EO 12866\_GHG EGU New Sources 2060-AT56 Final Rule\_20201229

## 6560-50-P

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 60**

**[EPA-HQ-OAR-2013-0495: FRL–10019-30-OAR]**

**RIN 2060-AT56**

**PollutantPollutant-Specific Significant Contribution Finding for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final Rule.

**SUMMARY:** In this action, the U.S. Environmental Protection Agency (EPA) is finalizing finalizing a definition for a significant contribution finding (SCF) for purposes of regulating source categories for greenhouse gas (GHG) emissions, under section 111(b) of the Clean Air Act (CAA). In EPA’s considered viewthat, source categories can be considered to contribute significantly to dangerous air pollution due to their GHG emissions only if the amount of thosethose emissions exceeds 3 percent of total U.S. GHG emissions. For source categories that emit above this threshold, the EPA is also finalizing secondary criteria that may be used to further evaluate whether a source category contributes significantly. The EPA is also applying the 3-percent threshold to the electric generating units (EGU) source category and determining that GHG emissions from the EGU source category do contribute significantly to dangerous air pollution. **DATES:** The final rule is effective on **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

**ADDRESSES:** The EPA has established a docket for this action under Docket ID No. EPA-HQ-OAR-2013-0495. All documents in the docket are listed on the *https://www.regulations.gov/* website. Although listed, some information is not publicly available, *e.g.*, Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. With the exception of such material, publicly available docket materials are available electronically through *https://www.regulations.gov/*. Out of an abundance of caution for members of the public and our staff, the EPA Docket Center and Reading Room are closed to the public, with limited exceptions, to reduce the risk of transmitting COVID-19. Our Docket Center staff will continue to provide remote customer service via email, phone, and webform. For further information on EPA Docket Center services and the current status, please visit us online at *https://www.epa.gov/dockets*.

**FOR FURTHER INFORMATION CONTACT:**For questions about this final action, contact Mr. Christian Fellner, Sector Policies and Programs Division (D243-01), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541-4003; fax number: (919) 541-4991; and email address: *fellner.christian@epa.gov*.

**SUPPLEMENTARY INFORMATION:**

*Preamble acronyms and abbreviations*. The EPA uses multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for reference purposes, the EPA defines the following terms and acronyms here:

AEO Annual Energy Outlook

BSER best system of emission reduction

°C degrees Celsius

CAA Clean Air Act

CFR Code of Federal Regulations

CH4 methane

CO carbon monoxide

CO2 carbon dioxide

D.C. Cir. United States Court of Appeals for the District of Columbia Circuit

DOE Department of Energy

EGU electric utility generating unit

EIA U.S. Energy Information Administration

EPA Environmental Protection Agency

°F degrees Fahrenheit

GHG greenhouse gas

HAP hazardous air pollutant(s)

HFC hydrofluorocarbon

km kilometers

M million

N2O nitrous oxide

NAICS North American Industry Classification System

NGCC  natural gas combined cycle

NOx nitrogen oxides

NSPS new source performance standards

OMB Office of Management and Budget

PC pulverized coal

PFC perfluorocarbon

PM particulate matter

PSD Prevention of Significant Deterioration

SF6 sulfur hexafluoride

SO2 sulfur dioxide

U.S. United States

U.S.C. United States Code

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# I. General Information

## A. Does this action apply to me?

The source categories that are the subject of this final rule includeinclude electric generating units regulated under 40 CFR 60, subpart TTTT. The North American Industry Classification System (NAICS) code for the industrial, federal government, and state/local government electric generating units is 221112. The NAICS code for tribal government electric generating units is 921150. This list of categories and NAICS codes is not intended to be exhaustive, but rather provides a guide for readers regarding the entities that this final rule is likely to affect. Also, the methodology set forth and utilized in this final rule concerning determining whether a source category’s GHG emissions contribute significantly to dangerous air pollution is applicable, in principle, to all CAA section 111 source categories with GHG emissions.

## B. Where can I get a copy of this document and other related information?

In addition to being available in the docket, an electronic copy of this final action is available on the Internet. Following signature by the EPA Administrator, the EPA will post a copy of this final action at *https://www.epa.gov/stationary-sources-air-pollution/nsps-ghg-emissions-new-modified-and-reconstructed-electric-utility*. Following publication in the **Federal Register**, the EPA will post the **Federal Register** version of the final rule and key technical documents at this same website.

## C. Judicial Review

Under section 307(b)(1) of the Clean Air Act (CAA), judicial review of this final rule is available only by filing a petition for review in the United States Court of Appeals for the District of Columbia Circuit (the D.C. Circuit) by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]. Moreover, under section 307(b)(2) of the CAA, the requirements established by this final rule may not be challenged separately in any civil or criminal proceedings brought by the EPA to enforce these requirements. Section 307(d)(7)(B) of the CAA further provides that “[o]nly an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment (including any public hearing) may be raised during judicial review.” This section also provides a mechanism for the EPA to convene a proceeding for reconsideration “[i]f the person raising an objection can demonstrate to the EPA that it was impracticable to raise such objection within [the period for public comment] or if the grounds for such objection arose after the period for public comment, (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule.” Any person seeking to make such a demonstration to us should submit a Petition for Reconsideration to the Office of the Administrator, U.S. Environmental Protection Agency, Room 3000, WJC South Building, 1200 Pennsylvania Ave. NW, Washington, DC 20460, with a copy to both the person(s) listed in the preceding **FOR FURTHER INFORMATION CONTACT** section, and the Associate General Counsel for the Air and Radiation Law Office, Office of General Counsel (Mail Code 2344A), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave.,., NW, Washington, DC 20460.

# II. Executive Summary

## A. What is the purpose of this regulatory action?

In Executive Order 13783 (Promoting Energy Independence and Economic Growth), all executive departments and agencies, including the EPA, werewere directed to “immediately review existing regulations that potentially burden the development or use of domestically produced energy resources and appropriately suspend, revise, or rescind those that unduly burden the development of domestic energy resources beyond the degree necessary to protect the public interest or otherwise comply with the law.”[[1]](#footnote-2) Moreover, the Executive Order directed the EPA to undertake this process of review with regard to the “Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units,” 80 FR 64510 (October 23, 2015) (2015 Rule).

In a document signed the same day as Executive Order 13783 and published in the **Federal Register** at 82 FR 16330 (April 4, 2017), the EPA announced that, consistent with the Executive Order, it was initiating a review of the 2015 Rule and providing notice of a forthcoming proposed rulemaking consistent with the Executive Order. AfterAfter due deliberation, the EPA issued a notice of proposedrulemaking, “Review of Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units—Proposed Rule,” 83 FR 65424 (December 20, 2018) (2018 Proposal).). Here the EPA is finalizing a rulemaking with respect to whether GHG emissions from EGUs contribute significantly to dangerous air pollution, which utilizes a methodology for determining whether GHG emissions from other NSPS source categories contribute significantly to dangerous air pollution. Any action regarding the proposal to revise the standards of performance, including the underlying determinations of the BSER, for new, reconstructed, and modified coal-fired EGUs, including certain technical issues, is beyond the scope of this final rulemaking and comments received on the 2018 proposal will be addressed in any separate future action.

## B. What is the summary of the major provisions in this action?



## The EPA is finalizing a pollutant-specific significant contribution finding (SCF) for GHG emissions from EGUs. In reaching this conclusion, the EPA has also concluded that it is appropriate to utilize a threshold for determining significance, as well as secondary criteria to be applied in certain circumstances, that in principle would be equally applicable to other NSPS source categories.

## C. What are the costs and benefits?

In 2015, the EPA promulgated “Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units,” 80 FR 64510 (October 23, 2015) (2015 Rule). When the EPA promulgated the 2015 Rule, it took note of both utility announcements and U.S. Energy Information Administration (EIA) modeling and, based on that information, concluded that even in the absence of this rule, (1) existing and anticipated economic conditions are such that few, if any, coal-fired EGUs will be built in the foreseeable future, and that (2) utilities and project developers are expected to choose new generation technologies (primarily natural gas combined cycle (NGCC)) that would meet the final standards and also renewable generating sources that are not affected by these final standards. *See* 80 FR 64515. The EPA, therefore, projected that the 2015 Rule would “result in negligible CO2 emission changes, quantified benefits, and costs by 2022 as a result of the performance standards for newly constructed EGUs.” *Id.* The Agency went on to say that it had been “notified of few power sector new source performance standards (NSPS) modifications or reconstructions.” Based on that additional information, the EPA said it “expects that few EGUs will trigger either the modification or the reconstruction provisions” of the 2015 Rule. *Id.* at 64516.

TheThe EPA has concluded that the projections described in the 2015 Rule remain generally correct. In the period of analysis,[[2]](#footnote-4) the EPA expects there to be few, if any, newly constructed, reconstructed, or modified sources that will trigger the provisions the EPA is promulgating in this action. ConsequentlyConsequently, the EPA projects that there will be no significant changes in CO2 emissions or in compliance costs as a result of this final rule.

# III. Summary of Previous Rulemaking Actions

On December 20, 2018, the EPA published a proposal to revise certain parts of the 2015 Rule; “Review of Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units.” 83 FR 65424 (2018 Proposal). The majority of that proposal was dedicated to the issue of the best system of emission reduction (BSER) for newly constructed, modified, and reconstructed coal-fired EGUs. Comments received on that issue are not being addressed in this rulemaking and will be addressed in any future EPA action. In that proposal, the EPA solicited comment on whether to make a pollutant-specific significant contribution determination for GHG emissions from EGUs, 83 FR 65432 n. 25, which is the subject of today’s action.

**IV. Pollutant-Specific Significant Contribution Finding (SCF)**

*A. Background*

CAA section 111(b)(1)(A) states that “[The Administrator] shall include a category of sources in such list if in his judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.”

In the 2015 Rule,, the EPA promulgated standards for GHG (measured CO2 emissions) from fossil fuel-fired steam generating EGUs and combustion turbines, a pollutant that the Administrator had not considered when he listed the categories of those sources - fossil fuel-fired steam generators[[3]](#footnote-12) and stationary gas turbines.[[4]](#footnote-13) *See* 80 FR 64510. Similarly, in 2016, the EPA promulgated anan NSPS for GHG (measured by CH4CH4 emissions) from oil and gas sources, a pollutant that the Administrator had not considered when he listed the category for those sources - the Crude Oil and Natural Gas Production source category.[[5]](#footnote-14) *See* 81 FR 35824 (June 3, 2016) (2016 Oil & Gas Rule).

In each rule, the EPA interpreted CAA section 111(b) to require that anan SCF and endangerment finding be made only with respect to the source category, at the time the EPA lists the category, and to authorize the EPA to promulgate NSPS for GHG, as long as the EPA provides a rational basis for doing so. However, in each rule, the EPA acknowledged that some stakeholders had argued that the EPA first needed to make a pollutant-specific SCF, that is, a finding that GHG from the source category contributes significantly to dangerous air pollution. In each rule, the EPA stated that it disagreed with those stakeholders, but nevertheless, in the alternative, did make a pollutant-specific SCF for GHG, supported by the same reasons that the EPA had used to determine that it had a rational basis to regulate GHG. *See* 80 FR 64529 through 31 (2015 EGU Rule); 81 FR 35840 through 43 (2016 Oil & Gas Rule).

In the 2018 Proposal, in which the EPA proposed to revise the 2015 Rule, the EPA solicited comment on whether to adopt the interpretation that it was required to make anan SCF for GHG from the EGU source category before it could promulgate anan NSPS for CO2. Some commenters stated that the EPA must make pollutant-specific findings of endangerment and significant contribution in order to establish anan NSPS for that pollutant. These commenters explained that in their view, CAA section 111(b)(1)(A) requires the EPA to make two specific findings: (1) the specific “air pollution” to be regulated is “reasonably … anticipated to endanger public health or welfare;” and (2) the specific source category “causes or contributes significantly to” that air pollution. Commenters asserted that CAA section 111(b)(1)(A) is not ambiguous in this respect, and, therefore, the Agency’s interpretation in the 2015 Rule directly contradicts the plain language of that section.

Other commenters stated that the EPA’s approach in the 2015 Rule, that it needs to determine only that it has a rational basis to regulate GHGs emitted by this source category as a prerequisite to regulation, is sound. They said in the context of CAA section 111, the SCF and endangerment finding are made with respect to the source category, and not as to specific pollutants. These commenters supported the conclusion in the 2015 Rule that the EPA possesses authority to regulate GHG emissions from fossil fuel-fired EGUs under CAA section 111 because there was no new evidence calling into question its determination that GHG air pollution may reasonably be anticipated to endanger public health and welfare and fossil fuel-fired EGUs have a high level of GHG emissions. The commenters stated that these considerations hew closely to the statutory factors that inform the decision whether to list a source category in the first place—namely, whether the category “causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare,” under CAA section 111(b)(1)(A). The commenters added that this approach, which closely parallels the listing analysis but does not require a formal endangerment finding or SCF, is legally sound. They also added that the statute is clear that a formal endangerment finding is required to initially list a sector to be regulated under CAA section 111; but it is also clear that such a finding is not required before regulating additional harmful pollutants from a previously-listed sector.[[6]](#footnote-15)

Similarly, in a 2019 proposal to revise the 2016 Oil & Gas Rule, the EPA solicited comment on whether to adopt the interpretation that it was required to make anan SCF for GHG from the Oil and Gas source category before it could promulgate a CH4CH4 NSPS. Recently, the EPA completed the final rule to revise the 2016 Oil & Gas Rule, “Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review: Final Rule,” 85 FR 57018 (September 14, 2020) (2020 Oil & Gas Rule). There, the EPA determined that a pollutant-specific SCF is required. In addition, the EPA further determined that the pollutant-specific SCF in the 2016 Oil & Gas Rule was invalid on grounds, in part, that the EPA had not established a threshold or criteria by which to determine whether an amount of emissions contributes significantly to dangerous air pollution, and to distinguish from an amount of emissions that simply contributes to dangerous air pollution. The EPA stated that section 111(b) of the CAA requires, or at least authorizes, a pollutant-specific SCF, and such anan SCF must be based on defined criteria or thresholds.

*B. What is a Significant Contribution Finding (SCF)?*

CAA section 111 directs the EPA to regulate, through a multi-step process, air pollutants from categories of stationary sources. CAA section 111(b)(1)(A) requires the initial action, which is that the Administrator must “publish … a list of categories of stationary sources. He shall include a category of sources in such list if in his judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” Therefore, the first action that the EPA must take, specified in CAA section 111(b)(1)(A), is to list a source category for regulation on the basis of a determination that the category contributes significantly to dangerous air pollution. This provision makes clear that although Congress designed CAA section 111 to apply broadly to source categories of all types wherever located, Congress also imposed a constraint: The EPA is authorized to regulate only sources that it finds cause or contribute significantly to air pollution that the EPA finds to be dangerous. Because CAA section 111(b)(1)(A) refers to air *pollution*, the EPA’s determination that a source category should be listed for regulation can be based on all pollutants emitted by the category (*i.e.*, collective contribution), or for a specific pollutant.

After the EPA lists a source category, CAA section 111(b)(1)(B) then directs the EPA to propose regulations “establishing Federal standards of performance” for new sources within the source category, to allow public comment, and to “promulgate … such standards with such modifications as he deems appropriate.” CAA section 111(a)(1) defines the term “standard of performance” as “a standard for emissions of air pollutants which [the Administrator is required to determine through a specified methodology].” These provisions read together make clear that the standards of performance that CAA section 111(b)(1)(A) directs the Administrator to promulgate must concern air pollutants emitted from the sources in the source category. However, industrial sources of the type subject to CAA section 111(b)(1)(A) invariably emit more than one air pollutant, and neither CAA section 111(b)(1)(B) nor CAA section 111(a)(1), by their terms, specifies for which of those air pollutants the EPA must promulgate standards of performance.

In the past, the EPA has interpreted CAA section 111(b)(1)(B) to authorize it to promulgate standards of performance for any air pollutant that the EPA identified in listing the source category and any additional air pollutant for which the EPA has identified a rational basis for regulation. 81 FR 35843 (2016 Oil & Gas Rule); 80 FR 64510 (2015 Rule). Inherent in this approach is the recognition that CAA section 111(b)(1)(A) does not, by its terms, necessarily require the EPA to promulgate standards of performance for all air pollutants emitting from the source category. The EPA could list a source category on grounds that it emits numerous air pollutants that, taken together, significantly contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, and proceed to regulate each of those pollutants, without ever finding that each (or any) of those air pollutants by itself causes or contributes significantly to—or, in terms of the text of other provisions, causes or contributes to—air pollution that may reasonably be anticipated to endanger public health or welfare.

As described in the 2020 Oil and Gas Policy Rule, CAA section 111(b)(1)(A) does not provide or suggest any criteria to define the rational basis approach, the EPA has not articulated any criteria in its previous applications in the EGU CO2 NSPS and the 2016 40 CFR part 60, subpart OOOOa rules, and in instances before those rules in which the EPA has relied on the “rational basis” approach, the EPA has done so to justify not setting a standard for a given pollutant, rather than to justify setting such a standard. 85 FR 77037*.* Thus, the rational basis test allows the EPA virtually unfettered discretion in determining which air pollutants to regulate. As a result, the rational basis standard creates the possibility that the EPA could seek to promulgate NSPS for pollutants that may be emitted in relatively minor amounts.

In contrast, CAA section 111(b)(1)(A) is clear that the EPA may list a source category for regulation only if the EPA determines that the source category “causes or contributes *significantly*” (emphasis added) to dangerous air pollution. As described in the 2020 Oil and Gas Policy Rule, in light of the stringency of this statutory requirement for listing a source category, it would be unreasonable to interpret CAA section 111(b)(1)(B) to allow the Agency to regulate air pollutants from the source category merely by making an administrative determination under the open-ended and undefined rational basis test. The EPA, therefore, determined it is logical to interpret CAA section 111(b)(1)(B) to require that the Agency apply the same degree of rigor in determining which air pollutants to regulate as it does in determining which source categories to list for regulation, and, therefore, must make a pollutant-specific SCF. *Id*.

Requiring a pollutant-specific SCF establishes a clearer framework for assessing which air pollutants merit regulatory attention that will require sources to bear control costs. This promotes regulatory certainty for stakeholders and consistency in the EPA’s identification of which air pollutants to regulate and reduces the risk that air pollutants that do not merit regulation will nevertheless become subject to regulation due to an unduly vague standard.

As previously described, CAA section 111(b)(1)(B) requires the EPA to establish an NSPS for a source category listed under CAA section 111(b)(1)(A). For a source category previously listed under CAA section 111(b)(1)(A), in order to subsequently promulgate an NSPS for a pollutant that the EPA did not evaluate the source category for at the time of listing, the EPA must make a pollutant-specific SCF for the reasons described above. As part of making an SCF, the EPA concluded in the 2020 Oil and Gas Policy Rule that, “a standard or an established set of a criteria, or perhaps both, are necessary to identify what is significant and what is not.” 85 FR 57039. The EPA did not finalize or take a position in the 2020 Oil and Gas Policy Rule on potential criteria, stating that it was deferring the identification of such criteria to a future rulemaking. *Id.* CAA section 111(b) itself does not specify what the criteria for a pollutant-specific SCF.

The “contributes significantly” provision in CAA section 111(b)(1)(A) is ambiguous as to what level of contribution is considered to be significant. *See* 84 FR 50267 and 68 (citing *EPA* v. *EME Homer City Generation, L.P.*,572 U.S. 489 (2014) (holding that a similar provision in CAA section 110(a)(2)(D)(i), often termed the “good neighbor” provision, is ambiguous)). Accordingly, the EPA has authority to interpret that provision. *Id.* at 50268. As noted above, the EPA reads CAA section 111(b)(1)(B) in light of CAA sections 111(b)(1)(A) and 111(a)(1) to incorporate the “contributes significantly” standard in connection with promulgating NSPS for particular air pollutants. The EPA has concluded that to allow the EPA to distinguish between a *contribution* and a *significant* *contribution* to dangerous pollution, some type of (reasonably explained and intelligible) standard and/or established set of criteria that can be consistently applied is necessary. Without at least one or the other, it is impossible to evaluate whether the SCF is well reasoned. Therefore, the lack of a standard or established set of criteria for an SCF renders the finding arbitrary and capricious.

A supporting basis for this conclusion can be found in the EPA’s analysis of the “contribute significantly” provisions of CAA section 189(e), concerning major stationary sources of particulate matter with a diameter of 10 micrometers or less (PM10). This provision requires that the control requirements applicable to major stationary sources of PM10 also apply to major stationary sources of PM10 precursors “except where the Administrator determines that such sources [of precursors] do not contribute significantly to PM10 levels which exceed the standard in the area.” As the EPA noted in the 2019 Oil and Gas Policy Rule proposal, in CAA section 189(e), Congress intended that, in order to be subject to regulation, the emissions must have a greater impact than a simple contribution not characterized as a significant contribution. However, Congress did not quantify how much greater. Therefore, the EPA developed criteria for identifying whether the impact of a particular precursor would “contribute significantly” to a NAAQSNAAQS exceedance. 84 FR 50268. These criteria included numerical thresholds. *Id*. The EPA has concluded similarly that, under CAA section 111(b), a standard or an established set of a criteria, or perhaps both, are necessary to identify what is significant and what is not. Moreover, without either, any determination of significance is arbitrary and capricious because it does not identify a reasoned basis for that determination.

These criteria help ensure that the EPA’s decision-making is well-reasoned and consistent. The EPA considers it particularly important to develop a set of criteria and/or a standard in order to determine when a *significant* contribution occurs, in order, as noted above, to distinguish it from a simple contribution. A contribution can be greater or lesser and remain a contribution, but a significant contribution determination necessarily involves a judgment about the degree of the contribution that rises to the level of significance. For such a judgment to be meaningful (and to be understood by regulated parties and by the public), the Agency must identify the criteria it will use to determine significance.

C. Primary Criteria for Determining Significance

In this section, the EPA describes the criteria for determining when GHG emissions from a source category contribute significantly to dangerous air pollution that it is finalizing in this action, in response to comments submitted on this rule.[[7]](#footnote-16) The EPA indicated in the 2020 Oil and Gas Policy Rule that it would finalize these criteria in a separate rulemaking. 85 FR 57039.

1. GHG Emissions

This action, including the criteria discussed herein, applies only to GHG in the context of the EPA’s SCF under CAA section 111(b)(1)(B). This action does not discuss criteria for pollutants other than GHGs, and as such, other pollutants are outside the scope of this determination. The EPA is determining that the quantity of GHG emissions from a source category is the primary criterion in determining significance for purposes of regulation of GHGs from a source category under CAA section 111(b). Gross GHG emissions are important for this set of pollutants because GHGs are global long-lived pollutants and do not have the local, near-term ramifications found with other pollutants (*e.g.*, criteria pollutants). Unlike other pollutants where both the location and quantity of pollution emissions are factors in determining the impact of the emissions, GHGs’ impact (*i.e.*, climate change) is based on a cumulative global loading and the location of emissions is not nearly as important a factor as it is for assessing local, near-term impacts associated with criteria pollutants. It is for this reason that, when the EPA is assessing GHGs impact in contributing significantly to air pollution which may reasonably be anticipated to endanger public health and welfare, the quantity of emissions should be the primary criterion that the EPA should evaluate.

The GHG emissions are the best, but not necessarily only, indicator of significance because the quantity of emissions emitted from a source category correlates directly with impacts. Calculations using the Model for the Assessment of Greenhouse Gas Induced Climate Change (MAGICC model) to investigate the impact of including or eliminating a single sector’s emissions from 2020 through 2100 have shown that the magnitude of emissions from that single sector is very close to being linearly related to the projected temperature change in 2100 resulting from eliminating that sector’s emissions. This is consistent with the results of a number of peer reviewed publications in the past decade: *e.g*., Matthews et al found that the temperature change is roughly proportional to the total quantity of CO2CO2 emissions over a wide range of potential scenarios.[[8]](#footnote-17) Note that this finding may not hold true for all non-CO2 gases: the same MAGICC model calculations show that eliminating the oil and gas sector has a somewhat larger impact on temperature than would be estimated based on multiplying the total CO2-equivalent emissions from the sector by the linear factor derived from the CO2-dominant sectors: this is because there is a large component of CH4CH4 emissions in the oil and gas sector, and methane has a larger short-term impact than CO2.

A threshold of GHG emissions from the source category compared to the rest of the U.S. GHG emissions (*i.e.*, the percent of total U.S. GHG emissions) can be used to demonstrate significance. Emissions can be large enough from a source category that the evaluation of GHG emissions in isolation is sufficient for making a finding of significance for the source category. Conversely, the EPA believes that some source categories are sufficiently small in GHG emissions that a finding of insignificance can be made by only evaluating the GHG emissions from the source category. For many source categories, the evaluation of GHG emissions alone will be sufficient for determining whether there is significant contribution.

2. Using a Threshold in Significance Determination

The EPA concludes that it is appropriate to utilize a threshold for the evaluation of significance of GHG emissions from source categories. The use of a clear threshold provides certainty regarding the EPA’s process and allows the regulated entities to have insight into how the EPA will make determinations on significance for their respective source category. The threshold set forth in this rulemaking is a reflection of the EPA’s best understanding of the landscape of the U.S. GHG emissions from stationary sources. The EPA is utilizing a methodology to evaluate significance with respect to the U.S. GHG emissions that can be applied for any source category, but that application of the methodology is only being directly applied to the EGU source category in this action. It is important to note that a significance determination for the U.S. GHG emissions will be needed before the EPA may regulate any other source category under CAA section 111(b) for GHG emissions.

As Table 1, below, makes clear, there are at least two natural breakpoints between groups of emitting source categories. The first natural breakpoint is between EGUs and all other source categories. EGUs stand out as by far the largest stationary source of the U.S. GHG emissions, emitting over 25 percent of all the U.S. GHG emissions. Based on available data, the next largest source category, Oil and Natural Gas, emits just under 3 percent of U.S. GHG emissions. Two other source categories, Boilers and Petroleum Refineries, also fall between 2.5 percent and 3.0 percent of U.S. emissions. Between 1.5 percent and 2.5 percent of U.S. GHG emissions there is another natural breakpoint and all of the remaining source categories fall below 1.5 percent of the U.S. GHG emissions. Note that source category emissions in Table 1 are an estimate of what the Agency currently understands about the emissions from CAA section 111 source categories. There is a wide range of confidence in these values and there is a possibility that some source categories may fall into different groupings of emissions.

**Table 1.**

|  |  |  |  |
| --- | --- | --- | --- |
| **% of Total US GHG Emissions** | **Emissions in that Range (MMT CO2e)\*** | **Source Categories Affected at Different Thresholds** | **Percent of US GHG Emissions from Stationary Sources Covered at Given Threshold** |
| Above 25% | >1670 MMT | EGUs (1778 MMT/27% of total US GHG Emissions, 3.6% of Global emissions) | 43% |
| 3% to 25% | 200 MMT-1670 MMT | No categories identified | 43% |
| 2.5% to 3.0% | 167-200 MMT | Oil/Gas Production and Processing^; Refineries; Boilers | 56% |
| 2.0% to 2.5% | 134-167 MMT | No categories identified | 56% |
| 1.5% to 2.0% | 100-134 MMT | No categories identified | 56% |
| 1.0% to 1.5% | 67-100 MMT | Landfillsᶧ; Iron and Steel | 60% |

*\* MMT CO2e = Million metric tons of carbon dioxide equivalent*

*^ Note that the oil and gas production and processing GHG emissions are very close to the 3% value and thus if this is a chosen threshold there is a possibility that this source category may be above the threshold in the near term.*

*ᶧ Note that the Landfills source category has already been regulated under CAA section 111 and the characterization of the emissions here reflect reductions of the GHG emissions as a result of that regulation as a co-benefit.*

Based on this analysis, the EPA is applying a threshold of 3 percent of U.S. GHG emissions to evaluate a source category’s emissions to determine significance for purposes of CAA section 111(b). The EPA is also determining that source categories that are less than this value (*i.e*., 3 percent or less) will necessarily be insignificant without consideration of any other factors.

The EPA acknowledges that, when interpreting other CAA provisions, the EPA has used different thresholds to define “significant contribution,” but it is appropriate to select a threshold based on the nature of the problem being addressed. For example, to address the problem of interstate transport under CAA section 111(a)(2)(D)(i)(I) -- which concerns criteria pollutants, *i.e.,* pollutants that affect the NAAQS -- the EPA selected a threshold of 1 percent based on analysis of air quality modeling specific to the criteria pollutant at issue. 76 FR 4820848208, 48236 (Aug. 8, 2011) (Cross-State Air Pollution Rule (CSAPR)). For criteria pollutants, both the location and quantity of emissions are factors in determining their impact. In contrast, the impact of GHGs (*e.g*, climate change) is based on a cumulative global loading, and the location of emissions is not nearly as important a factor as it is for assessing local impacts associated with criteria pollutants. Because GHGs do not have the local near-term impacts that criteria pollutants tend to have, a larger value is appropriate to use in determining significance as it still addresses the health and welfare impacts of GHG emissions without specifically evaluating local near-term impacts, which is analytically unreasonable to do given the global nature of GHGs. While the 3 percent threshold will be applied against domestic emissions, source categories exceeding that threshold represent a much smaller fraction of global GHG emissions.[[9]](#footnote-18)

By determining a threshold, the EPA is setting a clear indication of how source categories will be evaluated for significance based on GHG emissions. For those source categories that are below the 3 percent threshold, the EPA would make a determination (through future rulemaking) of insignificance. This means that if a source category collectively emits 3 percent or less of the total U.S. GHG emissions, it will be considered to be insignificant. For those source categories that are above the threshold, a more detailed evaluation of other criteria can be used to make a determination of significance. This is described in sectionsection IV.D below. It is important for the EPA to make this clear indication as it allows source categories and the general public a level of transparency as to how the EPA will be evaluating source categories for significance. The threshold in this action will provide a degree of certainty regarding whether a source category will later be found significant or insignificant based on the threshold.[[10]](#footnote-19)

After evaluating the two natural break points in GHG emissions, the EPA determined that 3 percent of the U.S. GHG emissions was the best threshold for determining significance. As noted above, there is currently only one source category above this threshold, EGUs, and the evaluation of significance for the EGU source category has been a topic explored and discussed by the Agency in great detail over the course of the last decade.[[11]](#footnote-20) Just below the 3 percent threshold are three source categories: Oil and Natural Gas, Petroleum Refineries, and Industrial-Commercial-Institutional Steam Generating Units (*i.e*., “Boilers”). There are no other source categories with GHG emissions between 1.5 percent and the 3 percent. By using a threshold of 3 percent of the U.S. GHG emissions (*i.e*., only including EGUs above the threshold), the EPA will effectively be covering 43 percent of the U.S. stationary source GHG emissions via regulation of a single source category. If the EPA were to instead set a threshold between the other identified breakpoint – between 1.5 percent and 2.5 percent of U.S. GHG emissions – the EPA observes that this threshold would lead to a relatively modest increase in the stationary source U.S. GHG emissions that would be regulated of an additional 13 percent (for a total of 56 percent of U.S. stationary source GHG emissions).[[12]](#footnote-21) In addition, regulation of the additional source categories that comprise 13 percent of U.S. emissions would eliminate only a portion of those emissions. With an even lower threshold of significance set at 1.0 percent of U.S. GHG emissions, there would be significantly more source categories covered (about 10 based on the EPA estimates) above the threshold but likely would include an even more modest increase in stationary source GHGs that would cover 60 percent of U.S. stationary source GHGs. The EPA is basing a decision to apply a threshold of 3 percent on the relative contribution of regulating source categories that contribute significantly to the overall impact of climate change. To that end, the temperature impact associated with the hypothetical elimination of all source categories above a 3 percent threshold corresponds to a hypothetical reduction of 0.049 degrees Celsius (°C) (the calculated effect in 2100 of removing 1,780 million metric tons (MMT) of CO2 emissions each year from 2020 through 2100) from source categories above that threshold (*i.e.,* just EGUs). Even eliminating the next largest source category (*i.e*., Oil and Gas Processing and Production) would only generate an additional hypothetical temperature reduction of less than 0.01°C and even smaller source categories correspondingly contribute less to global temperature. The EPA is making the decision that the threshold for a significance determination for U.S. GHG emissions to be in the form of a percentage. A percentage is a metric that measures the relative contribution to the whole and, in this action, the EPA believes that it is appropriate to measure and evaluate significant contribution of U.S. GHG emissions as a relative contribution to the whole of GHG emissions in the U.S. The EPA is determining that a threshold in the form of a percentage is both reasonable and more appropriate for making a significance determination for GHGs based on a percent’s relative nature. This is important because the trajectory of U.S. GHG emissions is trending down. As overall emissions decrease over the course of time, a source category’s relative contribution to GHGs may not have changed or may have even increased based on GHG reductions in other source categories and sectors. A relative percentage threshold would allow for the EPA to later determine that a source category is significant based on these circumstances, because a source category’s emissions may eventually exceed the threshold even though it is currently below the threshold. Accordingly, a percentage threshold allows the EPA, over time, to always focus on the source categories with the potential to have the greatest impact.

The EPA is determining that a threshold in the form of a percentage is both reasonable and more appropriate for making a significance determination for GHGs based on a percent’s relative nature. A tonnage threshold is a static metric that would not change over time. As previously described, the trajectory of U.S. GHG emissions is trending down. As emissions decrease over the course of time, it is likely that source categories that were once above any static threshold will fall below such a threshold. Even though a source category may reduce overall U.S. GHG emissions, that source category’s relative contribution to GHGs may not have changed or may have even increased based on GHG reductions in other source categories and sectors. Additionally, if emissions do decrease over time, the use of a tonnage threshold potentially results in no source category meeting the criteria for significance, even if collectively the U.S. GHG emissions continue to pose a danger to public health or welfare.

It should be noted that the U.S. GHG emissions of the EGU source category are more than an order of magnitude larger than the proposed threshold, representing 43 percent of U.S. stationary source GHG emissions. The EPA believes that it is possible for source categories with GHG emissions substantially larger than the threshold to be deemed significant on the basis of the primary criterion alone (*i.e.*, magnitude of emissions) and without consideration of the secondary criteria described elsewhere in this notice.

The EPA is finalizing regulations codifying the 3 percent threshold.

3. Tiers of Source Categories Based on GHG Emissions

As noted previously, the primary criterion in evaluating the significance of a source category is, again, the relative magnitude of the U.S. GHG emissions. The EPA believes that NSPS source categories may be grouped into three tiers on the basis of magnitude of the U.S. GHG emissions, as follows:

1. *Source category(s) with GHG emissions substantially above the threshold.* Such source category(s) have emissions of a large enough magnitude that they can be determined significant on the basis of the magnitude of emissions alone. As discussed later in this documentdocument, EGUs are likely to not require consideration of other factors in order to determine significance.
2. *Source categories with an intermediate magnitude of the U.S. GHG emissions (i.e., those with emissions above the proposed threshold but less than the quantity emitted by the EGU category).* For source categories with emissions above the proposed threshold, evaluation of the magnitude of the U.S. GHG emissions alone may be inconclusive. Rather, a significance determination would likely require an examination of the source category’s magnitude of emissions combined with a more detailed look at the secondary factors discussed elsewhere in this documentdocument.
3. *Source categories with a small magnitude of GHG emissions (i.e., those with emissions below the proposed threshold).* Source categories with a small magnitude of emissions will be deemed insignificant based on evaluation of the primary criterion alone, without consideration of any secondary factors.

# *D. Secondary Criteria for Determining Significance*

As described above, the EPA is determining that the U.S. GHG emissions from a source category are the primary and most important criterion for making a determination of significance for a source category. However, there may be instances where the U.S. GHG emissions from a source category do not give a comprehensive enough picture to make a determination of significance. The threshold that the EPA has described above in Section IV.B would provide a clear indication that the U.S. GHG emissions from source categories below that threshold are necessarily insignificant. However, for any source category that is above that threshold, there may be other source-category specific considerations that should be evaluated in addition to GHG emissions when making a determination of significance.[[13]](#footnote-22) For that reason, the EPA would consider other, secondary, criteria in the evaluation of significance for certain source categories. These other criteria are described in the subsequent subsections. It is important for the EPA to consider secondary criteria in the evaluation of significance for certain source categories because the criteria provide unique context to the source category beyond the information provided by the magnitude of the source category’s GHG emissions.

## 1. Evaluation and Context of GHG Emissions

The evaluation of the magnitude of the U.S. GHG emissions from a source category is a clear indicator of whether a source category is significant, but in the specific instance of source categories that have greater GHG emissions than the threshold, an evaluation based on the magnitude of the U.S. GHG emissions may be inconclusive. There are other emissions-based metrics that can be evaluated to clarify and make a significance determination for these source categories.

### a*. Source Category Trends*

An important criterion that can help illuminate and contextualize a significance determination is an evaluation of the trends in emissions and number of designated facilities within a source category. Primarily, the EPA can evaluate whether a source category is on a trajectory of the U.S. GHG emission decline. If the source category, as a whole, is decreasing its GHG emissions, an explanation for why it is on the decline may aid in making a significance determination. In one scenario, if the source category is decreasing emissions because the source category is declining in production or other output (*e.g.*, due to decreasing demand for goods or other market conditions, due to relocation overseas, or due to the cumulative effect of regulations), it may lend towards an insignificance determination as the emissions are already declining and expected to continue to decline even without further regulation. In a separate scenario, if a source category’s GHG emissions are declining due to increased efficiency and updated technology, it may lend towards a determination of significance. This would allow the EPA the ability to regulate the source category in order to ensure that efficiency and technology improvements become standard across the source category through both an NSPS (111(b) regulation) for new, modified and reconstructed sources and an emission guidelines (111(d) regulation) for existing sources.

In a scenario in which the EPA were to find a source category to be growing in either emissions or number of designated facilities (or both), it may lend towards that source category being found to be significant. This would allow EPA to regulate and mitigate emissions from new, modified and/or reconstructed designated facilities within that source category under CAA section 111(b) (*i.e.*, via a NSPS).

If the EPA were to evaluate the trend in the number of designated facilities and emissions of a source category, it might show a static number of existing facilities with a constant or slightly increasing quantity of the U.S. GHG emissions. In this scenario, there may be little utility in determining significance for that source category and consequentially developing a NSPS as there are little to no emissions that would be subject to such a standard. However, creating a NSPS for a source category and pollutant is a necessary predicate to regulating existing sources under CAA section 111(d). Hence, in the scenario of a static number of existing facilities, a finding of significance for the source category may be warranted as it would allow eventual regulation of a group of existing source categories. The EPA expects the prospect of regulating a source category under CAA section 111(d) for existing sources to be a compelling reason for determining significance.

### *b. Source Category Emissions with Global Context*

Another important criterion that the EPA can consider, as a secondary factor, is the relative contribution of GHG emissions from the U.S. in a specific source category compared to worldwide emissions of similar sources. As previously described, Section 111(b)(1)(A) of the CAA states that the Administrator shall include source categories that contribute significantly to endangerment of health and welfare. When evaluating a global pollutant such as GHGs, the EPA views the impact of domestic emissions from domestic sources as a more germane consideration when determining whether a pollutant contributes significantly to endangerment of health or welfare. Because every ton of GHG contributes to the global problem, a domestic ton will still have some impact in the U.S. Accordingly, it is reasonable for the EPA to evaluate whether a source category is well-regulated internationally and whether the U.S. emissions from that sector make up a relatively large share of GHG emissions on a worldwide scale, as such evaluation in turn would inform whether U.S. emissions are significantly contributing to domestic impacts. If the emissions from the U.S. are comparatively a large contribution to source category/sector emissions worldwide, it may lend towards a finding of significance for the source category based on the U.S.’s substantial global contribution to the source category. If, however they are relatively small, it would suggest less benefit from the EPA regulation of that source category.

The EPA can also consider, as one of the secondary criteria, an evaluation of whether a source category is vulnerable to being trade exposed (*i.e.* whether the source category is constrained in the sources’ ability to pass through carbon costs due to actual or potential international competition). The EPA may evaluate whether regulation of the source category would create a financial incentive for that source category/industry to move into, or increase production in, another country. This could be manifested as either a shift in production to facilities internationally or a complete closure of existing designated facilities in the U.S. It is not the EPA’s intention in regulating source categories to drive production from the U.S. to other countries, and there is an environmental concern in pushing industries to other international locations. This concern is based on the potential for these new international emissions to increase compared to the corresponding displaced U.S. emissions.[[14]](#footnote-23) While this is always a concern for the EPA in the regulation of industry within the U.S., it even more pronounced with the consideration of GHG emissions. As discussed, previously, the U.S. GHG emissions are a global pollutant that also have domestic impacts. As such, if a smaller quantity of domestic GHG emissions would be displaced, due to a regulation, by a greater quantity of international GHG emissions it may support a finding of insignificance for a given source category. This would occur if the U.S. sources are already significantly lower emitting in GHG emissions than sources in other countries. It should also be noted that source categories whose sources in the U.S. make up a relatively smaller proportion of the world’s emissions from corresponding international sectors may be particularly vulnerable to being trade exposed as there is likely a greater international capacity to absorb the displaced U.S. production.

## c. Consideration of Technology

While the consideration of technology in the CAA section 111 program has traditionally been associated with the standard setting process that follows after the significant contribution finding, there is a reasonable perspective that there is potential value in evaluating and considering the technology both with the associated source category (*i.e.* intrinsic to the process of the source category and a prime example of reductions associated with this evaluation might be efficiency improvements) and also with potential control technology for a source category. If we use EGUs as an example, consideration could be given to the evaluation of both efficiency improvements (as demonstrated in the Affordable Clean Energy rule) and back-end control technology and devices (*e.g*., carbon capture and storage (CCS)). Traditionally in the standard-setting process, the consideration of technology has been used to determine a BSER. This process involves a robust analysis of what is currently being used within the source category to reduce targeted emissions and also observing what is used in other source categories that may coincide with technology from the source category of evaluation. In the step of determining significance (*i.e.*, the step that the EPA takes for a source category prior to setting a standard of performance/setting a BSER) there is potentially a space for a screening procedure based on the consideration of technology. This would be a less robust and more high-level analysis of the technology associated with the source category that could add value to a determination of whether specific source categories significantly emit GHGs.

The EPA is including technology as a screening mechanism in the Agency’s determination of significance of a source category. The technology screening analysis is to see if there are any technology to review for any likely candidates for a BSER analysis

This technology screening can coincide with the evaluation of the secondary criteria. The EPA would evaluate the technology that is generally known to reduce the U.S. GHG emissions from the source category and evaluate whether that technology is readily available to be used for the source category in question. This evaluation can take source-category specifics into account such as the size, the U.S. GHG emission type (*e.g.*, CO2, CH4CH4, N2O), and facility type. In general, the EPA would use readily available information to make conclusions in this type of screening. Using this technology screening with the understanding that other combustion-based source categories do not have the magnitude of emissions as EGUs, it might be reasonable for the EPA not to make a determination of significance as there are not substantial emission reductions available for the source category. As described in the next section, the EPA could choose to reevaluate its prior determination of significance if a new technology that could apply to the source category were to emerge and become widely available.

## d. Temporal Evaluation of Criteria

The evaluation of the secondary criteria is not intended to be performed in isolation. Rather, the EPA will consider the weight of evidence of all the factors (both primary and secondary) to make an informed and comprehensive decision as to whether a source category that exceeds the 3-percent threshold contributes significantly to the U.S. GHG emissions. A source category’s determination can be reevaluated in the future as the status and criteria described here may have changed for that source category. For example, the technology to adequately regulate GHGs from a source category may not be readily available at this time, but in the future that technology may become more broadly available, causing the EPA to then make a SCF.

The EPA is finalizing regulations codifying these criteria.

*E. Significant Contribution Finding for EGUs*

As noted above, he Agency is determining that, based on appropriate criteria, GHG emissions from EGUs[[15]](#footnote-24) contribute significantly to dangerous air pollution. The primary criterion in determining whether to make a SCF is the magnitude of GHG emissions from a given source category. It is readily apparent that EGUs emit a uniquely large amount of GHGs compared with all other categories of stationary sources. The EPA made this clear in the 2015 Rule, quoted above, and reiterated it in the 2020 Oil & Gas Rule: “the unique CO2 emissions profile of fossil fuel-fired EGUs should be noted: the volume of emissions from EGUs dwarfs the amount of GHG emissions from every other source category.” 85 FR 57039, n.49.

Although GHG emissions from EGUs have fallen since the EPA promulgated the 2015 Rule, they still remain uniquely large among stationary source categories. The EPA’s Inventory of U.S. Greenhouse Gas Emissions[[16]](#footnote-25) indicates that, as of 2018, the Electric Power sector directly emitted 1,778.5 MMT of GHGs.[[17]](#footnote-26) This amount was more than twice the amount of GHGs emitted by all other industrial sources combined and more than all other industrial, commercial, and residential stationary combustion sources combined.[[18]](#footnote-27) In addition, direct GHG emissions from EGUs account for approximately 27 percent of total U.S. GHG emissions and 43 percent of U.S. stationary source emissions.. The direct GHG emissions from EGUs account for approximately 4 percent of total worldwide GHG emissions and are greater than the emissions of all but four countries.[[19]](#footnote-28) These facts confirm that at current emission levels, EGUs have measurable impacts on both the U.S. contribution to GHG emissions and the worldwide total GHG emissions and continue to be uniquely large stationary source emitters of GHGs. It should be noted that if domestic EGUs no longer emitted any GHG emissions, there would be a measurable impact on worldwide GHG emissions and between 2020 and 2100, there would be a reduction in the projected increase in global temperatures by 0.049 degrees Celsius (oC).

Because EGUs represent by far the largest stationary source of GHGs from combustion of fossil fuels, the EPA believes that this is the most appropriate place for the EPA, states, and sources to devote resources to reducing GHGs from stationary sources. Indeed, this uniquely large magnitude of emissions is the reason why, over the last 8 years, the Agency has devoted significant effort to determine how to best reduce GHGs from EGUs. Because EGUs are a relatively large U.S. source of emissions in an overall large pool of international EGU sources, regulation over time could help produce practices and technologies that have application to EGUs worldwide.

It is noteworthy that GHG emissions from EGUs are approximately an order of magnitude greater than the estimated emissions of the second largest stationary source category of GHGs attributed to combustion, industrial boilers. Because the magnitude of GHG emissions from EGUs is large compared to other stationary sources, this makes them clearly significant even without detailed consideration of other factors. As mentioned earlier, the EPA is determining that a source category that emits above a threshold of 3 percent of U.S. stationary source GHG emissions may contribute significantly to dangerous GHG air pollution. For those source categories above that threshold, the EPA is also determining that consideration of certain secondary criteria may, collectively, also inform the evaluation of whether a source category should be considered to significantly contribute. However, that analysis of secondary criteria is not necessary in the case of EGUs, due to the overwhelmingly large emissions of the source category; it is clear that controlling GHG emissions from the EGU source category will be necessary to appropriately address dangerous air pollution. This conclusion is consistent with the EPA’s 2018 Proposal where the Agency explained that if the EPA was required to evaluate significance, EGUs would be considered significant.

11. Secondary Criteria

The EPA is determining that the uniquely large GHG emissions from EGUs make a finding of significant contribution and regulation appropriate by itself. While the EPA does not think it is necessary to consider secondary criteriacriteria because of the uniquely large emissions from the EGU source category, as explained below, the EPA would make the same determination even if it did consider those criteria.

*a. Source Category Trends*

As mentioned earlier, an important criterion is the evaluation of the trends in emissions and number of designated facilities within a source category, such that the EPA can evaluate whether a source category is on a trajectory of U.S. GHG emission decline.

While electricity demand is projected to increase the U.S., due to the increased use of less carbon intensive generation technologies and more efficient generation, GHG emissions from the power sector are projected to remain relatively steady for the foreseeable future. However, EGUs are projected to remain the single largest stationary source of GHG emissions, and while the Agency expects few, if any, new coal-fired EGUs will be built to meet the demand for electricity, coal-fired EGUs are expected to continue to supply electricity and emit significant GHG emissions for the foreseeable future.[[20]](#footnote-29) While not part of the BSER review in the proposed rule, the EGU source category also includes stationary combustion turbines. The EPA expects new simple cycle and combined cycle combustion turbine EGUs will be built in the future and that the existing fleet of combustion turbines will continue to operate.[[21]](#footnote-30) Therefore, efficient generation technology could eventually become standard for all new and existing EGUs. Consequently, the EPA would consider the source category trends as supporting the regulation of GHG emissions from EGUs.

*b. Source Category Emissions with Global Context*

The EPA is also determining that it can consider, as a secondary criterion, the relative contribution of GHG emissions from the U.S. in the specific source category compared to worldwide emissions of similar sources. Accordingly, the EPA will evaluate whether a source category is well-regulated internationally and whether the U.S. emissions from that sector make up a relatively large share of global GHG emissions, as such evaluation in turn would inform whether U.S. emissions are significantly contributing to domestic impacts. In this instance, this criteria points towards a finding of significance given that U.S. EGUs make up a sizeable portion (13 percent of the emissions) from EGUs worldwide.[[22]](#footnote-31)

As mentioned earlier in this notice, the EPA is also determining that one of the secondary criteria is an evaluation of whether a source category is vulnerable to being trade exposed (*i.e.*, whether the source category is constrained in its ability to absorb regulatory costs due to actual or potential international competition). Concerns about international competition would not impact the Agency’s decision to regulate EGUs because electricity must be transported over power lines and it is not as easy to relocate or shift production locations as it is for other source categories. The ability to locate generation in Mexico and Canada and transmit the power to the U.S. is limited because of constraints on existing transmission lines and the expense to build additional transmission capacity. The only additional transmission capacity currently being considered is for electricity generated from hydroelectric power in Canada to supply power to New England. Since this electricity has a low carbon intensity, it would not contribute to an overall increase in GHG emissions. Furthermore, the emission standards in this rule will not increase the costs of electricity from a new coal-fired EGU such that it might be financially advantageous to locate new production internationally to countries with less stringent regulations. If international competition were a concern, the Agency would compare the forecast GHG emissions from international sources (in this case, EGUs in Canada and Mexico) against the forecast GHG emissions from domestic sources (in this case domestic EGUs) in both the absence of and implementation of the NSPS. In addition, since few, if any, new coal-fired EGUs are forecast to be built in the U.S., the standards in this final rule will not impact electricity prices to end users to an extent that other industries would be incentivized to relocate internationally due to increased electricity costs. Therefore, domestic reductions in GHG emissions from regulating EGUs will not be offset by increased international GHG emissions. In contrast, for source categories that supply raw materials to other domestic source categories, the impact of international competition on those source categories and the resultant GHG impacts could be considered when determining an appropriate NSPS. It is conceivable that an overly stringent NSPS could result in an increase in global GHG emissions, if the increase in international emissions is greater than the reduction in domestic emissions.

*c. Consideration of Technology*

As stated earlier in this documentdocument, while the consideration of technology in the CAA section 111 program has traditionally been associated with the standard setting process that follows after the significant contribution finding, there may also be value in evaluating and considering the technology both with the associated source category (*i.e.,* intrinsic to the process of the source category and a prime example of reductions associated with this evaluation might be efficiency improvements) and also with potential control technology for a source category. The EPA is determining that it may be appropriate in a given instance to include technology as a screening mechanism in the Agency’s determination of significance of a source category Even in light of the limited candidates for a BSER analysis, the magnitude of GHG emissions from EGUs and reductions available through efficiency would support the EPA’s determination of significance.















# V.Summary of Cost, Environmental, and Economic Impacts

## A. What are the affected facilities?

Fossil fuel-fired EGUs take two forms that are relevant for present purposes: those that are steam generating units and those that use gasification technology.[[23]](#footnote-145) Fossil fuel-fired steam generating units can burn natural gas, oil, or coal. However, coal is the dominant fuel for electric utility steam generating units. Coal-fired steam generating units are primarily either PC or fluidized bed (FB) steam generating units.[[24]](#footnote-146) At a PC steam generating unit, the coal is crushed (pulverized) into a powder to increase its surface area. The coal powder is then blown into a steam generating unit and burned. In a fossil fuel-fired steam generating unit using FB combustion, the solid fuel is burned in a layer of heated particles suspended in flowing air. Power can also be generated from coal or other fuels using gasification technology. An IGCC unit gasifies coal or petroleum coke to form a synthetic gas (or syngas) composed of carbon monoxide (CO) and hydrogen (H2), which can be combusted in a combined cycle system to generate power.

## B. What are the air quality impacts?

The EPA does not anticipate that this final rule will result in significant CO2 emission changes by 2026. The EPA does not anticipate the construction of new coal-fired EGUs and expects few, if any, coal-fired EGUs to trigger the NSPS modification or reconstruction standard for these sources.

## C. What are the energy impacts?

This final rule is not anticipated to have an effect on the supply, distribution, or use of energy. The EPA projects few, at most, new reconstructed or modified EGUs.

## D. What are the cost impacts?

The EPA does not believe that this final rule will have compliance costs associated with it because the EPA projects there to be, at most, few new, modified, or reconstructed coal-fired EGUs..

## E. What are the economic impacts?

The EPA does not anticipate that this final rule will result in economic or employment impacts because the EPA projects there to be, at most, few new, modified, or reconstructed coal-fired EGUs.. Likewise, the EPA believes this rule will not have any impacts on the price of electricity, employment or labor markets, or the U.S. economy.

## F. What are the benefits?

The EPA does not anticipate emission changes resulting from the rule as the EPA projects there to be, at most, few new, modified, or reconstructed coal-fired EGUs.. Therefore, there are no direct climate or human health benefits associated with this rulemaking.

# VIVI. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *https://www.epa.gov/laws-regulations/laws-and-executive-orders*.

## A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a significant regulatory action that was submitted to the Office of Management and Budget (OMB) for review because it raises novel legal or policy issues. Any changes made in response to OMB recommendations have been documented in the docket.

## B. Executive Order 13771: Reducing RegulationsRegulations and Controlling Regulatory Costs

This action is notnot expected to be an Executive Order 13771 regulatory action. There are no quantified cost estimates for this final rule because the EPA does not anticipate this action to result in costs or cost savings.

## C. Paperwork Reduction Act (PRA)

This action does not impose any new information collection burden under the PRA. OMB has previously approved the information collection activities contained in the existing part 75 and 98 regulations and has assigned OMB control numbers 2060-0626 and 2060-0629, respectively.

## D. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This rule requires the Administrator of EPA to make a pollutant-specific significant contribution finding that the source category causes, or contributes significantly to GHG air pollution before regulating GHG emissions from that source category. In addition, this notice makes such a pollutant-specific significant contribution finding for the EGU source category. However, since there is already in place a GHG NSPS for this source category, and this finding does not require EPA to make any changes to the NSPS, this rule does not affect small entities within the source category. The EPA has, therefore, concluded that this action will have no net regulatory burden for all directly regulated small entities.

## E. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments. This action imposes no enforceable duty on any state, local, or tribal governments or the private sector.

## F. Executive Order 13132: Federalism

This action does not have federalism implications. It 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.

## G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175. It would neither impose substantial direct compliance costs on tribal governments, nor preempt Tribal law. The EPA is aware of three coal-fired EGUs located in Indian Country but is not aware of any EGUs owned or operated by tribal entities. The EPA notes that this action wouldaffect only existing sources such as the three coal-fired EGUs located in Indian Country if those EGUs were to take actions constituting modifications or reconstructions as defined under the EPA’s NSPS regulations. However, as previously stated, the EPA expects there to be few, if any, new, reconstructed, or modified EGUs. Thus, Executive Order 13175 does not apply to this action.

Consistent with the EPA Policy on Consultation and Coordination with Indian Tribes, the EPA offered consultation with tribal officials during the development of this action; however, the Agency did not receive a request for consultation. The EPA held meetings with tribal environmental staff during the public comment period to inform them of the content of the proposed rule and to encourage them to submit comments on the proposed rule.

## H. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of “covered regulatory action” in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health or safety risk.

## I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not a “significant energy action” because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy and has not otherwise been designated as a significant energy action by the Administrator of the Office of Information and Regulatory Affairs (OIRA). This final action is not anticipated to have impacts on emissions, costs, or energy supply decisions for the affected electric utility industry.

## J. National Technology Transfer and Advancement Act (NTTAA)

This rulemaking does not involve technical standards.This rulemaking does not involve technical standards.

## K. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, and/or indigenous peoples, as specific in Executive Order 12898 (59 FR 7629, February 16, 1994), because it does not affect the level of protection provided to human health or the environment. As previously stated, the EPA expects thatthat few, if any, coal-fired EGUs would be affected by this action.

## L. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a “major rule” as defined by 5 U.S.C. 804(2).











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1. Executive Order 13783, Section 1(c), 82 FR 16093. [↑](#footnote-ref-2)
2. Standards developed under the NSPS program must, by statutory requirement, be reviewed, at least, every 8 years. [↑](#footnote-ref-4)
3. *See* “List of Categories of Stationary Sources,” 36 FR 5931 (March 31, 1971) (listing source category); “Standards of Performance for New Stationary Sources,” 36 FR 24376 (December 31, 1971) (promulgating NSPS for source category). [↑](#footnote-ref-12)
4. *See* “Standards of Performance for New Stationary Sources; Gas Turbines,” 44 FR 52792 (September 10, 1979) (listing and promulgating NSPS for source category). [↑](#footnote-ref-13)
5. *See* “Priority List and Additions to the List of Categories of Stationary Sources,” 49 FR 49222 (August 21, 1979) (listing source category); “Standards of Performance for New Stationary Sources; Equipment Leaks of VOC From Onshore Natural Gas Processing Plants,” 50 FR 26124 (June 23, 1985) and "Standards of Performance for New Stationary Sources; Onshore Natural Gas Processing SO2 Emissions,” 50 FR 40160 (October 1, 1985) (promulgating standards of performance).  [↑](#footnote-ref-14)
6. Some commenters on the 2018 Proposal also said that, in the 2009 Endangerment Finding, the EPA specifically defined air pollution, as referred to in section 202(a) of the CAA, to be the mix of six well-mixed, long-lived, and directly emitted GHGs: CO2, CH4, N2O, HFCs, PFCs, and SF6. 74 FR 66497. They commented that the EPA needs to make, but has never made, a separate finding that CO2 alone is reasonably anticipated to endanger the public health or welfare. The Agency disagrees with commenters. The air pollutant that the 2015 Rule regulates is GHG, and that air pollutant contributes to the same GHG air pollution that was addressed by the Endangerment Finding. The standards of performance adopted in the 2015 Rule take the form of an emission limitation on only one constituent gas of this air pollutant, CO2. *See* 40 CFR 60.5515(a) (“The pollutants regulated by this subpart are greenhouse gases. The greenhouse gas standard in this subpart is in the form of a limitation on emission of carbon dioxide.”). This is reasonable, given that CO2 is the constituent gas emitted in the largest volume by the source category and for which there are available controls that are technically feasible and cost effective. There is no requirement that standards of performance address each component of an air pollutant. CAA section 111(b)(1)(B) requires the EPA to establish "standards of performance" for listed source categories, and the definition of "standard of performance" in CAA section 111(a)(1) does not specify which air pollutants must be controlled. Moreover, as the EPA noted in the 2015 Rule, the information considered in the 2009 Endangerment Finding and its supporting record, together with additional discussion of GHG impacts in the 2015 Rule, makes clear that GHG air pollution may reasonably be anticipated to endanger public health or welfare. *See* 80 FR 64517, 64530 and 31. Because the 2015 Rule followed the same approach as in the 2009 findings and regulated the same pollutant as contributing to the same air pollution (to reiterate, both the air pollutant and the air pollution are GHG as the group of six well-mixed gases, including CO2), it was not necessary to evaluate CO2 separately. The EPA took the same position in the 2016 Oil & Gas Rule in response to a similar comment concerning CH4. *See* 81 FR 35843. [↑](#footnote-ref-15)
7. Comments by American Electric Power for Docket ID No. EPA-HQ-OAR-2013-0495, p. 19 (May 8, 2014), attached to Comments by American Electric Power for Docket ID No. EPA-HQ-OAR-2013-0495 (March 8, 2019). [↑](#footnote-ref-16)
8. H. Damon Matthews, Nathan P. Gillett, Peter A. Stott & Kirsten Zickfeld, The Proportionality of Global Warming to Cumulative Carbon Emissions. Nature 459, 829-832 (2009), available at *https://www.nature.com/articles/nature08047*. [↑](#footnote-ref-17)
9. The EPA recognizes that in the 2016 Oil & Gas Rule, it determined that GHG emissions from the oil and natural gas source category contribute significantly to dangerous air pollution, in part, on the grounds that those emissions exceeded the total amount of emissions from various foreign countries. 81 FR 35824, 35840 (June 3, 2016). The EPA believes that its current approach of identifying a threshold for significance based on a percentage of U.S. emissions is better reasoned than the 2016 Oil & Gas Rule’s approach of drawing comparisons to the absolute emissions of other countries. [↑](#footnote-ref-18)
10. The EPA does not currently have a comprehensive inventory of the U.S. GHG emissions for all of the NSPS source categories. For the EPA to make determinations of significance for a source category, a more comprehensive emissions profile of a source category should be used. The EPA will make determinations of significance for other source categories in the future. [↑](#footnote-ref-19)
11. *See* 79 FR 34960 and 80 FR 64510. [↑](#footnote-ref-20)
12. Note that one of those “next three largest” source categories is oil and natural gas which the EPA found in the recently finalized policy package that regulation of GHGs from this source category is unnecessary as it is currently being controlled by regulation of volatile organic compounds. See 85 FR 57018, 57030 (Sept. 14, 2020).. [↑](#footnote-ref-21)
13. Although there is no source category other than EGUs above the proposed 3% threshold, because the threshold is a percentage and as previously described, other source categories may move into this tier as overall GHG emissions decrease and other source category emissions increase. [↑](#footnote-ref-22)
14. If U.S. production shifted overseas to a jurisdiction that has laxer environmental regulations, for a global pollutant such as mercury or GHGs, there could be both increased local environmental and health impacts at the new overseas location and domestic impacts to the U.S. resulting from the increased U.S. GHG emissions. [↑](#footnote-ref-23)
15. For this purpose, EGUs include the affected sources in the combined source category for boilers and turbines. In the 2015 Rule, the EPA “combine[d] the two categories of EGUs—steam generators and combustion turbines—into a single category of fossil fuel-fired EGUs for purposes of promulgating standards of performance for CO2 emissions.” 80 FR 64529 (2015 Rule). [↑](#footnote-ref-24)
16. *See* Table 3-9, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018, Report 430-R-20-002, April 13, 2020, *https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2018*. [↑](#footnote-ref-25)
17. The global warming potential (GWP) of a greenhouse gas is defined as the ratio of the accumulated radiative forcing within a specific time horizon relative to that of the reference gas CO2. Total GHG emissions are the GWP-weighted emissions of all GHG emissions and reported in million metric tons of CO2 equivalent (MMT CO2e.). [↑](#footnote-ref-26)
18. See Table 3-9, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018, Report 430-R-20-002, April 13, 2020, *https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2018*. [↑](#footnote-ref-27)
19. In 2016, worldwide GHG emissions were estimated to have been 49.4 gigaton (Gt) CO2e. The GHG emissions of China, India, Russia, and Indonesia are 11,577, 3,235, 2,391, and 2,229 MMT CO2e respectively. *https://www.wri.org/blog/2020/02/greenhouse-gas-emissions-by-country-sector*. [↑](#footnote-ref-28)
20. According to Table 8 of the Annual Energy Outlook (AEO) 2020, while coal fired generation will decline between 2019 and 2025 from 959 billion kWh to 709 billion kWh, generation from coal-fired EGUs is projected to subsequently remain relatively steady through 2050. [↑](#footnote-ref-29)
21. According to Table 8 of the AEO 2020, natural gas fired generation is projected to increase from 1,322 billion kWh to 1,629 billion kWh. [↑](#footnote-ref-30)
22. U.S. EGU emissions from the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018, Report 430-R-20-002, April 13, 2020, *https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2018*. Worldwide EGU emissions from the International Energy Agency estimates IEA (2020), CO2 Emissions from Fuel Combustion*, https://www.iea.org/subscribe-to-data-services/co2-emissions-statistics*. [↑](#footnote-ref-31)
23. Fossil fuel-fired EGUs also include combustion turbines, but the EPA is not promulgating any changes to standards for those types of sources in this rulemaking. [↑](#footnote-ref-145)
24. Fossil fuel-fired utility steam generating units (*i.e.*, boilers) are most often operated using coal as the primary fuel. However, some utility boilers use natural gas and/or fuel oil as the primary fuel. [↑](#footnote-ref-146)