

FACT SHEET
CARBON POLLUTION STANDARDS FOR FOSSIL FUEL-FIRED POWER PLANTS
FINAL RULE
STANDARDS AND REGULATORY IMPACT ANALYSIS

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.

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.

Standards to Reduce Carbon Pollution from Power Plants

- The technology-based standards EPA is finalizing that will cut CO₂ from power plants include:
 - Emission guidelines for existing fossil fuel-fired steam generating EGUs (generally coal-fired)
 - New Source Performance Standards (NSPS) for fossil fuel-fired stationary combustion turbines (generally natural gas-fired)
- EPA’s regulatory impact analysis (RIA) projects that this final action, together with the Inflation Reduction Act (IRA), is projected to reduce CO₂ emissions **in the power sector** to more than 62% below 2022 levels, and more than 75% below 2005 emission levels (the historical emissions peak) by 2035. By 2040, this final standard, together with the IRA, is projected to reduce CO₂ emissions in the power sector by more than 83% below 2005 levels and more than 74% below 2022 levels.

Emissions Changes, Benefits and Costs

- EPA estimated the national emissions changes, benefits and costs in a Regulatory Impact Analysis (RIA) of the final rule.
- The RIA estimates are presented two ways – as present values (PV) and equivalent annualized values (EAV). The PV is the costs or benefits over the period of 2024 to 2047. The EAV represents the value for each year of the analysis.

- The RIA projects 1.38 billion metric tons total of CO₂ avoided from 2028-2047 systemwide along with tens of thousands of tons of nitrogen oxides (NO_x), sulfur dioxide (SO₂), and fine particulate matter (PM_{2.5}).
- Over the years 2024-2047, EPA estimates net climate and public health benefits of \$370 billion.
 - This includes \$270 billion in climate benefits; \$120 billion in health benefits; and \$19 billion in compliance costs.
- For a single year, the net benefits are \$20 billion.
 - This includes \$14 billion in climate benefits; \$6.3 billion in health benefits, and \$0.98 billion in compliance costs.
- EPA's national-level analysis of emissions reductions and public health impacts finds that the final rule would result in nationwide reductions in EGU emissions of multiple health-harming air pollutants including nitrogen oxides (NO_x), sulfur dioxide (SO₂), and fine particulate matter (PM_{2.5}). EPA estimates emissions changes and impacts for several snapshot years in the RIA, including 2028, 2030, 2035, 2040 and 2045.
- In 2035 alone, the RIA estimates reductions of 123 million metric tons CO₂; 49,000 tons of annual NO_x; 19,000 tons of ozone season NO_x; 90,000 tons of SO₂; 1,000 tons of direct PM_{2.5}; and about 200 pounds of mercury.
- The health benefits that will result from these reductions in 2035 alone include 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 work days.
- The monetized benefits estimates provide an incomplete overview of the beneficial impacts of the final rule. For example, the monetized benefits estimates do not include important climate benefits that were not monetized in the RIA. In addition, important health, welfare, and water quality benefits anticipated under these rules are not quantified or monetized.

Final Rule Responsive to Range of Views and Incorporates Flexibilities

- These final rules consider the extensive input received from a broad range of stakeholders on a variety of topics, including the operation of these regulated sources, in light of the rapid evolution of the power sector. At the same time, these final rules ensure that new combustion turbines and existing steam EGUs achieve significant and cost-effective reductions in GHG emissions through the application of adequately demonstrated control technology.
- These final standards are designed to allow the power sector continued resource and operational flexibility and to facilitate long-term planning. Among other things, these elements include:
 - subcategories for existing steam EGUs that are based on operating horizons and fuel type, and that accommodate the stated plans of many power companies to voluntarily cease operation of some sources;

- subcategories of new combustion turbines that allow for the stringency of GHG emission standards to vary by capacity factor and for CCS-based standards to be phased in over time for base load units;
 - compliance deadlines that provide ample time for states and utilities to plan; and
 - state plan flexibilities.
- The determination of 90% CCS as BSER at the longest-running coal and new base load combustion turbines is based on significant evidence including existing large scale utility projects, projects in other industries, improvements that have been made to CCS technology since it was installed at both the Boundary Dam and Petra Nova power plants, multimillion dollar engineering evaluations of CCS technology at multiple US coal and natural gas plants, and significant testing at US power plants and internationally.
 - CCS has a long track record of use in a variety of industries and multiple companies are aggressively pursuing installation of additional carbon capture systems. Additionally, multiple vendors have indicated their ability to provide CO₂ capture technologies that can achieve 90% or greater levels of control.

Emission Guidelines for Existing Fossil Fuel-Fired Steam Generating EGUs (Primarily Existing Coal Units)

- EPA is finalizing separate subcategories of existing fossil fuel-fired steam generating units based on fuel type (*i.e.*, coal-fired, natural gas-fired, or oil-fired). Fuel type is based on the status of the source on January 1, 2030, and annual fuel use reporting is required after that date as a part of compliance.
- EPA is finalizing CCS with 90 percent capture as the BSER for existing coal-fired steam generating units with a compliance date of January 1, 2032. These “long-term” units have a presumptive standard of 88.4 percent reduction in annual emission rate.
- As explained in the preamble for the final rules, CCS is an adequately demonstrated technology that achieves significant emissions reduction and is cost-reasonable, taking into account declining costs and a substantial tax credit available to sources.
- In recognition of the significant capital expenditures involved in deploying CCS technology and the fact that about half of the nation’s existing coal-fired generating capacity already has announced plans to retire by 2039, EPA is finalizing a separate subcategory for sources that plan to permanently cease operation before January 1, 2039, with a BSER of 40 percent natural gas co-firing on a heat input basis and a compliance date of January 1, 2030. These units have a presumptive standard of 16 percent reduction in annual emission rate.
- This rule does not apply to existing coal-fired sources that have plans to permanently cease operation prior to January 1, 2032.
- For natural gas- and oil-fired steam generating units, EPA is finalizing routine methods of operation and maintenance or the use of uniform fuels as the BSER, depending on subcategory for these units. The presumptive standards for natural gas- and oil-fired steam generating units by subcategory are:

- Baseload sources (those with annual capacity factors greater than 45 percent) have a presumptive standard of 1,400 lb CO₂/MWh-gross;
- Intermediate-load sources (those with annual capacity factors greater than 8 percent and less than or equal to 45 percent) have a presumptive standard of 1,600 lb CO₂/MWh-gross;
- Low-load sources (those with annual capacity factors less than 8 percent), have a presumptive input-based standard of 170 lb CO₂/MMBtu for oil-fired sources and a presumptive standard of 130 lb CO₂/MMBtu for natural gas-fired sources.

New Source Performance Standards for Fossil Fuel-fired Stationary Combustion Turbines (Primarily New Natural Gas Units)

- EPA is setting a more protective NSPS for GHG emissions from new and reconstructed fossil fuel-fired stationary combustion turbine EGUs. Power companies are building new natural gas-fired combustion turbines with plans to operate them at varying levels of capacity, in coordination with existing and expected generating sources.
- EPA is finalizing emissions standards for three subcategories of new combustion turbines based on the function the combustion turbine serves. The subcategories are base load, intermediate load, and low load.
 - New base load turbines are defined as units that are generating at least 40% of their maximum annual capacity, *i.e.*, greater than 40% capacity factor.
 - New intermediate load turbines are defined as units that are generating between 20 and 40% of their maximum annual capacity, *i.e.*, 20-40% capacity factor.
 - New low load turbines are defined as units that are generating less than 20% of their maximum annual capacity, *i.e.*, less than 20% capacity factor.
- For each subcategory, EPA is establishing standards of performance based on the application of distinct BSERs which were determined after an evaluation of the statutory factors, including feasibility, emissions reductions, and cost-reasonableness of available controls.
- For base load combustion turbines, the BSER includes two components to be initially implemented in two phases.
 - The first component of the BSER is highly efficient combined cycle generation (based on the emission rates that the best performing units are achieving) and the second component is utilization of CCS with 90 percent capture.
 - Recognizing the time that is necessary for new base load combustion turbines to plan for and install CCS, including the time that is needed to deploy the associated infrastructure (CO₂ pipelines, storage sites, *etc.*), EPA is finalizing a second phase compliance deadline of January 1, 2032.
- For intermediate load combustion turbines, the BSER is highly efficient simple cycle generation. EPA is not finalizing a second-phase standard for these sources.
- For low load combustion turbines, the BSER is the use of lower-emitting fuels.
- The final rule specifies standards of performance that are based on these BSER determinations and that are implemented in phases. Any facility that commences

construction or reconstruction after May 23, 2023 (the date the proposal published in the *Federal Register*) is subject to these standards.

- Phase 1: Affected facilities must meet a standard of performance based on highly efficient generation (or in the case of low load combustion turbines, lower-emitting fuels), by the later of the effective date of the rule or upon initial startup of the facility.
- Phase 2: Affected facilities in the base load subcategory must meet a more stringent standard of performance, based on 90 percent capture of CO₂, by January 1, 2032. This compliance deadline allows time for affected sources lead time to plan for and install controls.
- EPA has carefully considered the importance of maintaining resource adequacy and grid reliability in developing the final rule, taking into consideration comments from and extensive engagement with balancing authorities, independent system operators and regional transmission organizations, state regulators, power companies, and other stakeholders.
- 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 final standards for new combustion turbines are inherently flexible because they allow sources to average their performance over an annual compliance period. EPA additionally included a short-term reliability mechanism for new sources, allowing them greater compliance flexibility for any periods of time when they are responding to documented grid emergencies, like hurricanes and winter storms.
- There is also a pathway for both new and existing sources that are installing controls to seek up to a one-year compliance extension, in the event they encounter certain unanticipated delays with implementation.
- The final emission guidelines for existing sources also include two optional reliability-related instruments that states can include in their state plans.

Standards for New, Reconstructed and Modified Coal Units

- EPA is finalizing revisions of the standards of performance for coal-fired steam generators that undertake a large modification (*i.e.*, a modification that increases its hourly emission rate by more than 10 percent) to mirror the emission guidelines for existing coal-fired steam generators. This will ensure that all existing coal-fired steam generating sources are subject to the emission controls whether they modify or not.
- The 2015 standards for new coal units, based on CCS, and for reconstructed coal units, based on efficiency, remain in place.
- EPA is withdrawing the 2018 proposal to revise the NSPS for GHG emissions from coal-fired EGUs.

Rules Complement Legislation to Tackle the Climate Crisis

- CCS achieves substantial CO₂ emission reductions, particularly when applied to fossil fuel-fired sources that are operating the most and have the greatest emissions potential. However, these actions are just one part of the Biden Administration's comprehensive whole-of-government approach to tackling the climate challenge.
- These rules will 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.
- The Inflation Reduction Act is providing a surge of financial incentives to foster private investment in clean energy solutions – helping expand America's economy and create jobs in communities across the country.
- Lower costs and continued improvements in CCS technology, alongside tax incentives from President Biden's Inflation Reduction Act that allow companies to largely offset the cost of CCS, represent recent developments in emissions controls that informed EPA's determination of what is technically feasible and cost-reasonable. The Bipartisan Infrastructure Law also includes billions of dollars to advance and deploy CCS technology and infrastructure
- The IRA, IJIA, and Creating Helpful Incentives to Produce Semiconductors and Science Act (CHIPS Act) contain numerous provisions encouraging companies to reduce their GHGs. For example:
 - the IRA extended and significantly increased the tax credits for CO₂ sequestration under Internal Revenue Code section 45Q;
 - the IJIA provided more than \$65 billion for infrastructure investments and upgrades for transmission capacity, pipelines, and low-carbon fuels; and
 - the CHIPS Act authorized billions more in funding for development of low- and non-GHG emitting energy technologies that will provide additional low-cost options for power companies to reduce overall GHG emissions.

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](#)