary source of greenhouse gases (GHGs), emitting 25% of overall domestic emissions of GHGs in 2022.
- These final rules will significantly reduce carbon pollution from the power sector, which is contributing to destructive changes in our climate that are already having serious and life-threatening impacts on human health and well-being in communities across the United States. Climate change is causing more frequent and more intense heat waves and extreme weather events, rising sea levels, longer and more severe wildfire seasons, and other harmful impacts, many of which disproportionately affect already overburdened communities.
- These final Clean Air Act rules strengthen nationwide emission standards for carbon pollution from new gas-fired combustion turbines and establish emission guidelines for states to follow in setting standards to limit carbon pollution from existing coal-, oil- and gas-fired steam generating units.
- As laid out in section 111 of the Clean Air Act, the new source performance standards (NSPS) and emission guidelines reflect what is achievable through implementation of the best system of emission reduction (BSER) that, taking into account costs, energy requirements, and other statutory factors, is adequately demonstrated for the purpose of improving the emissions performance of the covered electric generating units (EGUs).
- After reviewing public comments on the proposal, and consistent with EPA's traditional approach to establishing pollution standards under section 111 of the Clean Air Act, EPA has determined that the BSER for the longest-running existing coal units and for new base load combustion turbines is a proven add-on control technology – carbon capture and sequestration/storage (CCS) – that can be applied directly to power plants that use fossil fuels to generate electricity. For other types of new gas-fired combustion turbines and existing fossil fuel-fired steam generating units, these rules prescribe standards based on other technologies, including co-firing with natural gas and efficient generating practices.
- EPA has evaluated the emissions reductions, benefits, and costs of the final carbon pollution standards in a Regulatory Impact Analysis (RIA). The RIA projects reductions of 1.38 billion metric tons of CO₂ systemwide through 2047 along with tens of thousands of tons of PM_{2.5}, SO₂, and NO_x – harmful air pollutants that are known to endanger public health.
- In 2035 alone, the RIA estimates health co-benefits including approximately 1,200 avoided premature deaths; 870 avoided hospital and emergency room visits; 1,900 avoided cases of asthma onset; 360,000 avoided cases of asthma symptoms; 48,000 avoided school absence days; and 57,000 lost workdays.
- The climate and health benefits of this rule substantially outweigh the compliance costs.
 - Between 2024 and 2047, the RIA projects net climate and health benefits of up to \$370 billion, which is an annualized net benefit of \$20 billion. These benefits include the value of multiple climate change impacts, including changes in human health

effects, net agricultural productivity, property damage from increased flood risk natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services.

- These carbon pollution standards will be phased in over time to give the industry adequate time to plan for and install controls to limit CO₂ from these units. For existing steam electric generating units, compliance deadlines range from 2030 to 2032 depending upon the type of unit and the applicable standard. For new combustion turbines, efficiency-based requirements apply as soon as the unit starts operation. New base load combustion turbines will have until January 1, 2032, to meet an emission standard based on 90% capture of CO₂ emissions.

Summary of Standards and Emission Guidelines

- The final rule includes subcategories that recognize the fact that the longer-running and more heavily utilized a power plant is, the more cost-effective it is to install controls for CO₂ emissions.
- For new combustion turbines, the final rule establishes three subcategories based on how intensively they are operated.
 - New base load turbines (defined as units that are generating at least 40% of their maximum annual capacity, *i.e.*, greater than 40% capacity factor) are subject to an initial "phase one" standard based on efficient design and operation of combined cycle turbines; and a "phase two" standard based on 90% capture of CO₂ with a compliance deadline of Jan. 1, 2032.
 - New intermediate load turbines (defined as units that are generating between 20 and 40% of their maximum annual capacity, *i.e.*, 20-40% capacity factor) are subject to a standard based on efficient design and operation of simple cycle turbines.
 - New low load turbines (defined as units that are generating less than 20% of their maximum annual capacity, *i.e.*, less than 20% capacity factor) are subject to a standard based on low-emitting fuel.
- For existing coal-fired EGUs, the final rule establishes subcategories based on how far into the future the plant intends to operate.
 - Units that intend to operate on or after January 1, 2039 (*i.e.*, "long-term" units) will have a numeric emission rate limit based on application of CCS with 90% capture, which they must meet on January 1, 2032.
 - Units that have committed to cease operations by January 1, 2039 (*i.e.*, "medium-term" units) will have a numeric emission rate limit based on 40% natural gas co-firing that they must meet on January 1, 2030.
 - Units that demonstrate that they plan to permanently cease operation prior to January 1, 2032, will have no emission reduction obligations under the rule.
 - For existing units, states have the ability to provide a variance for individual sources based on consideration of remaining useful life and other factors. An alternative standard may be appropriate where an individual existing source has fundamentally different circumstances than those considered by EPA and the source cannot reasonably achieve this required degree of emission limitation.

- For existing coal-fired power plants and other existing steam generating units, these rules outline a process – as required by the Clean Air Act – under which states must submit plans to EPA for establishing standards.
 - Under this process, states will have two years from the publication date of these rules to submit plans to EPA for review and approval.
 - The rule requires that states include a description of their meaningful engagement with a range of stakeholders in developing their plans, including communities that are affected by air pollution from existing power plants, energy communities and workers, small businesses, and reliability authorities. This process is intended to help ensure that states take into account the needs of impacted communities and stakeholders in deciding appropriate standards and compliance strategies for existing power plants.
 - These rules also provide states with a range of flexibilities, including clear articulation on how localized circumstances can be reflected in compliance requirements under Remaining Useful Life and Other Factors (RULOF), provisions for allowing emissions trading and averaging that maintain the environmental integrity of the standards, and a pathway for sources to seek a one-year compliance extension for unanticipated delays with control technology implementation that are outside the owner or operator's control.
 - EPA also has added two optional reliability-related mechanisms that states may choose to incorporate into their plans. One is a short-term reliability mechanism for units responding to declared grid emergencies (this mechanism is also available to new units). The other is a reliability assurance mechanism for units with cease operations dates that may be needed to stay online longer than anticipated due to documented reliability needs.

Consideration of Environmental Justice

- Advancing environmental justice is a priority for the Biden-Harris Administration and for EPA. During this rulemaking, EPA conducted extensive outreach with interested parties including Tribal nations and communities with environmental justice concerns. EPA took this feedback into account in its development of these final actions and carefully considered the concerns raised by these stakeholders.
- This rule will significantly reduce GHGs and move us a step closer to avoiding the worst impacts of climate change, which is already having a disproportionate impact on communities with environmental justice concerns. Non-GHG pollutants will also be reduced. EPA's modeling found that in all future modeled year scenarios, all demographic groups will be exposed to lower PM_{2.5} and ozone concentrations than today.
- EPA recognizes that several environmental justice organizations and community representatives raised significant concerns about the potential health, environmental, and safety impacts of CCS. It is important to note that the Carbon Pollution Standards are performance standards and do not require the installation or operation of any particular technology. Individual owners and operators will decide how best to meet the requirements laid out in the rule.

- Each state will ultimately be responsible for determining the future operation of fossil fuel-fired steam generating units located within its jurisdiction. EPA’s meaningful engagement requirements will allow interested stakeholders to have an opportunity to have their concerns heard as states make decisions.
- EPA has also carefully considered the health, environmental, and safety impacts of CCS. A robust and evolving regulatory framework exists, administered by EPA, PHMSA and other agencies, to address these concerns. EPA is committed to implementing its programs and working with federal partners to ensure that where CCS is deployed, it is implemented in a way that considers community input and is protective of public health, safety, and the environment.
- Furthermore, with respect to potential localized emissions increases, the NSR permitting program is an existing protection that is designed to ensure sources undertaking modifications do not result in air pollution that would exceed National Ambient Air Quality Standards, and to require the use of best available control technology (BACT) for any air pollutants emitted in significant amounts. The EPA plans to review and update as needed its guidance on NSR permitting, specifically with respect to BACT determinations for GHG emissions and consideration of co-pollutant increases from sources installing CCS.

Supporting Reliable and Affordable Electricity

- EPA has carefully considered the nation’s need for reliable and affordable electricity as it developed these final rules, and the design of these final rules reflects extensive engagement with grid operators, federal agencies responsible for grid reliability, and experts in grid reliability.
- The final rules provide power companies with a range of options for managing their existing generating fleets as well as investing in new generation, and provide the time and flexibility needed for power companies and grid operators to plan and invest for compliance while continuing to support a reliable supply of affordable electricity.
- EPA’s approach to supporting reliability is multifaceted, as it has always been. In this rule, EPA developed a four-point plan to support reliability, including:
 - 1) Flexible rule structure – EPA extended compliance timeframes for coal-fired units to meet compliance obligations by 2-years and simplified subcategories;
 - 2) Latitude for state plans –provisions allow states to take reliability into consideration in state plans and state plan revisions, should circumstances change;
 - 3) Compliance flexibilities – annual average compliance timeframes are inherently flexible, emissions trading and averaging are allowed provided they respect the environmental integrity of the rule, additionally, sources can access a 1-year extension for unanticipated implementation delays; and
 - 4) Reliability Mechanisms - two reliability mechanisms are available – one is a “short term reliability mechanism” to address grid emergencies, such as natural disasters. The other is a “reliability assurance mechanism” that can provide up to a 1-year extension for units that chose compliance pathways with cease operations dates when a documented reliability need exists and there is insufficient time for a state plan revision.
- EPA’s analysis finds that power companies can meet grid reliability requirements with negligible (0-1%) impact on retail electricity prices while complying with the standards. In

EPA's modeling, retail electricity prices decline over time while the system complies with the rules. These findings hold true even in a scenario with higher load growth.

- A recent [paper](#) from the National Renewable Energy Laboratory confirms that the power sector can meet resource adequacy with similar portfolios of resources as in EPA's modeling.
 - A recent DOE [analysis](#) finds that power companies and grid operators have significant, varied tools to meet reliability needs, and EPA's final rules do not inhibit companies from using any of these tools.
 - PA received comments with rigorous analyses that came to the same conclusion. For example, one commenter modeled the effect of more stringent standards than those finalized today on the PJM grid region and found that the system can comply with the standards during extreme weather conditions and experiencing low output from renewables.
- EPA's final standards and emission guidelines set achievable limits on carbon pollution that are based on available technologies, and that provide adequate time and ample compliance flexibilities to enable orderly and cost-effective compliance.

Energy Communities and Workers

- The Biden-Harris Administration and EPA are committed to supporting the workers and communities who have powered the nation for generations. The EPA consulted with the Federal Interagency Working Group on Coal and Power Plant Communities and Revitalization (Energy Communities IWG) in development of these rules. The Energy Communities IWG has provided resources to help energy communities access the expanded federal resources made available by the Bipartisan Infrastructure Law, CHIPS and Science Act, and Inflation Reduction Act, many of which are relevant to the development of state plans.
- States will need to conduct meaningful engagement in the development of state plans. Energy communities and workers, including workers employed at affected power plants, workers who may construct and install pollution control technology, and workers employed in associated industries such as fuel extraction and delivery and carbon dioxide transport and storage, will have an opportunity to participate in the state planning process. Meaningful engagement is intended to inform compliance planning and increase information sharing and transparency for all communities, including for workers and their communities.
- Workers and communities deserve to know well in advance when a power plant is going to make changes to operations, retrofit with pollution controls, or cease operations. State plans will also need to include transparent information on timelines for compliance actions.
- States are also encouraged to provide information collected during meaningful engagement in their state plans on a variety of metrics, including for example the number and types of jobs that will be created by compliance measures, such as CCS.

Other Elements of the Rule

- EPA is also simultaneously taking other actions, including

- finalizing revisions to the NSPS for GHG emissions from fossil fuel-fired steam generating units that undertake a large modification, based upon the eight-year review required by the Clean Air Act;
 - repealing the “Affordable Clean Energy (ACE) rule” that was finalized in 2019 under the previous Administration; and
 - withdrawing the changes proposed to the NSPS for coal in 2018 under the previous Administration.
- EPA is not taking final action on the May 2023 proposed emission guidelines for existing combustion turbines. We are working to design a broader, more environmentally-protective approach to GHG regulation of the entire fleet of existing combustion turbines. EPA is taking this step as part of the comprehensive approach to regulation of climate, toxic and criteria air pollution from combustion turbines. As part of a robust stakeholder outreach effort, we issued framing questions and are gathering input through a non-regulatory docket that is open through May 28, 2024. Details are available at [Nonregulatory Public Docket: Reducing Greenhouse Gas Emissions from Existing Gas Turbines at Power Plants](#).

For More Information

- Interested parties can download a copy of the final rule from [Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants](#)