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May 8, 2014

Ms. Gina McCarthy
Administrator
U.S. Environmental Protection Agency
EPA Docket Center—Mail Code 2822T
1200 Pennsylvania Ave., NW
Washington, D.C. 20460
Attn: Docket ID No. EPA-HQ-OAR-2013-0495

Re: Proposed Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units
79 Fed. Reg. 1,4380 (Jan. 8, 2014); Docket ID No. EPA-HQ-OAR-2013-0495

Dear Administrator McCarthy:

The House Committee on Science, Space and Technology submits the following comments in response to the Environmental Protection Agency's (EPA) proposed New Source Performance Standards (NSPS) for greenhouse gas (GHG) emissions for new fossil fuel-fired electric utility generating units (EGUs). Section 111 of the Clean Air Act (CAA) establishes a technology-based mechanism for controlling emissions from stationary sources. Specifically, the law directs EPA to set standards based on "the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated."[1]

The Science Committee has jurisdiction over the core technical and scientific issues underpinning this rulemaking. The Committee's authority includes: all energy research, development and demonstration; environmental research and development; and, the commercial application of energy technology.[2]

EPA is recklessly rushing ahead. In this proposal, the EPA disregarded the law requiring independent scientific review; silenced its scientific advisors; denied review of carbon storage science; and adopted an energy policy that ignores technical and practical realities. The NSPS fundamentally obscures the state of technology and rejects sound energy policy. In so doing, the EPA displays a striking disregard for the law and scientific integrity, while jeopardizing our nation's future.

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[1] Clean Air Act § 111(a)(1), 42 USCA § 7411(a)(1) (2006).
[2] House Rule X(1)(p).

I. Overview

Under the proposal, EPA concluded that carbon capture and sequestration (CCS) has been adequately demonstrated as a technology for controlling carbon dioxide (CO2) emissions in full-scale coal-fired EGUs, while reaching the opposite conclusion—that CCS is not adequately demonstrated—for gas-fired EGUs. Based on this determination, EPA proposed a standard for coal-fired sources of 1,100 lbs of CO2 per mega-Watt-Hour (MWH) and proposed standards for natural gas combined cycle sources from 1,000 to 1,100 lbs CO2/MWH depending on the size and type of unit. EGUs that primarily fire biomass are exempted from the proposed rule.

In examining the impact of this proposal, EPA asserted that "coal units built between now and 2020 would have CCS, even in the absence of this rule." In light of this assumption, "EPA projects that this proposed rule will result in negligible CO2 emissions changes, quantified benefits, and costs by 2022." EPA seeks comment for its proposal.

Consistent with its jurisdictional responsibilities, the Science Committee began examining the technology challenges and opportunities associated with CCS before the Agency announced the new NSPS proposal. The Committee conducted hearings to obtain testimony from leading technical, scientific, and policy experts. Further, the Committee observed interactions between the EPA and the independent Science Advisory Board (SAB) charged with advising the Agency and Congress. Science Committee efforts uncovered serious problems and unanswered questions with the scientific and technical assumptions supporting EPA's new power plant proposal.

The goal of these comments is to provide the EPA with critical information obtained by the Committee in exercising its jurisdictional responsibilities. The NSPS must have a sound technical and scientific basis. As the Agency has stated on many occasions, "science is, and continues to be the backbone of this agency and the integrity of our science is central to the identity and credibility of our work."[3] This Committee intends to hold EPA to that standard.

The Science Committee's comments include questions related to the technical, scientific and policy underpinnings of the NSPS. The Agency must address these foundational issues and fully address them in a new proposal. They include: scientific review recommended by the Agency's science advisors; technical evidence obtained by the Science Committee through hearings; and unanswered official Science Committee questions. Until these comments are addressed and a revised proposal is issued, the Agency stands in default.

By requiring the immediate application of unproven technology, the NSPS has the potential to impact the reliability and diversity of the nation's electricity supply. This could dramatically affect electricity prices and energy security. Additionally, the EPA proposal directly impacts the development of a technology the Administration deems critical to the success of global efforts to mitigate climate change. We cannot afford to gamble with this technology.

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[3] EPA News Release, "EPA Appoints New Scientific Integrity Official," Nov. 25, 2013, *available at* http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceeac8525735900400c27/d6741453e168fd4385257c2e00650858!OpenDocument.

II. Science Advisory Board Recommendations

Under the law, the advice of scientific experts is a pre-requisite, not an afterthought. Specifically, the Environmental Research, Development, and Demonstration Authorization Act of 1978 (ERDDAA)[4] establishes the Science Advisory Board as an independent body charged with providing advice to Congress and the EPA. Under ERDDAA, the "Administrator, at the time any proposed criteria document, standard, limitation, or regulation under the... [CAA]... is provided to any other Federal agency for formal review and comment, shall make available to the Board such proposed criteria document, standard, limitation, or regulation, together with relevant scientific and technical information in the possession of the Environmental Protection Agency on which the proposed action is based."[5] Significantly, the law explains that this process provides the Board with a critical opportunity to share with the Administrator "its advice and comments on the adequacy of the scientific and technical basis of the proposed criteria document, standard, limitation, or regulation."[6] When followed, ERDDAA helps ensure that regulations are informed by sound science before they are ever proposed.

Further, EPA Senior Leadership and the SAB continue to note that waiting until the proposal stage to provide information to the SAB is too late in the process for meaningful input.[7] For this very reason, EPA created a new process to ensure that the SAB received planned Agency actions at the pre-proposal stage so that EPA would consider the Board's advice before proposing regulations. The November 12, 2013 memo from the Work Group on EPA Planned Actions for SAB Consideration of the Underlying Science to the Members of the Chartered SAB provides a detailed explanation of this process, its history, and the underlying legal obligations of ERDDAA.

It is clear from the statute and the Agency's own protocol that the Board should review the scientific underpinnings of draft proposals as part of the interagency process before a rule is ever proposed. The importance of this principle is compounded when a rule, such as this NSPS proposal, is binding as to the date of proposal. Consequently, the Agency's attempt to issue a proposed rule before allowing for an independent examination by the SAB undercuts the language and spirit of ERDDAA.

The Agency pushed through the NSPS before giving the SAB an opportunity to review the underlying science and provide independent advice. Despite the Agency's rush to judgment, scientists were raising serious questions. In a December 3, 2013 letter to Administrator McCarthy, the Science Committee highlighted the Work Group's concerns with inadequate peer review and reinforced the implications of statutory restrictions prohibiting EPA from relying on certain demonstration projects. Although these key statutory concerns were first raised in a Science Committee hearing on Nov. 14, 2013, the Agency had failed to respond. While surrogates had proposed explanations for the Agency's actions, those theories only made independent review of the studies EPA cites all the more imperative.

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[4] Environmental Research, Development and Demonstration Authorization Act of 1978, 42 USC § 4365.
[5] *Id.*
[6] *Id.*
[7] *See* Memorandum from SAB Work Group on EPA Planned Actions for SAB Consideration of the Underlying Science to Members of the Chartered SAB and SAB Liaisons, Nov. 12, 2013, Attachment A, *available at* http://yosemite.epa.gov/sab/sabproduct.nsf/18B19D36D88DDA1685257C220067A3EE/$File/SAB+Wk+GRP+Memo+Spring+2013+Reg+Rev+131213.pdf, [hereinafter Work Group Memo].

Unfortunately, instead of taking the advice of the Work Group seriously and exercising judicious respect for the independence of the SAB, the Agency displayed a shocking disregard for the concerns of its science advisors. In fact, a senior official from the EPA's Office of Air and Radiation attempted to muzzle voices of dissent by claiming that the NSPS was not "setting any requirements on sequestration and not providing any analysis as such because we don't speak to the sequestration."[8] Contrary to all logic and new Subpart RR storage reporting requirements the NSPS expressly requires, the Agency claimed that the proposal only covers carbon capture without any need to consider what happens to the captured carbon.

Given the Agency's apparent attempts to unduly narrow the SAB's review and silence scientists' inquiries, the Committee sent Administrator McCarthy a second letter highlighting these troubling developments and imploring the Agency to heed the advice of the SAB and correct course. The letter went on to highlight other important concerns that the agency had failed to address and requested a copy of any analysis prepared by EPA on the costs associated with new storage related requirements encompassed in the NSPS proposal. The Agency has never responded to either letter or the requests for clarification encompassed within those communications.

In the SAB's official January 29, 2014 Report, "the SAB defers to EPA's legal view, communicated to the SAB by staff from EPA's Office of Air and Radiation, that . . . the potential risks associated with carbon sequestration are not within the scope of the Clean Air Act. Carbon sequestration, however, is a complex process, particularly at the scale required under this rulemaking, which may have unintended multi-media consequences." The SAB underscored that the storage of captured carbon is linked to the rule in "important systematic ways" and that "research and information from the EPA, Department of Energy, and other sources related to carbon sequestration merit scientific review." Further, the SAB advised the EPA to ensure expedited review.[9]

Mindful of the unique role created for the Science Committee under the law and the Agency's commitment to scientific integrity, before moving ahead with this proposal we must insist upon a robust examination of the scientific and technical issues raised by the SAB in their January 29, 2014 report to Administrator McCarthy.

Important documents referenced in this summary of communications are included as **Attachment A** as part of the Committee's comments on this rulemaking. These documents highlight significant procedural deficiencies in this rulemaking process, prompting the following questions.

1. How, when, and in what manner has the Agency considered the advice of the SAB?

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[8] *SAB Suggests Dropping Review of CCS in Utility NSPS after EPA Pushback,* Inside EPA, Dec. 5, 2013 (quoting Peter Tsirigotis, Director, Sector Policies and Programs Division, Office of Air and Radiation, US EPA).

[9] Report from SAB to Administrator McCarthy on Science Advisory Board Consideration of EPA Planned Actions in the Spring 2013 Unified (Regulatory) Agenda and their Supporting Science, January 29, 2014 Attachment A, *available at* http://yosemite.epa.gov/sab/sabproduct.nsf/6646907111A3A35385257C70006F5F22/$File/EPA-SAB-14-003-unsigned.pdf.

2. This Committee is familiar with the communications between the Science Advisory Board and the Administrator as well as the meetings held in December 2013 and January 2014 addressing CCS. The EPA staff who spoke on your behalf at the December 4-5, 2013 meeting said that looking at sequestration was outside their statutory obligation since other EPA programs would handle the storage or sequestration of the CO2.

   Yet we can find no evidence of any cross media research conducted by the Office of Water or Office of Solid Waste to address the injection and storage of the CO2 from new power plants. Your proposed rule's Technical Supporting Documents and other materials for the rulemaking point to the Class II programs for oil and gas injection wells. However for new coal-fired or perhaps even natural gas-fired power plants, EOR is not helpful because they would not be located in states with oil and gas operations.

   a. Please explain how future power plants would be permitted for CO2 injection in parts of the country where EOR is not an option. What portion of the storage costs and liability will EPA be willing to subsidize? How did EPA assess these costs?

   b. The NSPS proposal notes that UIC Class VI wells are an option. How many final Class VI permits has the agency granted to date?

3. Over the past few months, EPA staff told the Science Advisory Board that it was not allowed to examine EPA's assessment of injection and sequestration aspects of the proposed NSPS rulemaking.

   a. Why was the SAB instructed to ignore sequestration issues?

   b. How can the Agency both rely on the benefits of EOR sales for making a CCS system less expensive, and incorporate new storage requirements in the rule (Subpart RR) while simultaneously denying that CCS includes the storage half of the system?

4. At the January 21, 2014 SAB meeting, held by conference call, the EPA had speakers or witnesses from at least three utilities that discussed how CCS would not be feasible in their states for a number of reasons.

   In one case, a speaker from New York State, explained that while they had adequate cap rock to hold the CO_2 into place in western New York, the operators realized that they could not get a performance warranty or guarantee for how much CO_2 could be injected. Further, the utility learned that the CO_2 injected would stretch beyond the subsurface owned by the city utility. Ultimately, they concluded that is not legal in the state of New York to inject CO_2 under another person's property. The project for CCS at that new coal-fired power plant was ceased as a result.

   a. Does the Agency dispute the information presented by these witnesses or any others presented at this meeting?

b. Did EPA encourage the SAB to consider these comments? Why or why not.

c. Was EPA aware of the legal obstacles utilities face in many states?

d. Does EPA have the power to address these legal problems?

e. How did EPA factor in these obstacles?

f. What economic analysis did EPA undertake to understand the potential impacts of these practical and legal obstacles?

III. Evidence submitted to the Committee

Over the past few months, the Committee has held three hearings focusing on the technical and scientific issues underpinning this proposal. In these hearings, evidence was provided to the Committee through prepared testimony, oral testimony, and witness responses to questions for the record. These materials are included as **Attachment B** as part of the Committee's comments on this rulemaking.

In reference to the evidence provided in **Attachment B** please respond to the following:

1. On July 25, 2013:

   - **Mr. Chris Smith**, Acting Assistant Secretary for Fossil Energy, Department of Energy, testified before the Committee;
   - **Mr. Ben Yamagada**, Executive Director, Coal Utilization Research Council;
   - **Mr. Don Collins**, Chief Executive Officer, Western Research Institute; and
   - **Ms. Judi Greenwald**, Vice President, Center for Climate and Energy Solutions, testified before the Science Committee.

   Each witness provided prepared and oral testimony, and additional testimony in responses to official questions for the record.

   a. Does the Agency disagree with any of the testimony provided? If so, please detail any objections to her testimony.

   b. Please detail the steps the Agency has taken to consider this evidence.

2. On October 29, 2013:

   - **The Honorable Charles McConnell**, Executive Director, Energy & Environment Initiative, Rice University;
   - **Dr. Richard Bajura**, Director, National Research Center for Coal and Energy, West Virginia University;
   - **Mr. Kurt Waltzer**, Managing Director, The Clean Air Task Force; and
   - **Mr. Roger Martella**, Partner, Environmental Practice Group, Sidley Austin testified before the Science Committee.

Each witness provided prepared and oral testimony, and additional testimony in response to official questions for the record.

a. Does the Agency disagree with any of the testimony provided? If so, please detail any objections to his testimony.

b. Please detail the steps the Agency has taken to consider this evidence.

3. On March 12, 2014:

- **Mr. David Hawkins**, Director of Climate Change Programs, Natural Resources Defense Council;
- **Mr. Robert Hilton**, Vice President, Power Technologies for Government Affairs, Alstom Power Inc.;
- **Mr. Robert Trautz**, Senior Technical Leader, Electric Power Research Institute; and
- **Mr. Scott Miller**, General Manager and CEO, City Utilities of Springfield Missouri, American Public Power Association, testified before the Science Committee.

Each witness provided prepared and oral testimony, and additional testimony in response to official questions for the record.

a. Does the Agency disagree with any of the testimony provided? If so, please detail any objections to his testimony.

b. Please detail the steps the Agency has taken to consider this evidence.

IV. Unanswered Questions

The Science Committee appreciates testimony provided by experts during hearings. However, to fully understand and meaningfully consider the technical evidence these expert witnesses convey, all Committee members have an opportunity to ask official questions for the record (QFRs). The testimony witnesses provide in response to official questions is ultimately a part of the hearing and the Congressional Record.

The Committee hearings of July 25, 2013 and October 29, 2013 are submitted in these comments in final publication format because all witnesses responded to official questions for the record in a timely manner. Unfortunately, Acting Assistant Administrator for Air and Radiation, Janet McCabe, has failed to respond to the Committee's official questions, which were due on April 15, 2014. Consequently, the Committee was forced to include the evidence obtained through the March 12, 2014 hearing in a pre-publication format in **Attachment B** as a part of the Science Committees comments.

Additionally, Administrator Gina McCarthy testified before the Science Committee on November 14, 2013. Administrator McCarthy has failed to respond to the Committee's official

questions, which were due on January 2, 2014. The pre-publication transcript from that hearing and the unanswered official questions for the record address issues directly related to this rulemaking. These documents are included in **Attachment C** as a part of the Science Committees comments.

These unanswered questions have direct bearing on the technical determinations EPA makes in this proposal. We cannot afford to compromise transparency and accountability in the name of expediency. Accordingly, EPA should not move forward with a final rule until these questions are answered and scientific uncertainties are thoroughly addressed. The Agency's thorough responses should be made available for consideration as part of the official rulemaking record and public comment.

Reflecting upon the evidence obtained by the Committee on Science, Space, and Technology and all other relevant information the Agency is aware of or has relied on, please respond to the following unanswered questions and detail how such responses were considered in this rulemaking.

1. At a hearing before the House in February 2014, DOE Deputy Assistant Secretary for Clean Coal, Dr. Julio Friedmann, testified that requiring CCS technologies at new coal-fired plants could dramatically raise the cost of electricity for consumers.

   Dr. Friedmann testified that for so-called first generation technologies, there would be "something like a 70 to 80 percent increase on the wholesale price of electricity." Dr. Friedmann added that "It is in fact a substantial percentage increase in the cost of electricity…"

   a. Does the EPA agree with that statement?

   b. Does the NSPS proposal align with that assessment? Why or why not?

   c. Is a 70 to 80 percent increase on wholesale power prices acceptable to the EPA?

   d. How did EPA model the economic impacts of such an increase?

2. You testified that the Agency believes that CCS systems have been "adequately demonstrated" as a technology for reducing CO2 emissions from fossil fuel-fired power plants. However, there is no fully operational, full scale, fossil-fired power plant in the world currently using CCS technology.

   a. Can you provide any other example of a technology required by EPA CAA section 111 regulations where the technology was **not** yet used on a commercial basis?

   b. EPA is explicitly required to consider cost in determining the best system of emission reduction. By EPA's own estimate, adding CCS to a new coal-fired power plant adds somewhere between 60% and 80% to the total cost of the plant. How does this compare to the percentage increase in costs imposed by other control technologies EPA has required in the past?

c. Would it be fair to say the costs for compliance with this single requirement would exceed the combined cost for all other CAA technologies required by EPA on new coal-fired power plants?

3. In the proposal, EPA determined that partial CCS is BSER for coal but not for natural gas fired EGUs. The BSER analysis and factors EPA considered in making these contrasting determinations is strikingly different between the two categories. EPA appears to suggest that the legal framework for making BSER determinations changes based on the current economics of different fuel options.

   a. Is this EPA's legal position? If so, on what authorities does this legal rationale rely?

   b. Are there other variables that EPA believes would impact the factors the Agency considers in making a BSER determination?

   c. To what extent is cost a determining factor?

   d. What assumptions were made about the cost of natural gas and coal? Was this done regionally or does EPA assume that prices are uniform nationally?

   e. At what price does coal power become competitive or advantaged over natural gas?

   f. Have prices changed since the initial release of this proposal in September of 2013?

   g. Are long-term contracting or stockpiling options the same for coal and natural gas?

   h. How will the agency's conclusions change when these costs factors change substantially?

4. Do regulated parties have an interest in "fuel diversity"? Would such an interest support construction of coal fired power plants in the absence of the proposed NSPS?

5. In some regions of the United States, would the proposed NSPS prevent the construction of new coal-fired power plants or make the construction of such plants absurdly expensive?

6. Prior to the public release of the NSPS rule, the Office of Management and Budget circulated it to other Federal agencies to provide feedback to EPA. That feedback resulted in 35 pages of comments that were published with the rule—much of which was extremely critical. I want to zero in on one particular set of comments made by another agency. They said:

> "EPA's proposal will have significant disparate geographic impacts. Geologic features appropriate for EOR or geologic sequestration are not evenly distributed throughout the country…
> …the DC Circuit has said that sec. 111 standards "must not give a competitive advantage to one State over another in attracting industry."

a. Would you agree that the ability to do either EOR or geologic sequestration are very site specific, and many states and regions will simply not have EOR or sequestration options?

b. Do you think this rule will put specific states and regions at a competitive disadvantage in terms of compliance?

c. Do you believe CO2 pipelines can solve this problem?

7. EPA's proposed rule states that the levelized cost of electricity (LCOE) for partial CCS is "comparable to other non-NGCC generation, after accounting for revenue from the sale of CO_2 for EOR."[10] EPA states that "[w]hen considered against the range of costs that would be incurred by projects deploying non-natural gas-fired electricity generation, the implementation costs of partial CCS are reasonable."

   It is apparent that not everyone shares this assessment. For example, while the Energy Information Administration (EIA) considers LCOE to be "a convenient summary measure of the overall competitiveness of different generating technologies" it notes that "actual plant investment decisions are affected by the specific technological and regional characteristics of a project, which involve numerous other considerations."[11] EIA further stated that "[s]ince projected utilization rates, the existing resource mix, and capacity values can all vary dramatically across regions where new generation capacity may be needed, the direct comparison of the levelized cost of electricity across technologies is often problematic and can be misleading as a method to assess the economic competitiveness of various generation alternatives." [12]

   a. Please provide any records demonstrating that EPA considered and/or rejected EIA's January 2013 assessment of LCOE.

   b. Do you believe that use of LCOE in CAA rulemaking can be "problematic" and/or "misleading"? If not, please provide the committee with the technical basis for this assessment and your accompanying economic rationale.

   c. EPA claims to have considered the costs of various BSER alternatives and to have rejected several lower cost options on the basis that they would not result in "significant reductions" in GHG emissions. What does EPA consider to be an acceptable cost-per-ton of CO_2 removed from EGUs?

8. Acting Assistant Secretary for Fossil Energy, Chris Smith, was asked by several Senators at a recent Senate hearing about his opinion on whether carbon capture and storage (CCS) is currently commercially available for power plant applications. In response he answered that

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[10] 79 Fed. Reg. 1,430, 1,436 (January 8, 2014).
[11] Levelized Cost of New Generation Resources in Annual Energy Outlook 2013, EIA, Annual Energy Outlook, January 28, 2013.
[12] *Id.*

"[all] components of CCS . . . have been demonstrated worldwide" and that "[t]here are twelve large-scale CCS projects in operation worldwide today."

You also noted that the Agency relied on 12 large CCS projects.

a. Are any of these 12 projects a full-scale, base-load electric power plant?

b. Do any of these 12 projects currently have a final Class VI well permit?

c. For each of these 12 projects, please provide the Committee with:

1. A general description of the project, its location, and the electric generating capacity of the project, and the specific type of fuel the project uses.

2. The approximate date any planning initially began for the project or a previous iteration of the project.

3. The current status of the project.

4. Estimated completion date of the project.

5. Planned operating life of the project.

6. A technical description of the capture technologies, including detailed disclosure of any chemicals used in these systems.

7. Documentation of any commercial guarantees for capture technologies used in conjunction with any projects receiving federal funding.

8. Volume of CO2 currently captured; the annual volume of CO2 anticipated to be captured when fully operational; and the total volume of CO2 anticipated to be captured over the lifetime of the project.

9. Explain where, how, and under what regulatory and reporting systems the CO2 will be stored.

10. The total federal, state, or municipal financial assistance the project has received or anticipates obtaining. Please include any grants, tax incentives, loan grantees, or rate recovery mechanisms.

11. Explain the parasitic load factor of the entire carbon capture, compression, transport, and storage system. Explain how this impacts the efficiency of the project as compared to the project without CCS.

12. Explain how the project foot print is impacted by the CCS system.

13. Provide the percentage of the overall cost of the project that is predominately related to the CCS portion of the project.

14. List any objections made to the project by any stakeholders, environmental groups, NGOs, or other individuals. Provide petitions for any challenges or objections that are currently pending. For any objections that have been resolved, provide concessions or alterations made that allowed the project to move forward.

9. The proposed rule relies heavily on the potential for power plants to sell CO2 to enhanced oil recovery (EOR) operators as a means of defraying the tremendous costs of CCS. However, EOR operators are signaling that the Subpart RR requirements in the proposed rule may be prohibitive.

   A broad coalition of groups, from EOR operators to electric power providers, has raised concerns about EPA's plans. For example, the Committee received a letter from the Electric Reliability Coordinating Council (Attachment B, p. 837 of Comments). Other members have submitted documents from companies like Denbury—each representing a range of companies and groups with concerns about the efficacy of EOR in relation to this rule.

   a. Please explain in detail the new requirements for EOR operators that would accept CO2 from power plants?

   b. Have you spoken with any groups potentially impacted by the new Subpart RR reporting requirements? How have you taken their concerns into consideration?

   c. Would reporting under Subpart RR potentially trigger the transition of an EOR well from Class II to Class VI under the UIC program—as EPA draft guidance suggests?

   d. A significant part of EPA's economic justification for the proposed rule relies on the assumption that the CO2 from power plants will be a valued commodity used in EOR operations. How do the economics of the proposed rule change if this is no longer an option?

   e. Can you commit that EPA will not use reporting under Subpart RR to push any EOR operations into Class VI.

10. EOR is not an option in many parts of the country, and geology is often unpredictable. EPA and others have suggested that new CO2 pipelines could solve this problem. For example, portions of the Northeast that do not have access to an EOR market, or perhaps the right geology or legal structures for geologic sequestration, could build pipelines to states like Texas that could provide a market for CO2 to be used in EOR.

    a. As a rule of thumb, pipelines can cost $100,000 per mile per inch of diameter. So for example, a 24-inch pipeline would cost roughly $2.4 million per mile. So a two thousand mile pipeline of modest size would cost roughly $5 billion to construct. Is

this a cost EPA considers in the proposed rule? Does EPA consider this cost feasible?

b. Such a pipeline would also require a significant right of way along its two thousand mile path. How long would that take? Is there a federal authority that currently regulates interstate CO2 pipelines? Does such a body have imminent domain authority over private land owners?

c. Could newly proposed changes to the Clean Water Act (CWA) impact the viability of utilizing Nation Wide Permitting authorities—thus requiring thousands of CWA 402 and 404 related permits prior to construction of such a pipeline? Given the environmental reviews required, how difficult might it be to build just one of the many pipelines that would be required for a nation-wide system of CO2 pipelines? How did EPA take this into consideration?

d. Did EPA consider the potential non-air environmental impacts of the proliferation of CO2 pipelines?

11. In June of 2013, DOE released a "Mitigation Action Plan for the W.A. Parish Post-Combustion CO2 Capture and Sequestration Project." (Attachment B, p. 841 of Comments) In this document, DOE explained that carbon storage "activities are included in this project description because they are integrated into the project concept and considered connected actions."

    a. Does EPA fully agree with this assessment? Please explain EPA's rationale and legal justifications.

    b. If EPA does not fully agree with this assessment, has or will EPA object? Why or why not?

    c. Provide any documentation that EPA considered this or other determinations made by DOE or other agencies that CCS is a connected system that includes storage.

12. The sole source aquifer program is an excellent example of where consultation should take place, since it is administered by EPA not states. There are about 77 sole source aquifers in the United States where the populations of those communities rely upon that aquifer for drinking water for at least 50% of the population. In fact in the western part of the U.S. a few communities rely almost entirely upon sole source aquifers for drinking water. While EPA staff did not address sole source aquifers before the SAB, the EPA staff said that <u>all non-air issues would be addressed by other EPA regulatory programs</u>.

    a. How did EPA address the cross statutory issues related to the injection and sequestration of CO_2 if the injection must go through a sole source aquifer?

b. Please explain how EPA's Office of Air and Radiation and EPA's Office of Water communicated and considered the impact of the proposal on EPA's own special program dedicated to protection of sole source aquifers?

c. Please provide any communications or other documentation of these inter-agency communications.

13. On March 6, 2014 our colleagues from the Senate Environment and Public Works Committee inquired whether EPA had conducted any consultation with the Fish & Wildlife Service (FWS) regarding the Endangered Species Act (ESA) and whether a full analysis has taken place under the ESA.

    As you are aware, Section 7 of the ESA requires the FWS consultation on any action that "may effect" a listed species or designated critical habitat. As the Senators pointed out, because the NSPS effectively removes coal as an option for electric power generation, the nation will need to rely on other energy resources, like nuclear, natural gas and renewables. This shift will certainly require additional habitat and the use of resources that have a history of harming endangered species.

    You testified that EPA has not consulted with the FWS in regard to the proposed rule for new power plants.

    a. Why did EPA choose not to consult with the FWS in drafting this rule?

    b. Has EPA consulted with the FWS in regard to the upcoming existing source rule? Why or why not?

14. You testified that since the components of CCS have been used by other industries, fully integrated CCS systems have been "adequately demonstrated" for power plants. But the GHG NSPS's own cited literature explains that "even when component technologies work well, they need to work well within an integrated CCS system." Isn't EPA's own research correct – isn't there a difference between demonstrating the components of CCS and demonstrating CCS as a fully integrated system?

15. EPA cites three studies in the "literature" section of the new standard's "technical feasibility" discussion of CCS. Yet, EPA leaves out that one of those studies concludes that "there is truth to the often heard assertion that CCS has never been demonstrated at the scale of a large commercial power plant." Another study assumes carbon capture is "unproven technology." And the other study – which EPA co-drafted – says that carbon capture has "not been demonstrated at a scale necessary to establish confidence for power plant application." How does EPA explain these apparent inconsistencies?

16. In EPA's first NSPS proposal in 2012, the agency determined that carbon capture and storage technology was not the best system of emissions reduction for new coal power plants. A year later, in this latest proposal, EPA says it is now the best system for emission reduction.

Please explain with specificity exactly what changed in a year and a half to allow EPA to reach a different conclusion on the technical and economic feasibility of CCS?

17. Section 1-3 of NSPS Regulatory Impact Analysis, EPA stated that "even in the absence of this rule, existing and anticipated economic conditions will lead electricity generators to choose new generation technologies that meet the proposed standard without the need for additional controls."

    a. If that is the case, why did EPA expend substantial resources adopting a rule that it asserts will have no impact on "new construction" of electric generation facilities?

    b. EPA also states that it "anticipates that the proposed EGU New Source GHG Standards will result in negligible CO2 emission changes, energy impacts, quantified benefits, costs, and economic impacts by 2022." Why is EPA engaged in a regulatory proceeding for which EPA's own analysis states will result in "negligible, quantified benefits, costs, and economic impacts by 2022"?

    c. Why does EPA conclude that its NSPS proposal would "provide an incentive for supporting research, development, and investment into technology to capture and store CO2" if EPA predicts that, even absent NSPS, there would be no new "coal-fired power plant" construction and thus no need to "implement[t] some form of partial capture and storage" for such plants?

    d. What is the basis for EPA's recognition that "a few companies may choose to construct coal or other solid fossil fuel-fired units" in the absence of the proposed NSPS? *See* Section 1-3 of NSPS Regulatory Impact Analysis.

18. Is it EPA's position that the proposed NSPS will have no tangible impact on the parties that it regulates?

    a. If EPA believes that the proposed NSPS will have tangible impacts on regulated parties, what are those impacts?

    b. If EPA believes that the proposed NSPS will have no tangible impacts on regulated parties, why is EPA engaged in a costly and resource-intensive proceeding that will have no impact in the real world?

19. In 1997, EPA proposed standards to reduce nitrogen oxide (NOx) emissions from utility and industrial steam generating units under CAA section 111(b). For the subpart Da sources covered by the proposed rule, EPA calculated the nationwide increase in annualized costs as well as the cost-effectiveness of the proposed standards, *e.g.*, cost-per-ton of NOx removed.

    While EPA also examined the resulting cost of the standards with regard to the price of electricity, EPA stated that "the goal of the economic impact analysis was to estimate the market response to the proposed changes to the existing standards for NOx emissions . . . The analysis did not quantitatively address the possibility of changing technology, fuel, or

capacity utilization in response to the proposed revisions . . ."[13] Additionally, while EPA looked at the impact of the rules on electricity prices generally, the Agency specifically examined the price changes on a facility basis, estimating that such costs could be as high as 6 percent.[14] EPA's final rule did not depart from this economic analysis.[15]

The proposed GHG NSPS, however, uses a LCOE to measure the "reasonableness" of the proposed standards. New coal-fired generation with partial CCS is compared to the LCOE of a new nuclear power plant and EPA concludes that "the cost of new coal-fired generation that includes CCS is reasonable today."[16]

a. In the Proposed Rule, EPA claims that case law stretching back 40 years in the D.C. Circuit requires EPA to consider different factors, including that the costs of "the system must be reasonable."[17] But in the Proposed Rule, EPA simply equates the LCOE with what is "reasonable," ignoring past practice where EPA examined facility costs in determining the Best System of Emission Reduction under CAA section 111.

    1. Please provide a detailed explanation of why EPA failed to consider the cost of the proposed rule on individual facilities. On what legal precedent does the Agency rely?

    2. When and under what rationale did EPA determine it would vary from past practice in examining costs when setting BSER under CAA section 111?

    3. Explain why EPA's use of LCOE is superior to the examination of the costs expected to be incurred by individual facilities, in terms of up-front capital costs and the cost per ton of pollution reduced.

b. Since EPA has proposed that partial CCS is BSER for subpart Da units, please provide the Committee with EPA's estimate of the cost (in $ per ton of CO2 avoided and assuming no EOR potential) of partial CCS on a "typical" baseload subpart Da unit, 550 MWe or above, operating at or above 85% capacity. Please include enough detail to determine EPA's assumptions for the costs of capture, transport, sequestration, and monitoring.

20. As you know, power plants are just one of approximately 70 different industrial source categories that EPA regulates under the Clean Air Act. Those categories include nearly every sector of the industrial economy—manufacturing, refineries, steel plants, sewage treatment, fertilizer plants, cement production, and so on. In previous testimony to Congress, Administrator McCarthy refused to rule out new regulations on carbon emissions from these

[13] 62 Fed. Reg. 36,948, 36,958 (July 9, 1997). EPA did indicate, however, that costs and projected impacts might be overestimated on the basis of not considering such costs and impacts. *Id.*
[14] *Id.*
[15] 63 Fed. Reg. 49,442, 49,443 (September 16, 1998).
[16] 79 Fed. Reg. at 1,477.
[17] *Id.* at 1,462.

sectors. EPA has an obligation to provide these industries as well as Congress and the public clarity on its plans.

a. Can you tell us if EPA has ruled out greenhouse gas regulations on any of these sectors? If so, which ones, and of the remaining sectors that you do plan to regulate, which ones will be first?

b. What are the implications of this new definition of the "Best System of Emission Reduction"? Might it be used in other rules?

c. Can you assure us that outside groups will not have the power to force the Agency to require CCS in other contexts?

21. The GHG NSPS is being sold to the public based on EPA's linking of CO2 emissions to potential negative impacts pf climate change. Yet the proposed rule states that the GHG NSPS "will result in negligible CO2 emission changes...by 2022."

a. How much CO2 does EPA estimate that the 111 (b) proposal will prevent between its initial proposal and the 8 year window for review?

b. Has EPA modeled the climate impacts of these anticipated reductions? Why or why not? If so, please provide the assumptions included in this modeling.

c. President Obama's executive order on regulations requires that for any regulation, the benefits must justify the cost. In light of the absence of demonstrated benefits associated with this proposal, how do these new standards meet the President's cost-benefit requirement?

22. In order to bolster the cost feasibility of the NSPS GHG New Plants rule, EPA heavily emphasizes the marketability of CO2 to be used in the production of crude oil through enhanced oil recovery (EOR). <u>In fact, the proposed rule and along with the Regulatory Impact Analysis mention 'enhanced oil recovery' or 'EOR' more than 130 times.</u>

However, a 2009 peer-reviewed paper published in Environmental Science & Technology found that EOR as a method of sequestering CO2 leads to net increases in CO2 emissions. The paper, *Life Cycle Inventory of CO2 in an Enhanced Oil Recovery System*,[18] found that when oil is produced *"93% of the carbon in petroleum is refined into combustible products ultimately emitted into the atmosphere."*

The study concluded that:

> *"The net emissions from* [CCS EOR] *systems are positive meaning that the GHG emissions are larger than the CO2 injected and stored in the reservoir."*

[18] *Life Cycle Inventory of CO2 in an Enhanced Oil Recovery System*, by Paulina Jaramillo, W. Michael Griffin, and Sean T. McCoy, Environmental Science & Technology, Accepted September 14, 2009.

"We calculated that between 3.7 and 4.7 metric tons of CO2 are emitted for every metric ton of CO2 injected."

a. Does the Agency dispute this finding? If so please explain why. If not, explain how pairing carbon capture and sequestration with enhanced oil recovery wouldn't defeat the fundamental purpose of EPA's proposed rule.

b. The Agency's favorite example of the potential for partial CCS is the Kemper plant in Mississippi and its associated EOR project. In December, Denbury Resources told the Associated Press[19] that without the Kemper plant "they would not be able to produce oil there otherwise." So in EPA's model CCS case, the Kemper plant, the oil would not be produced without Kemper. In this light, wouldn't it be reasonable to assume that the CCS EOR project at Kemper could lead to a net increase in CO2 emissions?

23. Who will be reviewing the comments submitted to the EPA's rulemaking docket for the NSPS 111(b) proposal?

a. How many EPA employees will review comments submitted? How many hours per week will these employees review comments?

b. Will EPA contract out any of this review to non-EPA employees? If so, please detail exactly what portions of the process and the cost of such review.

c. Will EPA use contractors to draft any Agency responses?

d. Will EPA use computers to sort, co-late, or otherwise stream line comments?

e. Does EPA utilize any methodology to identify computer generated or substantially similar comments? How are these types of comments considered when tabulating the number of favorable or unfavorable comments? Do these comments receive the same weight as unique comments?

f. Are there any types of comments the Agency will not consider?

24. Please explain EPA's rational for not including modified sources in the 111(b) proposal. Provide a detailed legal rationale and any supporting examples or precedent.

a. Will the Agency propose a separate rule for modified sources under section 111 or will this rule be combined with the upcoming 111(d) proposal? Provide EPA's legal rationale for this decision.

b. What will be the triggering thresholds for modification? Provide a detailed legal rationale for this decision.

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[19] *To clean up coal, Obama pushes more oil production*, Associated Press, by Dina Capiello, Dec 23, 2013.

c. What will be the effective date for the section 111 modified source rule—proposal, finalization, or some other date? Provide a detailed legal rationale and any supporting examples or precedent.

25. Do you support the principle that EPA should not propose or finalize regulations unless the scientific and technical information relied on is: specifically identified; and publicly available in a manner that is sufficient for independent analysis and substantial reproduction of research results?

26. Several important elements of your proposed standard rely heavily or exclusively on the use of the Integrated Planning Model, a proprietary model, instead of public energy models like NEMS.

    a. How is this consistent with EPA's Scientific Integrity Policy, which states "the use of nonproprietary data and models are encouraged, when feasible, to increase transparency"?

    b. Was it not feasible to rely on a nonproprietary model?

    c. Please provide all EPA contracts, grants, and agreements related to the Integrated Planning Model since 2008.

27. As you know, the President's budget includes $25-102 million to fund CCS for natural gas projects. If one of these projects becomes operational, would that be sufficient for EPA to begin requiring CCS as part of the NSPS or the PSD permitting process? What is the goal of these efforts? Will EPA be working with DOE on these projects?

28. Please identify all:

    a. Post-combustion coal projects EPA has cited or is aware of.

    b. Post-combustion natural gas projects EPA has cited or is aware of.

    c. Pre-combustion CCS projects currently capturing and storing CO2 at coal power plants that EPA has cited or is aware of.

    d. Pre-combustion CCS projects currently capturing and storing CO2 at natural gas power plants that EPA has cited or is aware of.

    e. CCS power plant projects proposed or under construction that EPA has cited or is aware of.

    f. Other non-power generation CCS projects currently capturing and storing CO2 at the same scale that would be required in the power generation context—at least 1,000,000 tons CO2 per year. How long has any such project been continuously

capturing, injecting, and monitoring at this scale? What legal and regulatory systems are any such projects operating under?

V. Conclusion

The NSPS proposal is premature, arbitrary, and inadequately supported by the record. For the reasons provided in these comments, EPA must withdraw the proposed rule.

Sincerely,

Rep. Lamar Smith
Chairman
Committee on Science,
Space, and Technology

cc: John Podesta, Counselor to the President, The White House
Howard Shelanski, Administrator, Office of Information and Regulatory Affairs, Office of Management and Budget
Janet McCabe, Acting Assistant Administrator, Office of Air and Radiation, EPA
Dr. David Allen, Chair, EPA Science Advisory Board
Rep. Eddie Bernice Johnson, Ranking Member, Committee on Science, Space, and Technology