



2024 greenhouse gas standards for fossil fuel-fired power generation industry

On May 9, 2024, the EPA published [final new standards](#) in the Federal Register to limit emissions of greenhouse gases (GHG) from the electric power generation sector for certain new and reconstructed natural gas-fired combustion turbines and existing fossil fuel-fired electric generating units (EGUs). The new standards represent the EPA's latest approach to regulating GHG emissions from this industry, following the 2015 [Clean Power Plan](#) and 2019 [Affordable Clean Energy Rule](#). The final rules, which create and amend multiple rules under [40 CFR 60](#), rely significantly on carbon capture and sequestration (CCS) as an available technology to reduce GHG emissions from the electric power generation sector.

New and reconstructed stationary combustion turbines

The EPA issued new and updated emission standards for new or reconstructed fossil fuel-fired stationary combustion turbines, with sub-categorization based on the frequency of operation. All stationary combustion turbines regulated by the standard are subject to numeric emission limitations upon initial startup, with baseload turbines required to use CCS by 2032 to achieve emission reductions. See Table 1 below for details.

Existing fossil fuel-fired electric generating units

The EPA finalized new emission guidelines for certain existing fossil fuel-fired EGUs, to be implemented in plans submitted by the states for the EPA's approval. In the case of coal-fired units, those who intend to fire coal beyond 2039 will be expected to install and operate CCS, while those who cease operation prior to then will be subject to less intrusive standards, based on the date in which the unit's ability to fire coal is removed. See Table 2 below for details. Separate standards are proposed for existing fuel oil and natural gas fired EGUs, which do not require CCS and are provided in Table 3 below.

In the final rule ([40 CFR 60 Subpart UUUUa](#)), state plans are to be submitted no later than May 11, 2026, to the EPA for review and approval. States are to use the EPA's best system of emission reduction (BSER) as a basis for establishing requirements for affected sources, noting that states may, but are not obligated to, allow trading and averaging so that sources in the state, on average, achieve the reductions which would occur if each source applied BSER. In that scenario, certain sources may be approved to apply a less than BSER-level degree of reductions.

Changes since proposed rules

The final rules include a number of changes since the rule was first proposed in May 2023, including:

- Emission standards for certain existing baseload combustion turbines have not been finalized. The EPA is soliciting comments on that subcategory for future action.
- The final rules remove requirements for what the proposed rules defined as "imminent-term" and "near-term" coal-fired EGUs. As a result, only those coal-fired EGUs that will continue to combust coal after 2032 will be subject to the existing source standards.
- The date by which medium-term coal-fired EGUs must cease coal firing was moved up from 2040 to 2039.
- The final rules introduce reliability-based deadline extensions by which states can delay the ceasing of operations, provided certain provisions are met.

Important Milestones

Date	Milestone
May 9, 2024	Final rule published in Federal Register
May 11, 2026	State plan submittal deadline
January 1, 2030	Compliance deadline for existing medium-term coal-fired, all fuel oil-fired, and all natural gas-fired EGUs
January 1, 2032	Long-term coal-fired EGUs and new/reconstructed combustion turbines must implement CCS
January 1, 2039	Medium-term EGUs must cease coal firing

Considerations and Preparation

The final GHG standard for the power generation industry is one of many contemporary drivers for change in the American electric power generation portfolio. Other drivers include additional recent environmental requirements, ESG pressure, and capital and operating costs, which can drive change at a rapid pace. Barr can help provide your facility with integrated engineering and environmental solutions to optimize future power generation. [Learn more](#) about Barr's services for the electric power industry.

Contact your Barr Project Manager or [Adam Driscoll](mailto:adriscoll@barr.com) (adriscoll@barr.com) for further assistance.

Table 1: New and Reconstructed Stationary Combustion Turbines

Sub-Category	NSPS TTTa Applicability		Phase 1			Phase 2		
	Heat input	Capacity Factor	BSER	Date	Standard [1]	BSER	Date	Standard [1]
Low Load Turbines	> 250 MMBtu/hr heat input of fossil fuel (alone or in combination with any other fuel) and > 25 MW	<= 20%	Lower emitting fuels	Upon construction/reconstruction	120–160 lbs CO ₂ /MMBtu	N/A		
Intermediate Load Turbines		> 20% and ≤ 40%	Highly efficient simple cycle generation		1,170 lbs–1,560 CO ₂ /MWh-gross			
Base Load Turbines		> 40%	Highly efficient combined cycle generation		800 lbs CO ₂ /MWh-gross (heat input > 2,000 MMBtu/hr) --- 900–1,250 lbs CO ₂ /MWh-gross (250 MMBtu/hr < heat input < 2,000 MMBtu/hr)	90% CCS	2032	100–150 lb CO ₂ /MWh-gross

[1] Unit specific emission standard determined based on mix of fuels combusted; lowest value represents 100% natural gas firing

Table 2: Existing Coal-Fired Electric Generating Units

Source	Definition [1]	Applicability		Requirements			
		Sub Category	Cease Coal Firing Date	Compliance Mechanism	BSER	Additional Requirements	Compliance Deadline
Coal	25 MW --- Fires coal > 10% avg heat input during three calendar years prior to compliance deadline OR > 15% during any one of those calendar years --- Retains ability to fire coal beyond 12/31/2029	Medium Term	1/1/2039	Federally enforceable and included in state plan	Co-firing 40% annual heat input natural gas	16% reduction (lb CO ₂ /MWh-gross)	2030
		Long Term	Beyond 1/1/2039		90% CCS	88.4% reduction (lb CO ₂ /MWh-gross)	2032

[1] Exemptions include units with limits to sell $\leq 33\%$ of potential electric output or 219,000 MWh or less, non-fossil fuel fired units that limit 10% or less of heat input from fossil fuel, municipal waste incinerators, commercial or industrial solid waste incinerators

Table 3: Existing Fuel Oil and Natural Gas-Fired Electric Generating Units

Source	Definition [1]	Applicability		Requirements			
		Sub Category	Annual Capacity Factor	Standard	BSER	Additional Requirements	Compliance Deadline
Fuel Oil/ Natural Gas	25 MW --- Fires FO/NG > 10% avg heat input during three calendar years prior to compliance deadline OR > 15% during any one of those calendar years --- No longer retains ability to fire coal beyond 12/31/2029	Low Load	< 8%	170 lb CO ₂ /MMBtu - FO --- 130 lb CO ₂ /MMBtu - NG	Uniform fuels	N/A	2030
	Intermediate Load	8–45%	1,600 lb CO ₂ /MWh-gross	Operation and maintenance	No increase in emission rate		
	Base Load	> 45%	1,400 lb CO ₂ /MWh-gross				

[1] Exemptions include units with limits to sell ≤ 33% of potential electric output or 219,000 MWh or less, non-fossil fuel fired units that limit 10% or less of heat input from fossil fuel, municipal waste incinerators, commercial or industrial solid waste incinerators