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# Comments on EPA's Proposed Carbon Pollution Standard for New Power Plants

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## Abstract

The U.S. Environmental Protection Agency's (EPA) proposed greenhouse gas (GHG) performance standards for power plants are an important step forward in regulating GHGs in terms of both their substantive impact and legal precedent. Nevertheless, we have some concerns with the proposal, which we discuss in the following comments submitted to the agency. The majority of our comments are directed to ways that EPA can increase certainty for the industry—reducing costs and, possibly, improving environmental outcomes. We highlight two specific areas of concern. First, the current proposal contributes to the significant uncertainty facing existing sources. Second, EPA's proposed averaging option for new facilities that will install carbon capture-and-storage (CCS) technology in the future, although intended to create a flexible pathway, unfortunately creates some new regulatory uncertainty. We also comment on EPA's decision to combine most coal and gas generators into a single source category. We believe this decision is legally valid and practically important, and that EPA should resist pressure to reconsider.

**Key Words:** greenhouse gas emissions, performance standards, new source review, carbon capture and storage technology, U.S. Environmental Protection Agency, uncertainty

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# Comments on EPA's proposed Carbon Pollution Standard for New Power Plants

Dallas Burtraw, Art Fraas, Karen Palmer, and Nathan Richardson*

## I. Introduction and Summary

The U.S. Environmental Protection Agency (EPA) deserves credit for its proposed new source performance standards (NSPS) for most fossil-fuel-powered electric generating facilities. In these comments we identify actual and potential problems with the current proposal, but it is nevertheless an important step. This is true both in terms of the proposal's substantive impact and its legal precedent. When finalized, the regulations will be the first at the national level to limit greenhouse gas (GHG) emissions from the largest group of emissions sources in the United States. EPA has broken new ground by using its powers over category definitions to create a new source category (TTTT), allowing uniform standard across fossil fuel types. Finally, it creates an inevitable path toward the first major performance standards for existing sources.

Nevertheless, we have some concerns with the proposal. Our past work on GHG regulation under the Clean Air Act (CAA) has generally advocated a flexible approach to performance standards, allowing emitters to average, bank, and trade their progress toward the standard. Our legal analysis indicates that such an approach is permissible under the statute,[1] and our economic research indicates it would be substantially more cost-effective.[2] However, EPA is currently only proposing standards for new sources. For a variety of reasons, a flexible or tradable standard covering new sources alone is probably impractical. We therefore do not advocate such an approach here.

A secondary and, in some ways, related goal is certainty for industry. The majority of the comments that follow describe ways that, we believe, EPA can increase certainty—reducing

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[1] See Gregory Wannier et al., Prevailing Academic View on Compliance Flexibility under §111 of the Clean Air Act, Discussion Paper 11-29 (Resources for the Future 2011), available at http://www.rff.org/Publications/Pages/PublicationDetails.aspx?PublicationID=21603.

[2] See Dallas Burtraw, Art Fraas, and Nathan Richardson, Tradable Standards for Clean Air Act Carbon Policy, 42 ELR 10338 (2012).

costs and, possibly, improving environmental outcomes. EPA claims that the proposed standards reduce uncertainty by clarifying the future regulatory environment for fossil power generation. This is true, albeit tautological—any new regulation increases certainty about what is permitted and what is not. It is therefore important to be more specific.

In the following comments, we identify ways that we believe EPA could further reduce regulatory uncertainty, and therefore increase the quantity and quality (long-term cost-effectiveness) of investment in the electricity sector. Some recommendations deal with sources of persistent uncertainty about the new source standards themselves, while others deal with uncertainty for existing sources (to which the proposed NSPS do not currently apply, but will be the subject of future regulations that will inevitably follow from the promulgation of this NSPS).

We highlight two specific areas of concern. First, the current proposal contributes to the significant uncertainty facing existing sources. These sources may be subject to NSPS or to New Source Review (NSR) if and when they undergo modifications, and the implications of the current proposal for either process are unclear. EPA could also do more to explain the pathway to future performance standards that will apply to existing sources on an ongoing basis—existing source performance standards (ESPS) under §111(d). Such standards will undoubtedly be influenced by, and could be linked with, standards for new sources.

Second, EPA's proposed averaging option for new facilities that will install carbon capture-and-storage (CCS) technology in the future, although intended to settle expectations by creating a flexible pathway, unfortunately creates some new regulatory uncertainty. The introduction of flexibility into CAA performance standards is welcome, but the long-term credibility of the option is questionable as currently designed. We suggest one way to address these concerns would be to introduce an alternative compliance payment mechanism, perhaps coupled with an escrow account that could be used to securitize future obligations to invest in control technologies under the averaging provision.

We also comment on one policy decision EPA has made in this proposal that has drawn criticism, but which we believe is correct and EPA should resist pressure to reconsider. The agency's decision to combine most coal and gas generators into a single source category with a uniform standard is almost undoubtedly legal, and a wise policy decision with important practical benefits.

## II. Uncertainty for Existing Sources

In this proposed rulemaking, EPA would provide significant certainty to builders of future new coal and gas power plants, albeit in the form of a strict CCS requirement for new coal. But substantial uncertainty exists for owners of existing power plants. This uncertainty has two sources. First, it is unclear how future §111 performance standards will apply to existing sources, either as a result of facility modifications or on an ongoing basis under §111(d) ESPS. Second, it is unclear what the implications of this rulemaking are for existing sources that may undergo NSR as a result of modifications.

### *A. Performance Standards for Existing Sources*

Existing sources may be subject to §111 performance standards under either of two circumstances. First, when a source undergoes modification or reconstruction, it becomes subject to NSPS. Second, existing sources are subject to §111(d) ESPS on an ongoing basis.

#### 1. Modified/Reconstructed Sources

§111 makes no distinction between modified and new sources—its definition of "new source" encompasses both.[3] In this proposed rulemaking, EPA has elected not to propose standards for modified or reconstructed sources, on the basis that the agency lacks sufficient information to do so. This creates uncertainty for existing sources that may wish to do modifications. Such sources will either have no GHG performance standards, or, under a strict interpretation of the definition of "new source" in §111, will have to comply with the standard for new sources (1,000 lbs $CO_2$e/MWh) despite EPA's open-ended commitment to issue specific modified-source standards.[4]

In practice, it is possible that few, if any sources, in category TTTT will undergo sufficient modification (much less reconstruction) to trigger NSPS. If so, then any ambiguity surrounding such standards is irrelevant, and EPA resources are better directed elsewhere. But it is hard to know—and harder to be sure—what facilities' future plans will be. Even if no facilities

[3] See CAA §111(a)(2), "[t]he term "new source" means any stationary source, the construction *or modification* of which is commenced after the publication of regulations. . . " (emphasis added).

[4] Indeed it is not clear whether EPA has authority under §111 to propose different standards for new and modified/reconstructed sources. No distinction is made between the categories in the statute. If necessary, EPA can create different source categories for new and modified sources by including a "constructed after" date in the definition of a source category.

trigger modified-source NSPS, it will be hard to know whether it is because of baseline trends or because of the costs/uncertainty of the NSPS itself. Strict regulation may lead to industry altering its behavior to avoid entering the regulation's area of effect. But EPA should not use this fact to justify leaving the regulation incomplete. If EPA believes that sources are unlikely to trigger NSPS via modifications, it should publicize the analysis that leads it to this conclusion. Even (and especially) if no such analysis exists, EPA should solicit outside research into this question, under a range of assumptions about technology and market change in the power sector.

There is also legal risk surrounding the traditional thresholds for triggering NSPS as a result of modifications. For example, under the pollution control provision of EPA's NSPS regulations, modifications made by existing sources for pollution control purposes have not been treated as modifications for NSPS purposes. But a similar interpretation has been rejected for NSR. As EPA notes:

> "It is important to note that at the same time that the EPA promulgated the pollution control provision in the EPA's regulations under CAA section 111, the EPA promulgated a similar provision in EPA's NSR regulations. The DC Circuit, in New York v. EPA, 413 F.3d 3, 40 (DC Cir. 2005), vacated the NSR pollution-control-project exemption. Because of the similarities between the NSR and the section 111 pollution control project regulatory provisions, the Court's vacatur of the NSR regulatory provision may call into question the continued validity of the section 111 regulatory provision. As a result, we are soliciting comment on whether this exemption from the definition of ''modification'' for pollution control projects, under 40 CFR 60.14(e)(5), continues to be valid or not, and what course of action, if any, would be appropriate for the EPA to take."[5]

If EPA's apparent suspicions are correct and the pollution control exception were challenged and rejected by the courts, many existing sources undergoing modification to comply with other rules would be forced to comply with GHG NSPS. The implications of this are unclear so long as EPA has not clarified its NSPS plans for modified sources. But, as noted above, a strict interpretation of the statute could lead to such sources being forced to comply with the proposed 1,000 lbs/MWh standard for new sources. This standard is not achievable by most existing sources in the TTTT category, including all coal generating plants. This risk, even if remote, further increases the uncertainty facing operators of existing plants.

[5] 77 FR 22421

EPA can resolve much of this uncertainty and should do so to the extent possible. First, the agency should openly state its prediction for how frequently TTTT sources would trigger NSPS based on modifications, so that this prediction—and the agency's de-prioritization of modified-source NSPS—can be evaluated. Second, the agency should announce when and whether it plans to issue modified- and reconstructed-source NSPS, and its legal basis for differentiating between these classes and newly constructed sources for NSPS purposes. Finally, the agency should consider defusing legal criticism of its decision to treat new and modified sources differently by including a "constructed after" date in the definition of source category TTTT.[6]

**2. Existing Sources**

As noted above, existing sources are subject to §111(d) ESPS on an ongoing basis, regardless of whether they undergo modification. ESPS are implemented by states under guidelines set by EPA through a process similar to that for state implementation plans under §110 of the Act—EPA must approve state standards and, if a state fails to act, impose federal standards. Once EPA has finalized §111(b) NSPS, it and states are required to regulate existing sources in the same category for pollutants not regulated elsewhere under the CAA (§110 or §112)—though no specific timetable for §111(d) is given.

When EPA does issue §111(d) guidelines, they will come in a separate rulemaking. It is not necessary for EPA to discuss its §111(d) plans in this proposal. But it would be helpful to do so. Currently, EPA discusses §111(d) standards only in the most general terms:

> "…The proposed rule will also serve as a necessary predicate for the regulation of existing sources within this source category under CAA section 111(d). In these ways, the proposed rule will contribute to the actions required to slow or reverse the accumulation of GHG concentrations in the atmosphere, which is necessary to protect against projected climate change impacts and risks."[7]

[6] Such a move would separate new and existing sources into different source categories, unquestionably allowing EPA to impose different standards on existing sources that undergo modification or reconstruction. Note that this would not mean that existing sources would not be subject to future ESPS or modification-triggered NSPS—EPA would presumably create an additional source category to cover TTTT sources built before the specified date.

[7] 77 FR 22430.

Operators of existing coal-fired plants face important control decisions in terms of meeting EPA's recently promulgated Cross-State Air Pollution Rule and Mercury and Air Toxics Standards. They will be required to make these decisions without knowing the GHG standards that apply to their plants. Will EPA adopt separate categories—the traditional approach—for coal-fired and gas-fired plants or (as in this proposal) adopt a combined source category with a likely more stringent GHG standard? (We believe EPA should stick with a single category—see Section 0 below). Will EPA allow trading or averaging among these sources? The more information available to these operators, and the sooner it is available, the better their decisions will be.

A more in-depth discussion of the agency's plan for existing sources is particularly valuable if EPA plans to allow any form of trading or averaging under §111(d). Legal analysis indicates that a wide range of such options are within EPA's §111 authority,[8] and economic analysis suggests that such an approach would be much more cost-effective than a traditional standard without trading.[9] Trading is probably not practical among new sources alone, so it is not surprising that EPA has not discussed this approach in the current proposal.

But once existing sources are subject to §111(d) ESPS, trading becomes very attractive. Furthermore, in such a system new sources that are able to do better than the applicable standard could be sellers of tradable credits. Including new sources in a tradable standard or other trading system therefore could provide incentives to replace inefficient and/or high-emissions existing coal sources with new, efficient natural gas generation.

EPA can and should discuss this integration between new and existing sources in a trading system in its rulemaking for new sources. Even if trading is not available until §111(d) standards are in place, discussing the possibility in this rulemaking would provide certainty to industry. EPA could go further by stating that new sources will be integrated into any §111(d) trading system. Doing so could incentivize early action—construction of efficient natural gas generation.

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[8] See Gregory Wannier et al., Prevailing Academic View on Compliance Flexibility under §111 of the Clean Air Act, Discussion Paper 11-29 (Resources for the Future 2011), available at http://www.rff.org/Publications/Pages/PublicationDetails.aspx?PublicationID=21603.

[9] See Dallas Burtraw, Anthony Paul, and Matthew Woerman, Retail Electricity Price Savings from Compliance Flexibility in GHG Standards for Stationary Sources, Discussion Paper 11-30 (Resources for the Future 2011), available at http://www.rff.org/Publications/Pages/PublicationDetails.aspx?PublicationID=21606.

### *B. New Source Review and Existing Sources*

EPA already administers a regulatory program for new and modified sources of air pollution—the NSR (or PSD—Prevention of Significant Deterioration) permitting program. Since 2010, this program has been applied to GHG emissions. New or modified facilities that emit more than a specified volume of GHGs must employ "best available control technology" (BACT). This determination is made on a case-by-case basis.

The proposed rule does not address the NSR review process for modification of an existing plant. Operators undertaking a modification—even a modification to address other environmental requirements—have no guidance on the extent natural gas options will be an integral part of the BACT review process.[10] The draft NSPS and the absence of any discussion on the shape of regulatory requirements for existing sources contribute to the continuing uncertainty facing existing plants.

The NSR review process—because of the burdensome nature of the review—has long been viewed as creating an important disincentive to projects that might otherwise improve efficiency. In general, we would expect existing sources to design their projects so as to avoid triggering an NSR review by avoiding any increase in emissions greater than 75,000 tons per year (the current threshold in the "Tailoring" rule).[11] Nevertheless, a final rule establishing §111(d) requirements for existing sources could also substantially settle expectations for the likely requirements associated with NSR review for any more substantial projects at existing plants since it could serve as the floor for BACT review.

## III. Averaging, CCS, and Credibility

The proposed NSPS specifies a maximum $CO_2$ emissions rate for new electric fossil fired steam boilers. Achieving the substantial reduction in $CO_2$ emission rates at coal plants required under the proposal would effectively require CCS technology. However, the high costs of carbon capture and the uncertainty surrounding the performance of the technology plus the largely

[10] As another possible outcome, EPA has already in some cases sought limits on the life of a plant through some of its consent decrees on NSR violations and (more recently) as part of BART(regional haze) decisions. So, the NSPS could serve as an impetus for such restrictions.

[11] The DC Circuit recently upheld the Tailoring Rule on standing grounds. If a different plaintiff (or Supreme Court review) allow the court to reach the merits of the rule, an adverse decision with respect to the 75,000 ton threshold in the tailoring rule would significantly tighten the applicability criteria for new source review of investment projects at existing fossil fuel-fired electricity generating plants.

undeveloped physical and regulatory infrastructure for carbon transport and storage will likely contribute to the reluctance of investors to make major investments in this technology. In the presence of a performance standard mandating this technology, investors can be expected to hold off on investing in new facilities and extend the lives of existing units at least until costs come down and experience with the new technology builds.

EPA's proposal anticipates the concern that CCS is not yet commercially mature by including in its proposed regulation an innovative provision to allow for 30-year emissions rate averaging. A new facility can either achieve the annual average emissions rate standard of 1,000 pounds $CO_2$ per MWh or it can emit at a higher 1,800 pounds $CO_2$ per MWh rate in the first 10 years and commit to reduce its emissions rate to 600 pounds $CO_2$ per MWh by year 11 so as to achieve an average emissions rate no greater than 1,000 lb/MWh over the first 30 years of operation.

This approach resembles the approach employed to a very different end: the phase-out of nuclear power in European countries that limited the total hours of operation for existing plants and gave industry the flexibility to achieve the phase out in a cost effective way. The disadvantage in both contexts is dynamic inconsistency; as the date of reckoning comes nearer, the incentive to revisit the commitment strengthens. Moreover, the costs are back loaded, meaning that they would not be felt until new investments were required, making policy reversal plausible. In fact, in every country where nuclear phase-outs were proposed there was substantial subsequent backsliding (until the Fukushima Daiichi accident in March 2011), and EPA's proposal for 30-year $CO_2$ emissions rate averaging might experience a similar fate.

In recent research we investigate the effect of flexibility as compared to an inflexible standard.[12] In an analytical framework we examine the incentives created under an inflexible (traditional) emissions rate performance standard and propose two alternatives that improve dynamic consistency by providing endogenous incentives for new investment.

The first alternative introduces an element of flexibility by allowing for an alternative compliance payment (ACP) in the form of an emissions surcharge for investments that fail to meet the maximum emission rate standard. The ACP that we analyze is not based on a

[12] Patino-Echeverri, Dalia, Dallas Burtraw and Karen L. Palmer. 2012. Flexible Mandates for Investment in New Technology, RFF Discussion Paper 12-14, March. http://www.rff.org/Publications/Pages/PublicationDetails.aspx?PublicationID=21833

(Pigouvian) estimate of the social cost of carbon but rather it is calibrated to provide an endogenous incentive to invest in new technology. In the first alternative we do not account for the use of revenues that accrue from the surcharge. In a second alternative we extend the ACP by proposing that revenue from the surcharge be held in an escrow account and used to offset some of the capital cost of later retrofit investment.

In our research, we use an analytical framework to demonstrate that the inflexible emissions rate standard can delay new investment and potentially increase cumulative emissions. An ACP for emissions above the emissions standard is predicted to lead to earlier investment than under the inflexible standard, with lower aggregate emissions and greater profits to investors than occurs under an inflexible standard. When ACP revenues are held in escrow and available to pay for part of the capital costs of retrofits, the model predicts investment should occur most quickly, aggregate emissions should be lowest, and profits to investors should be highest.

We test these conjectures in a case study for installation of CCS on new fossil-fired power plants. We do so using a simulation framework that combines national and regional level electricity market equilibria with the multi-stage optimization problem facing an individual first-mover investor in CCS in a specific power region of the United States over a 43-year horizon. The model examines the incentives for an individual investor choosing generation technology and timing of investment from among five technology options, with CCS installed initially or with subsequent retrofit with CCS. The decision is considered in twelve potential scenarios reflecting different projections for future natural gas prices and future national climate policies that introduce a price on $CO_2$ emissions.

Under perfect foresight about future climate policy and natural gas prices, we find an inflexible technology policy delays investment in new generating capacity in every scenario except one, consistent with hypotheses developed in the analytical framework. Second, we identify an ACP under a flexible policy that leads to investment in CCS at the same time or earlier as would occur under the inflexible standard. Further, the introduction of an escrow fund with the ACP leads to investment in CCS at the same time or earlier than without the fund; in one case, however, the operation of the CCS is delayed. Total cumulative emissions are always lower for the flexible policy, and lower still in several scenarios (and never higher) with the escrow fund. Profits to the investor are higher with the flexible policy, and higher still in several scenarios (and never lower) with the escrow fund.

Finally we investigate the technology policies under multi-stage stochastic optimization with uncertainty about future natural gas prices and prices on $CO_2$ emissions. In the model, the probability over which scenario will ultimately obtain evolves over time. In the uncertain context, the inflexible policy has the expected effect of delaying investment in generation capital in most scenarios, as occurs under perfect foresight. But the effect is muted considerably, in large part because uncertainty in and of itself tends to delay investment in all policy scenarios relative to the perfect foresight case. Moreover, there are a few scenarios where investment occurs earlier under an inflexible policy than under no technology policy because the inflexible policy eliminates some investment alternatives thereby reducing the option value of waiting.

Nonetheless, with uncertainty (as with perfect foresight), compared to an inflexible performance standard the introduction of flexibility generally leads to the earlier (or no later) adoption of CCS for a given type of generation technology, and/or the earlier adoption of new or different generation technology. Both of these outcomes lead to reductions in cumulative emissions and increased profits in our model.

In summary, EPA's 30-year averaging provision provides an innovative way to introduce flexibility into the technology standard, by allowing for a 10-year delay in the installation of control technologies, the costs of which are expected to fall over time with technological innovation. But the provision has a major flaw in terms of dynamic inconsistency as costs are pushed into the future and it creates an incentive to revisit the policy as the delay period winds down.

An ACP such as the one we have analyzed addresses this incentive and has several potentially virtuous characteristics. First, it bounds costs at the level of the surcharge, potentially facilitating investments even if a control technology is not yet commercially mature. Second, if the ACP is set above the expected future variable cost of the control technology then there is likely to come a time when a retrofit investment is less expensive than continued payment of the surcharge, providing an endogenous incentive to adopt the new technology. Third, if ACP payments are allowed to accumulate in an escrow fund and are available to offset the capital cost of the retrofit investment, the time when a retrofit investment is endogenously chosen could come even sooner. Fourth, with an ACP, consumers in the present would begin to bear a cost that reflects the cost of future technological innovation and reduces the extent to which costs are passed forward to future consumers and investors, thereby undoing the dynamic inconsistency that threatens the long-term viability of the averaging provision with no ACP.

The introduction of an ACP at the federal level for performance standards affecting new sources may require legislative authorization, although existing CAA authority may be sufficient. It is noteworthy that similar provisions have been used under other sections of the Clean Air Act. For example, §206(g) of the CAA allows manufacturers of heavy-duty engines to pay a non-conformance penalty for engines that exceed EPA emission standards. Imposing an ACP under existing CAA authority deserves careful legal scrutiny, but cannot be ruled out and should be considered. The ACP coupled with an escrow account could be a requirement that might be part of a 30-year averaging provision to securitize an unfunded obligation. That obligation is the requirement to install pollution controls to achieve the required lower emissions rate by the end of year 10 of operation and the ACP with an escrow provides a mechanism for collecting funds to help ensure that a regulated entity is able to make good on that obligation.

Alternatively, states might implement an ACP, requiring payments and/or escrow from emitters that choose EPA's averaging option. States could also adopt similar averaging options under §111(d) ESPS, including an ACP, with or without EPA encouragement. In either case, there would be no apparent obstacle to an ACP under federal law. [13]

## IV. Supercategorization

EPA has come under criticism for its decision in this proposal to group most coal and natural gas power plants into a new, single source category (TTTT). Some critics claim that EPA has never previously grouped coal and gas generators—"different technologies" as they put it—into a single NSPS source category. This is factually incorrect—the current Da source category includes coal, gas, and oil-fired boilers. A more nuanced criticism is that EPA has previously made fine distinctions between different fuel types and generating technologies, creating subcategories with different regulatory requirements (including within category Da). While this is correct, EPA is not required by the statute to do so. Furthermore, we believe EPA's decision to propose a single source category (TTTT) for most coal and gas power plants, with a uniform standard applying to all, is legally sound and has important policy benefits.

Contrary to critics' claims, EPA has regularly grouped different technologies into a single source category. For example, there is substantial variation among combustion technologies used

[13] Richardson, N., 2012. Playing Without Aces: Offsets and the Limits of Flexibility under Clean Air Act Climate Policy, Environmental Law, forthcoming.

in coal power plants, but EPA's existing source category (Da)—with which critics were presumably satisfied—groups many of these technologies together.

Furthermore, this source category already includes both coal and gas-fired generating facilities. The primary distinction between the two source categories EPA is combining to form the new TTTT category (Da and KKKK) is not fuel but the technological method by which chemical energy is converted into electricity (Da covers steam generation, KKKK turbines). Critics are therefore correct that EPA is proposing to merge two classes of emitters that EPA has historically treated differently, but the split between the two is different from that cited by some critics.

There is no inherent requirement that EPA retain its historical divisions between source categories. The process of creating source categories by its nature requires the agency to combine some technologies and divide others, and revisions to category definitions should come as no surprise as technology and understanding of pollution risks changes.

The CAA enshrines this view by giving EPA nearly unlimited discretion over the definition of source categories, including revisions of source categories. Distinguishing among technologies for regulatory purposes is exactly the sort of decision that is difficult or impossible to specify in statutory language and is better left to the expert judgment of agencies—and the drafting of the CAA reflects this principle. EPA is of course limited by the general requirement under the CAA and Administrative Procedure Act that it must not regulate arbitrarily. It must therefore adequately justify any categorization decisions. But provided it does so, there are no limits on its authority to categorize and recategorize. In any case, the agency retains the ability to subcategorize within TTTT however it sees fit.

Critics are correct in a broad sense—past source categories (such as Da) have made distinctions between different technologies and fuel types by subcategorizing and imposing varying standards, usually with different cuts between subcategories for different pollutants. EPA's creation of the combined TTTT category does not stop the agency from subcategorizing in a similar way, but it is not proposing to do so—the 1000 lbs/MWh standard applies equally to all TTTT sources. To the extent that critics' true, precise complaint is *this* decision, rather than the decision to combine existing categories, it is at least aimed at a valid target—though such a reframing does not change the fact that EPA is well within its legal discretion to act as it has proposed.

Whatever the correct framing of their arguments, critics' core claim appears to be that there are important reasons to treat coal and gas generators differently. However, we believe that

combining coal and gas into a single category, with a single standard, will enable more efficient regulation of these sources. Creation of broad source categories lays critical groundwork for EPA to include trading or other compliance flexibility in its performance standards once it issues standards for new sources. In fact, creation of "supercategories" may be necessary for emitters currently in different categories to trade among themselves. Broader trading markets should lead to lower-cost emissions reductions. Moreover, preliminary research by Dallas Burtraw and others suggests that at least some kinds of subcategorization lead to greater overall program costs.

EPA should therefore resist pressure to reconsider its decision to merge steam and turbine generation into the TTTT category.

## V. Conclusions

Over the long term, we believe that EPA should move toward flexible GHG performance standards that allow trading, banking, and averaging among new and existing sources in different classes of emitters—not just the electric power sector. We believe EPA has ample authority to take this approach, and that doing so would yield much more cost-effective emissions reductions.

But EPA cannot—and cannot be expected to—achieve this goal all at once. This single-sector, new-source-only proposal is an important first step. EPA should not forget, however, that it is but a piece of a larger regulatory program, for an industry that faces critical long-term investment decisions and is already burdened with substantial regulatory requirements. Providing additional certainty about the future of GHG performance standards and the interactions between them and other EPA programs is critically important. Greater regulatory certainty should lead to greater and more cost-effective investments in the power sector.

We therefore suggest EPA address two major sources of uncertainty in the proposal by taking the following specific actions:

1. Reducing Uncertainty for Existing Sources
    a. EPA should state its predictions regarding the number of existing TTTT sources likely to be subject to NSPS due to modification or reconstruction.
    b. EPA should state its plans and schedule for releasing NSPS for modified and reconstructed sources, and the legal basis for treating these classes differently from new sources.

c. EPA should redefine the TTTT category as it applies to new sources to encompass only sources built after a specified date to reduce legal risk and regulatory uncertainty for existing sources in the category.
d. EPA should discuss in the final rulemaking its future plans for integrating new sources into flexible, market-based systems of emissions reduction for existing sources.
e. EPA should clarify the relationship between the NSPS and NSR for existing sources.
f. EPA should move as quickly as practical to issue ESPS for TTTT sources, as doing so would resolve many of the above sources of uncertainty.

2. Reducing Uncertainty Arising from the CCS Averaging Option
   a. EPA should take steps to increase the long-term credibility of the proposed averaging option.
   b. In particular, EPA should consider requiring facilities that choose the option to make an alternative compliance payment, which would ideally be held in escrow until it can later be used for CCS investment.

Finally, we suggest that EPA should not cave to criticism over its decision to combine existing source categories and issue a single uniform emissions standard. Larger source categories with uniform standards lay important legal groundwork for future flexible performance standards programs and appear likely to increase regulatory cost-effectiveness.