

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units)
Docket No. EPA-HQ-OAR-2013-0495)
Via regulations.gov)
May 9, 2014)

Thank you for accepting these comments on the EPA's proposed Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units ("EGU NSPS," or "GHG NSPS"), 79 Fed. Reg. 1430 (Jan. 8, 2014). The Sierra Club is the oldest and largest grassroots environmental group, with over 1.2 million members and supporters. The Sierra Club has joined with other environmental groups in developing a detailed and comprehensive set of comments ("Joint Environmental Group Comments"). This comment highlights and elaborates on certain issues addressed in the Joint Environmental Group Comments and also discusses some issues that those comments did not address.

The Sierra Club would also like to take this opportunity to recognize and thank the staff at the EPA and other Federal agencies for their extraordinary efforts to date and in the future on this important and complex undertaking. The Sierra Club wholeheartedly supports the efforts of the Administration and the EPA to address emissions from electric power producers that are this country's largest source of the greenhouse gas pollution that is currently damaging our planet and threatening to inflict more damage in the future. We will not repeat the fuller discussion of the compelling need to address climate change that appears in the Joint Environmental Group Comments, but note and applaud the Administration's support of the 2014 Climate Action Assessment¹ which finds:

"Climate change, once considered an issue for a distant future, has moved firmly into the present.

* * * *

What is new over the last decade is that we know with increasing certainty that climate change is happening now. While scientists continue to refine projections of the future, observations unequivocally

¹ The National Climate Assessment summarizes the impacts of climate change on the United States, now and in the future. A team of more than 300 experts guided by a 60-member Federal Advisory Committee produced the report, which was extensively reviewed by the public and experts, including federal agencies and a panel of the National Academy of Sciences. Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: Climate Change Impacts in the United States: The Third National Climate Assessment (U.S. Global Change Research Program, 2014), available at <http://nca2014.globalchange.gov/downloads> at <http://nca2014.globalchange.gov/highlights/overview/overview>

show that climate is changing and that the warming of the past 50 years is primarily due to human-induced emissions of heat-trapping gases. These emissions come mainly from burning coal, oil, and gas, with additional contributions from forest clearing and some agricultural practices.

* * * *

Global climate is projected to continue to change over this century and beyond, but there is still time to act to limit the amount of change and the extent of damaging impacts.”

2014 National Climate Assessment, Introduction

The Sierra Club commends the Administration for its announced intention to act to the full extent of its authority under the Clean Air Act (“CAA”) and other statutes to begin to address the critically important issue of climate change. We believe that the EPA has the authority under the CAA to require meaningful reductions in greenhouse gas emissions from all new and existing fossil fuel-fired power plants.

Coal-Fired Power Plants

The Sierra Club believes that EPA is justified in setting a stringent standard governing CO₂ emissions from coal-fired power plants based on either carbon capture and storage (“CCS”) or highly efficient combined cycle gas turbine (“CCGT”) technology as the best system of emission reduction (“BSER”). The Sierra Club joined with other environmental groups to support EPA’s 2012 proposal to establish a fuel-neutral standard for baseload and intermediate-load power plants based on efficient CCGT technology, in comments on that proposal.² We continue to support a CCGT-based standard and incorporate those comments by reference here.

We also agree that EPA may set a standard for coal-fired power plants based on CCS. CO₂ separation and capture technology has been demonstrated in the oil and gas sector for many years and the various demonstration and larger scale projects cited in the Joint Environmental Group comments and in EPA’s record show that the technology is transferrable. Under applicable law EPA may rely on that prior experience in a forward-looking determination of the best system of emission reductions under section 111(b) of the CAA for new coal-fired

² See Sierra Club *et al.*, Joint Environmental Comments (Corrected), EPA-HQ-OAR-2011-0660-10887 (July 9, 2012), at 13-23, 33-61, *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2011-0660-10887>, and attached as Exhibit 67 to the comments submitted by the Joint Environmental Commenters to [this](#) Docket No. EPA-HQ-OAR-2013-0495

power plants, including new Integrated Gasification and Combined Cycle (“IGCC”) plants that use gaseous fuel derived from coal. Although the use of CCS technology will incur some additional cost at the individual unit, given the projected number of new coal plants that would be built, with or without promulgation of the regulation, the CCS requirement will not have a significant impact on electricity rates, either regionally or nationally. EPA is correct in its determination that, under the CAA, the assessment of cost impacts is to be made on a sector-wide basis, rather than on an individual plant basis.

While the Sierra Club agrees that CO₂ injection into geologic formations is technically feasible, we also agree with EPA that far more work needs to be done to ensure that the injected CO₂ will remain sequestered for geologic time frames and will not cause or contribute to unintended adverse consequences. Given the risks posed by climate disruption and the potential that CCS may prove to have an important role in addressing those risks, EPA’s decision to move forward with a CCS requirement is justified. In light of that decision, EPA must work with the appropriate federal, state and local authorities to develop a better technical understanding of the risks, and develop definitive site characterization, monitoring and remediation protocols and a comprehensive regulatory scheme for geologic sequestration.

The proposed rule considers the availability of enhanced oil recovery (“EOR”) as an option for sequestering CO₂ recovered from power plants.³ As the rule itself explains, EOR that uses CO₂, also known as “CO₂-EOR,” involves injecting CO₂ into a mature oil field in order to mobilize any remaining oil and make it available for recovery. The Sierra Club does not endorse the practice of EOR and is concerned that CCS could generate low cost CO₂ that would increase the production and use of oil globally. Oil, of course, is a carbon-rich fuel which is refined into combustible products that also emit CO₂. EPA should therefore evaluate the CO₂ emissions associated with the entire life cycle of power generation and downstream processing of the oil produced through recovery to understand whether these additional emissions would offset the reductions targeted under the proposed rule.⁴

In the proposed rule, EPA refers to a study by the Texas Bureau of Economic Geology that assessed CO₂ leakage at the SACROC field in the Permian Basin based on extensive groundwater sampling.⁵ Jaramillo et al. (2009) assessed the net life cycle emissions for SACROC and other projects.⁶ Using an assumption that the CO₂ used in the projects analyzed was produced at an IGCC plant that used bituminous coal and that captured 90 percent of the CO₂ emissions through a water shift reactor, these authors calculated the upstream GHG emissions associated with the coal life cycle from coal mining, processing, and transport, as well as the

³ 79 Fed. Reg. at 1473-1474; *see also* RIA, at 5-50—5.51.

⁴ *See* Center for Biological Diversity, *Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units (Proposed Rule) (Comments)*, Docket No. EPA-HQ-OAR-2013-0495.

⁵ 79 Fed. Reg. at 1475.

⁶ Jaramillo et al., *Life Cycle Inventory of CO₂ in an Enhanced Oil Recovery System*, *Environ. Sci. Technol.* 2009, 43, 8027-8032 (2009), attached as Exhibit 1.

GHG emissions from the production, transport, and refining of the crude oil produced, and from the transportation of petroleum products⁷, as shown in Figure 1 below:

Fig. 1. GHG Emissions from Coal Life Cycle and Oil Production in EOR Projects

TABLE 2. GHG Emissions from Coal Upstream, Coal Power Plant, and CO₂ Transport Associated with the Production of Injected CO₂

process	case				
	Northeast Purdy Unit	SACROC Unit, Kelly Snyder Field	Ford Geraldine Unit	Joffe Viking Unit	Weyburn Unit
electricity ^a (million MWh)	7.0	99.7	2.7	4.1	22.7
CO ₂ from coal power plant (million metric tons CO ₂ e)	6.9	97.1	2.6	4.0	22.1
power plant upstream emissions (million metric tons CO ₂ e)	0.4	5.5	0.15	0.23	1.25
CO ₂ transport (million metric tons CO ₂ e)	0.03	0.41	0.01	0.02	0.09

^a The electricity attributed to the CO₂-EOR project is calculated based on the amount of CO₂ purchased.

TABLE 3. GHG Emissions from Oil Production, Transport, Refining, and Combustion

case	crude oil production emissions (million metric tons CO ₂ e)	crude oil transport emissions (million metric tons CO ₂ e)	refinery emissions (million metric tons of CO ₂ e)	petroleum product combustion emissions (million metric tons of CO ₂ e)
Northeast Purdy Unit	2.03	0.09	1.80	14.2
SACROC Unit, Kelly Snyder Field	22.7	0.98	20.1	159
Ford Geraldine Unit	0.73	0.03	0.65	5.12
Joffe Viking Unit	1.30	0.05	1.15	9.07
Weyburn Unit	7.35	0.32	6.51	51.2

Source: Jaramillo et al. (2009)

The study found that the net life cycle GHG emissions for each project, including the life cycle of the electricity generated at the coal plant, the transport of the CO₂ from the power plant to the field, the oil extraction, the transport of the crude oil produced, the crude oil refining, and the combustion of the refined petroleum products was actually larger than the CO₂ injected and stored in the reservoirs.⁸ In particular, the SACROC project had the largest net emissions, exceeding 300 million metric tons of CO₂e.⁹ In its evaluation of the impact of using EOR for CCS, EPA should consider this and other analyses that do not draw boundaries that exclude the emissions associated with the full life cycle of power generation and oil production and processing. In addition, while permanent sequestration may be feasible in formations used for EOR, the performance of the oil and gas sector in fracking activities over the past few years and the BP Macondo oil well blowout do not provide a basis for a high degree of confidence that what may be feasible will actually occur in practice.

We recognize that CO₂ injection for EOR purposes is lawful and outside the scope of the proposed regulation. The limited use of CCS-generated CO₂ for EOR purposes that is currently

⁷ *Id.* at 8029.

⁸ *Id.* at 8030.

⁹ *Id.*

forecast may help demonstrate the safety and efficacy of site characterization and sequestration protocols for a broader application of geological storage that does not involve EOR, as part of a long term climate strategy.

Natural Gas-Fired Power Plants

EPA has proposed to find that efficient combined cycle gas turbine (“CCGT”) technology is BSER for gas fired combustion turbines (CT), including CCGT. We note that carbon capture and sequestration (“CCS”) is technically feasible at this time for all electric generating units (“EGUs”), including gas-fired plants regulated under 40 C.F.R. Pt. 60, Subpart KKKK. However, the Energy Information Agency (“EIA”) projects that an additional 23.9 GW of as-yet- unplanned natural gas-fired capacity are projected to come on line by 2020.¹⁰ Requiring CCS at all new gas-fired generating facilities immediately might prove challenging for the testing, permitting, monitoring and implementation activities that would need to occur in a fairly short timeframe to develop adequate sequestration capacity. Furthermore, the economics of requiring CCS at gas plants at this time might discourage a transition to newer, more efficient gas-fired units in favor of maintaining older, less efficient fossil fuel-fired plants.

EPA has recognized the need to advance the understanding of various aspects of geologic sequestration as the country moves forward with implementation of CCS for the electricity generation sector and has determined that the most prudent course of action is to phase in its implementation by establishing a uniform national standard for coal-fired EGUs, but not for gas-fired units, based on CCS as BSER. While we recognize the value of phasing in CCS, we disagree with a number of the agency’s technical justifications for its conclusion that the standards for gas plants should not be based on CCS. In fact, these technologies are now demonstrated and even commercially available for gas plants.

It may be more manageable to designate CCS as BSER for plants regulated under subpart Da in this rulemaking, and defer until the subsequent NSPS revision whether CCS is BSER for subpart KKKK sources. However, we strongly urge EPA to revisit this question during the next phase of NSPS revisions. At that time, it should consider the actual, on-the-ground experience of CCS deployment, particularly at new subpart KKKK facilities for which CCS has been determined to be the best system of emissions reduction (“BACT”) under the Prevention of Significant Deterioration (“PSD”) program, 42 U.S.C. §§ 7470-7479, in the intervening years. The case-by-case analysis of BACT is a reasonable and productive way to introduce new technology in an industrial category without creating the economic and environmental problems EPA has identified.

¹⁰ EIA, Annual Energy Outlook 2014 (May 2014), at Table A9, *available at* <http://www.eia.gov/forecasts/AEO/>.

Thus, to the extent that the factors discussed above support EPA's determination that CCS is not the best system of emission reduction ("BSER") for gas-fired EGUs at this time, they do not preclude a finding that it should be the basis for BACT determinations for specific new plants. We are concerned that EPA's rationale for rejecting CCS as CCGT, which contains technical inaccuracies and is overly broad, may be relied on by sources and permitting authorities as an excuse to reject CCS as BACT in all future permits. We therefore ask EPA to correct those inaccuracies in this record.

We believe that EPA should establish performance standards for gas plants based on highly efficient CCGT technology. Unfortunately, EPA has not proposed to adopt as BSER the most efficient technologies employed within the CCGT category. While EPA proposes partial CCS on *highly efficient* coal-fired units as BSER, the agency proposes only that "*efficient*" CCGT be considered BSER for gas-fired units. Due to gaps in the proposed applicability provisions, EPA's proposal would effectively exempt almost all CTs so that as a practical matter the regulated subcategory is just CCGTs. EPA then proposes an emission limit for new sources of that almost all (96 percent) of existing CCGTs built since 2000 and the majority of all existing CCGTs in service have met. In our view, such a lenient limit cannot be reflective of the best system of emission reductions that can be found for the subcategory.

The EPA has proposed a limit of 1,000 lb CO₂/MWh for larger CCGTs and 1,100 lb CO₂/MWh for smaller CCGTs, to be determined on a gross electrical output basis. The Sierra Club along with Joint Environmental Commenters has conducted a detailed review of years of emission data maintained by the EPA and DOE and of design specification published by manufacturers and reported in trade publications. Based on this analysis, which is provided in detail in the Joint Environmental Group comments, we have recommended a set of emission limits based on the operational characteristics of existing units in different service environments. Our recommended limits are based on the fact that where a unit operates less than a few hours per day, emissions during startup, or those associated with warm idle can result in situations where CTs and fast start CCGTs are more efficient, and hence lower CO₂ emitting, than CCGTs designed for base load applications. The Sierra Club and Joint Environmental Commenters recommended limits are (on a net output basis) 825 lbs CO₂/MWh for baseload units, 875 lbs CO₂/MWh for intermediate and load-following units that operate less than 4,000 hours per year, and 1,100 lbs CO₂/MWh for peaking units that operate less than 1,200 hours per year.

We have examined the cost implications of our proposed limits. Published pricing data shows no significant upfront cost difference between more efficient and less efficient CCGTs or between more efficient and less efficient CTs within the same size range. Since operating costs are lower at more efficient units there is no cost to the industry, or for that matter to individual units, that can be assigned to the emission rates we have proposed, and indeed, plant operators would likely recognize cost savings over the long run.

In reviewing the proposed NSPS we are mindful of the relationship between the NSPS under 111(b) and the forthcoming guidelines for existing sources that the EPA will issue in June

of 2015 under section 111(d). As a legal matter regulation under section 111(b) is a predicate for the 111(d) guidelines that will follow for existing sources. Practical considerations also come into play. In the Joint Environmental Comments we provide emissions data for existing CCGTs and CTs that illustrate the potential for efficiency improvements at existing units through better maintenance and hardware upgrades. However, the EPA may find it difficult to justify a requirement for efficiency improvements at the large majority of existing units that would already meet the NSPS. Additionally, the EPA proposal would exempt large numbers of CTs and CCGTs from the NSPS, which could affect the manner in which the 111(d) guidelines address existing CT and CCGT units.

The Sierra Club is also mindful that there is no single bullet that will, by itself, reduce global CO₂ emissions to acceptable levels. In order to be successful we and the EPA need to pay attention to detail and cannot forego the opportunity to reduce hundreds of thousands or millions of tons of CO₂ emissions simply because those opportunities don't generate reductions of *hundreds* of millions of tons by themselves. One example of an EPA's failure to pay sufficient attention to details can be found in the agency's proposal to establish the new emission limitations to two significant digits where 1,000 lbs/MWh is represented as 1.0×10^3 lb/MWh and sources are allowed to round down to comply with the limit. This proposal would relax the NSPS by an additional 1-5 percent.¹¹ Sierra Club anticipates that differences in whether existing sources can reduce emissions by these percentages will be highly controversial, and yet the EPA proposes this outcome without analysis of its impact.

A fuller discussion of additional exemptions and gaps in the proposal and their impact on new and existing source regulation is provided in the Joint Environmental Group Comments. The major exemptions are:

- EPA's proposed rule amends the relevant sections of existing rules so that an electric utility steam generating unit does not qualify as a regulated EGU unless it actually supplies more than one-third of its potential electric output and more than 219,000 MWh (net) to the grid on an annual basis. This would exempt peaking units and many load following units including the new fast start CCGTs designed to support renewables.
- EPA further proposes to amend subpart KKKK such that any stationary combustion turbine (again, whether simple cycle or combined cycle) would not be subject to regulation unless it combusts over 90% natural gas on a three-year rolling average basis. A unit that co-fires more than 10 percent of some other fuel, such as oil, blast furnace gas, landfill methane, or syngas from coal,¹² would not be subject to any regulation.

¹¹ Depending on whether EPA allows sources to apply the rounding to the test results expressed in Imperial (English) or metric units.

¹² Unless and only so long as that unit burned more than 50 percent syngas.

- Under the proposed rule, a source is not a regulated EGU unless it actually combusts more than 10 percent fossil fuel during three consecutive calendar years on a heat-input basis. This proposal would permit sources large enough to require NO_x and/or SO₂ emission limitations immediately upon commencement of operation to defer the applicability of the CO₂ emission limits for three years until the first average can be calculated, with the result that the standard may or may not apply in subsequent years, depending on the use of the facility in the relevant averaging period.
- Under the proposal a unit is not an IGCC subject to the obligation to employ CCS unless it is designed to combust 50 percent or more coal-derived fuel.
- EPA proposes to allow sources with emissions over the applicable limit to “round down” to establish compliance. Combined with the proposed expression of the emission limit to two significant digits rather than three, this could allow a source whose emissions were 1-5 percent higher than the applicable limit to claim compliance. (For example, an emission rate of 1049.99 would round down to 1000 and comply with the proposed limit if expressed in U.S. units. If the determination is in metric units the effect would be smaller)

These revisions are problematic for a number of reasons. Under EPA’s proposal, a source would no longer be subject to the NSPS if it fell below the threshold for any of the applicability metrics that are calculated on a three-year (or, in some cases, annual) basis. This would create a situation in which no one would know whether a particular plant will be subject to the standards at all until years after the emissions had already occurred. Furthermore, because a number of the proposed applicability provisions apply on a rolling basis, plants operating near the threshold could move in and out of the regulatory system from one month to the next. Not only would this create significant practical problems for compliance and enforcement purposes, it would add unnecessary complication to Title V¹³ and PSD permitting as well, since authorities would not know whether certain sources would or would not be subject to the NSPS until well after those plants had been operating for several years, and would not have a proper basis to establish a BACT floor for those units.

Table One. Impact of proposed EPA exemptions and limiting definitions

Exemption	Impact on New Sources	Impact on Existing Sources
Operate less than 2920 hours	all CTs and many load following CCGT	almost all CTs, ~ 40 % of CCGTs and ~ 20% of coal-fired EGU may not be covered
Combust less than 90% natural gas	Not subject to any regulation	Not covered?
IGCC less than	No CCS requirement; not	Not covered?

¹³ Title V refers to the CAA’s operating permit program and state-level analogs. See 42 U.S.C. §§ 7661-7661f.

50% syngas	subject to any regulation; allows unregulated combustion of large amounts of coal; undermines partial CCS obligation	
Co-located electricity	Allows CCS sources to credit electricity from unregulated sources used to power the gasifier and compressor when determining compliance. Lesser impact on other sources.	Would allow compliance by measures not factored into the determination of the standard
Significant digits/rounding policy	Allows emissions 1-5 percent higher than BSER	May undercuts importance of small percentage improvements from existing units

The preceding list of concerns and objections is significant. However, some of the exemptions and gaps in the proposal derive from legacy provisions that may have made sense in the context of criteria pollutants or that may not have been seriously examined in years. We remain hopeful that the agency will analyze and address the adverse impact on of the provisions we have identified.

The Sierra Club looks forward to working with the EPA and other interested parties in a constructive manner to ensure the best possible outcome in these critical rules.

Respectfully submitted,

/Joanne Spalding/

Joanne Spalding
Andres Restrepo
Alejandra Núñez
Sierra Club
85 Second St., 2nd Fl.
San Francisco, CA 94105
joanne.spalding@sierraclub.org

ATTACHMENT A: ADDITIONAL TECHNICAL COMMENTS

Grid Emergencies

EPA has requested comment on whether it should exclude electricity generated during a grid emergency when calculating a source's net electricity sales for rule applicability purposes. *See* 79 Fed. Reg. at 1497. As discussed in the Joint Environmental Comments which Sierra Club has submitted along with a number of other organizations, section 111 emission standards apply continuously. Accordingly, Sierra Club contends that these standards apply during grid emergencies, and that EPA may not, for any purpose under the Clean Air Act, suspend their application during these periods.

The proposed exclusion is also unnecessary, as EPA already possesses an effective mechanism to address this issue while avoiding conflicting outcomes and unintended consequences. The EPA Assistant Administrator for Enforcement is delegated the authority on behalf of the United States to advise a source that the government would not sue the source for taking certain actions during an emergency¹⁴. This authority has been used in a variety of circumstances, from blizzards and refinery fires that interrupt fuel supplies to tankers collisions with bridges. From May 2000 to June 2001, the state of California suffered severe electricity supply shortages resulting from the confluence of massive price manipulations by electricity wholesalers (including Enron) and a severe drought. While the illegal causes of the shortage were not known at the time, a number of available units with emergency response capacity initially faced constraints on operation due to Clean Air Act limitations, including annual hourly operating limits needed to avoid application of new source requirements. Those constraints were addressed promptly and on a case-by-case basis by EPA enforcement authorities working with state and local officials by way of "enforcement discretion" letters.

The enforcement discretion approach has several significant advantages. First, it has a proven track record of providing prompt, flexible relief that is tailored to the needs of the particular emergency and the communities being served, yet is only utilized where the relief will address the particular emergency at hand. Under the EPA's current proposal, a source would obtain an exemption for electricity generated during grid emergency regardless of whether the exemption actually served to respond to that emergency. Second, the enforcement discretion approach is consistent with Clean Air Act's mandate that emission limits apply continuously and provides safeguards against abuse. An enforcement letter does not assert that the actions identified in the letter are lawful, just that the United States will not sue if those actions are taken. Thus, if a state or local authority or a concerned citizen disagrees with the relief afforded by the enforcement discretion letter, that entity or person may bring an action to enforce the underlying requirement. And yet, because of the limited delegation of

¹⁴ *See, e.g.*, the EPA's 2011 enforcement discretion letter respecting compliance with the area source boiler rules, http://www.epa.gov/ttn/atw/boiler/area_source_nna_2012-03-13.pdf attached hereto as Exhibit 2.

enforcement authority and the care with which that authority has been exercised historically, we are aware of no scenarios in which a source was found guilty of a violation for acts that were the subject of a federal enforcement discretion letter. This approach avoids the problem of the proposed exemption, which effectively delegates authority for Clean Air Act compliance to public utility commissions or independent system operators (“ISOs”) that may not have the authority or expertise to determine whether waiver of a one-year average limitation or annual cap on hours of operation is needed to respond to the emergency.

Moreover, the emergencies that the EPA mentions happen rarely and typically last for short periods. The EPA’s proposed applicability threshold would allow a source to operate at its full rated capacity for up to 2,920 hours per year without triggering NSPS, and the potential occurrence of grid emergencies represents a tiny fraction of this time.¹⁵ For example, in the rulemaking for stationary reciprocating internal combustion engines (“RICE”) under the National Emission Standards for Hazardous Air Pollutants program, EPA set 100 hours as the maximum limit for grid emergency operations for RICE sources. See 78 Fed. Reg. 6674 (Jan. 30, 2013). In practice, however, grid emergencies occur during far fewer hours per year. For example, between 2006 and 2013, the California ISO spent a cumulative total of 146 hours—less than one week’s time—operating under emergency operating conditions.¹⁶ Similarly, in the RICE rule, EPA noted that stakeholders had suggested that a 15-hour limit would “usually [be] adequate to cover the limited hours in which these engines are expected to be called upon” in a typical year. *Id.* at 6679. Even in the unlikely event that grid emergency operations might reach 100 hours in a single year, it would represent only a minor percentage of a source’s annual operating threshold, leaving an adequate margin for careful planning and compliance.

A broad exemption for grid emergencies is unnecessary even under the revised approach to peaking plants that is proposed in the Joint Environmental Comment letter referenced earlier. As proposed therein, generators that operate in a peaking capacity would be subject to a more lenient performance standard. Those sources would have to manage their operations to stay below an annual threshold, nominally in excess of 1,200 hours per year. In the unlikely event that a grid emergency would push such a plant over this threshold, the source could still obtain relief through an enforcement discretion letter if the situation warranted one.

As a precedent for the exclusion of emergency operation, EPA cites the example of a prior NSPS rulemaking in which the agency allowed an exemption for power plants ordered to

¹⁵ This figure is based upon EPA’s proposal to cover under its performance standards only those sources that supply one-third or more of their potential electric capacity and 219,000 MWh annually to the grid. See 79 Fed. Reg. at 1502 (proposed 40 C.F.R. § 60.46Da(a)(2)), 1506 (proposed 40 C.F.R. § 60.4305(c)(5)), 1511 (proposed 40 C.F.R. § 60.5509(a)(1)-(2)). Sierra Club opposes this metric for determining applicability, and instead supports an alternative approach that is described in the Joint Environmental Comment letter referenced above.

¹⁶ See California ISO, *Grid History – 1998 to Present* (Revised Jan. 2, 2014), at 3-10, available at <http://www.caiso.com/outlook/SystemStatus.html#AWE>.

operate during an emergency while a flue gas desulfurization (“FGD”) system is inoperable. 79 Fed. Reg. at 1497.¹⁷ Even assuming, that such an exemption was within EPA’s authority when issued, the example is inapposite. In contrast to a power plant with a malfunctioning FGD system and a short term (e.g., 30-day rolling average) emission limit, there would be no certain violation of the emission limits on CO₂ pollution (which are averaged over a 12- or 84-month period according to the current NSPS proposal) if the source operates during an emergency. At most, a source ordered to operate would need to maximize its efficiency or alter its quantity of operation hours over the remainder of the averaging period.¹⁸ Therefore, EPA must reverse course and include *all* generation in its applicability and compliance determinations—including generation that occurs during a grid emergency.

Standard for Biomass and Bioenergy

As described in the Joint Environmental Comments, Sierra Club endorses EPA’s 10 percent threshold described above. However, EPA must resolve the ongoing question of which biomass fuels should qualify as renewable resources. Research continues to accumulate demonstrating that the climate-related benefits of many types of bioenergy have been overestimated. It is therefore critical that EPA work toward a sound and comprehensive determination of the true climate impacts of different types of bioenergy. In addition, EPA must promptly issue GHG performance standards for biofuel-fired electric utility boilers that combust less than 10% of their heat input from fossil fuels. Otherwise, these sources will be permitted to emit unlimited amounts of CO₂ into the atmosphere, regardless of whether the feedstocks absorb enough CO₂ on a lifecycle basis to produce any meaningful climate benefits.

Rounding

The EPA’s guidance on standard setting adopts ASTM standard rounding protocols – carry at least five significant digits throughout all intermediate calculations, and employ ASTM Procedure E 380 (round down if less than 5; round up if equal to greater than 5) for the final calculation.¹⁹ This policy also provides that the EPA shall specify emission limitations in metric units and shall employ either two or three significant digits in establishing limitations. The EPA has included metric unit limits, but largely based its discussion on only U.S. system units. The EPA has also proposed to establish limitations based on only two significant digits. Expressed in terms of significant digits, the proposed limits would be 5.0×10^2 kg/MWh or 1.0×10^3 lb/MWh.

¹⁷ Importantly, the emergency operation exemption cited is far more circumspect than the very broad exemption proposed by EPA.

¹⁸ We note that the source is allowed to charge for electricity provided during grid emergencies. Accordingly, there is no predictable loss in revenue if the source operates during an emergency rather than some other time during the year.

¹⁹ See William Laxton, OAQPS, and John Seitz, OAQPS, , “*Memorandum: Performance Test Calculation Guidelines*”, December, 1996

Under applicable rounding rules, however, a violation would not occur unless the annual average was greater than 5.0499×10^2 kg/MWh or 1.0499×10^3 lb/MWh. Thus, the EPA proposed calculation procedures further relax the already lenient standards by one to five percent. These differences are significant when compared to the difference in performance between the best performing CCGTs and mediocre units that are not BSER and are also significant when compared to the 20 percent reduction in emissions associated with the selection of partial CCS as BSER for coal-fired units.

The EPA provides no basis or justification for its proposed use of two significant digits in this context. No additional cost or hardship can be associated with truncating a calculation that has been carried to five significant digits throughout to three significant digits in the final step, rather than two. Prior to the 1996 memorandum, the EPA policy had provided that a violation was established if the result of the calculation were higher than the standard. The EPA should either abandon the 1996 memorandum in its entirety and specify that any level higher than the applicable limit is a violation, or minimize the impact of this policy by specifying that the standards are in metric units and are established to three significant digits.

Compliance with standards and maintenance requirements

The EPA proposes to exempt sources subject to these rules from §60.11 of the General Provisions, *Compliance with standards and maintenance requirements*. For the most part, §60.11 addresses specific opacity provision that are not relevant here. However, this section also contains two provisions that are applicable and should be included or otherwise addressed. The first is a reference to the startup test procedures of 40 CFR §60.8. Joint Environmental Commenters have recommended that the EPA consider establishing a “new and clean, ISO” emission rate for CCGTs and a partial system test for CCS-equipped coal fired units.

Section 60.11 also includes the requirement that sources “maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.” This provision is an important part of any CO₂ emission control strategy as it ensures that operators maintain and operate new units as efficiently as practicable, rather than merely managing to the relatively lax proposed standards with long averaging times. The EPA provides no basis or rationale for its proposed exemption from this General Provision.