

Texas, filed with Water Quality Division of TCEQ). To the extent Las Brisas contends that this lease is included in its claimed \$40 million investment, EPA should be aware that the copy of the LBEC lease agreement filed with TCEQ indicates that the rental obligation is not absolute, as Las Brisas has the right to terminate this Lease Agreement if its financing for improvements is not closed by January 31, 2013. Attachment N at p.2, last paragraph of Section 1.01. And in any event, even if Las Brisas has in fact expended substantial sums in connection with its project, such an expenditure does not excuse its own willful failure to comply with applicable requirements under the CAA.

In light of the history of its application, absolutely no equitable or extenuating circumstances exist justifying inclusion of Las Brisas among the transitional sources. To the exact contrary, EDF submits that making any exception would be particularly unjustified and inappropriate, and would simply reward Las Brisas for its own refusal to comply with core CAA requirements.

# # #

Thank you for your consideration of these comments.

**To:** Howard Hoffman/DC/USEPA/US@EPA[]  
**From:** Megan Ceronsky  
**Sent:** Thur 8/23/2012 4:15:06 PM  
**Subject:** comments  
[comments new power plants GHG NSPS \(non-technical\) 6 25 2012.pdf](#)  
[EDF, Comments on White Stallion & Las Brisas re NSPS \(6.25.2012\).pdf](#)  
[Environmental Defense Fund, Supplemental Comments on the Proposed Carbon Pollution Standards for New Sources, June 25, 2012.pdf](#)  
[SC et al Final Comments \(6.25.2012\).pdf](#)

Hi Howard-

I wanted to make sure you saw our comments.

Best,  
Megan

Megan Ceronsky  
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June 25, 2012

President Barack Obama  
The White House  
1600 Pennsylvania Avenue  
Washington, D.C. 20500

The Honorable Lisa Jackson, Administrator  
Environmental Protection Agency  
Room 3000, Ariel Rios Building  
1200 Pennsylvania Avenue  
Washington, D.C. 20460

**Attn: Docket ID No. EPA-HQ-OAR-2011-0660. Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units**

Dear President Obama and Administrator Jackson:

We, the undersigned groups, on behalf of our millions of members and supporters across the nation, write today to express our strong support for the establishment of protective carbon pollution standards for new power plants issued under the nation's clean air laws. We urge you to finalize these standards as soon as possible and to move swiftly to propose and finalize carbon pollution standards for existing power plants. The carbon pollution standards should ensure that new power plants use the most efficient, lowest-emitting technologies and that emissions from existing power plants are reduced by the amounts that science demands. This goal is achievable because of the availability of cost-effective technologies that are produced in America and create American jobs.

**The need to curb climate-destabilizing pollution from power plants is urgent. The new source carbon pollution standards are a vitally important step towards accomplishing this critical task.**

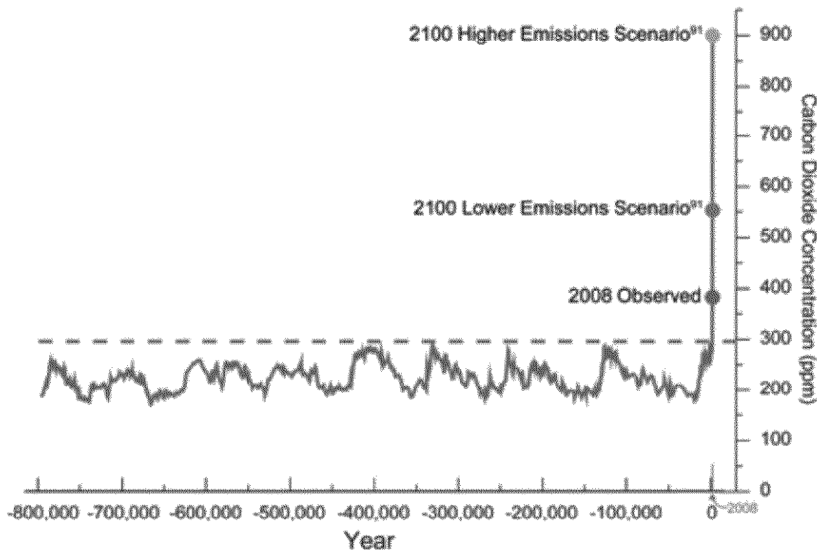
In December of 2009 the U.S. Environmental Protection Agency (EPA) concluded—after reviewing a comprehensive and massive body of peer-reviewed scientific research on climate change—that heat-trapping greenhouse gas emissions may reasonably be anticipated to endanger public health and welfare of both current and future generations.<sup>1</sup> Due to human activities—primarily the combustion of fossil fuels and deforestation—the concentration of these gases in the atmosphere is rapidly rising. Atmospheric carbon dioxide (CO<sub>2</sub>) levels have increased by approximately 38% since the Industrial Revolution; current atmospheric

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<sup>1</sup> See Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (to be codified at 40 C.F.R. ch. I).

concentrations of both CO<sub>2</sub> and methane (an even more potent greenhouse gas) are significantly higher than they have been for the last 800,000 years.<sup>2</sup>

### 800,000 Year Record of Carbon Dioxide Concentration



This chart shows CO<sub>2</sub> concentrations in the atmosphere over the last 800,000 years, based upon analyzing air bubbles trapped in an Antarctic ice core. It also shows that unless we curb greenhouse gas emissions atmospheric CO<sub>2</sub> concentrations will likely double or triple by the end of this century.<sup>3</sup>

The increase in the amount of solar radiation that is trapped in the earth's atmosphere is causing average global temperatures to rise. Global temperature records independently assembled by NOAA, NASA, and the United Kingdom's Hadley Center indicate that global mean surface temperatures have risen by  $1.3 \pm 0.32^{\circ}\text{F}$  over the past 100 years (1906-2005), with the greatest warming occurring during the past 30 years.<sup>4</sup>

<sup>2</sup> See U.S. ENVTL. PROT. AGENCY, TECHNICAL SUPPORT DOCUMENT FOR ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(a) OF THE CLEAN AIR ACT ES-1 to -2 (2009); Kenneth L. Denman et al., *Couplings Between Changes in the Climate System and Biogeochemistry*, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, at 512 (S. Solomon et al. eds., 2007); Piers Forster et al., *Changes in Atmospheric Constituents and in Radiative Forcing*, in CLIMATE CHANGE 2007, *supra*; Eystein Jansen et al., *Paleoclimate*, in CLIMATE CHANGE 2007, *supra*; THOMAS R. KARL ET AL., U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES (2009).

<sup>3</sup> U.S. GLOBAL CHANGE RESEARCH PROGRAM, *supra* note 2, at 13.

<sup>4</sup> See Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. at 66,522; U.S. ENVTL. PROT. AGENCY, *supra* note 2, at ES-2, -28 to -29; Gabriele C. Hegerl, *Understanding and Attributing Climate Change*, in CLIMATE CHANGE 2007, *supra* note 2, at 683.

**Climate change presents severe risks to the health and well-being of Americans. If carbon pollution is unchecked, the economic and welfare costs of intensifying climate impacts will be profound.**

The United States Global Change Research Program has determined that if carbon pollution emissions are **not** reduced it is likely that American communities will experience increasingly severe and costly climate impacts, including:

- Rising levels of dangerous smog in cities—which will lead to an increased risk of respiratory infections, more asthma attacks, and more premature deaths;
- Increased risk of illness and death due to extreme heat;
- More intense hurricanes and storm surges;
- Increased frequency and severity of flooding;
- Increases in insect pests and in the prevalence of diseases transmitted by food, water, and insects;
- Reduced precipitation and runoff in the arid West;
- Reduced crop yields and livestock productivity; and
- More wildfires and increasingly frequent and severe droughts in some regions.<sup>5</sup>

**Climate science indicates that it is necessary to make deep cuts in the amount of carbon pollution emitted—which will require major reductions in power sector emissions.**

The National Research Council's 2011 report on climate stabilization concurs that steep emission reductions, on the order of 80% globally, are necessary to stop CO<sub>2</sub> concentrations in the atmosphere from reaching dangerous levels.<sup>6</sup> Cutting emissions from the power sector will be a necessary component of these emissions cuts, as the U.S. power sector is responsible for approximately 40% of U.S. carbon emissions<sup>7</sup> and 7% of global greenhouse gas emissions.<sup>8</sup>

**America has the resources and the technologies needed to sharply reduce power sector carbon pollution.**

The standards should ensure that new power plants use the most efficient, lowest-emitting technology available, and reflect the emission rates achievable by state-of-the-art combined cycle natural gas plants. Standards issued for existing power plants should achieve the pace and scope of emission reductions that science demands and that proven, cost-effective technologies readily enable.

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<sup>5</sup> U.S. GLOBAL CHANGE RESEARCH PROGRAM, *supra* note 2, at 8-109.

<sup>6</sup> NAT'L RESEARCH COUNCIL, CLIMATE STABILIZATION TARGETS 10 (2011) (excerpt attached as Ex. A). For full report please see: [http://www.nap.edu/catalog.php?record\\_id=12877](http://www.nap.edu/catalog.php?record_id=12877).

<sup>7</sup> U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2010, at ES-4 tbl.ES-2 (2012).

<sup>8</sup> *Environmental Indicators—GHGs*, U.N. STATISTICS DIV., [http://unstats.un.org/unsd/environment/air\\_greenhouse\\_emissions.htm](http://unstats.un.org/unsd/environment/air_greenhouse_emissions.htm) (last updated July 2010).

Carbon pollution standards for new and existing power plants will further the progress we are making towards a cleaner, more secure, and more independent future for energy in America. These standards can ensure that we will use our nation's electricity resources more efficiently to cut energy costs for American families and businesses, mobilize American innovation, technologies, and fuels for cleaner energy generation, and ensure that America is at the cutting edge of the clean energy economy of the future.

Sincerely,

Citizens for Pennsylvania's Future (PennFuture)  
 Clean Air Task Force  
 Clean Water Action  
 Climate Solutions  
 Conservation Law Foundation  
 Earthjustice  
 Environment America  
 Environment Northeast  
 Environmental Defense Fund  
 Greenpeace USA  
 Health Care Without Harm  
 Interfaith Power and Light, The Regeneration Project  
 League of Conservation Voters  
 Moms Clean Air Force  
 National Wildlife Federation  
 Natural Resources Defense Council  
 New Jersey Audubon  
 NW Energy Coalition  
 Oregon Environmental Council  
 Physicians for Social Responsibility  
 Powder River Basin Resource Council  
 Renewable Northwest Project  
 Safe Climate Campaign  
 Sierra Club  
 Southern Alliance for Clean Energy  
 The Center for the Celebration of Creation  
 The Climate Reality Project  
 US Climate Action Network  
 Washington Environmental Council  
 Western Environmental Law Center  
 Western Resource Advocates  
 WildEarth Guardians

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June 25, 2012

*Via Website and Email (without attachments)*

<http://www.epa.gov/oar/docket.html>

[a-and-r-docket@epa.gov](mailto:a-and-r-docket@epa.gov), Attn: Docket ID No. EPA-HQ-OAR-2011-0660

EPA Docket Center

U.S. EPA, Mail Code 2822T

1200 Pennsylvania Ave. NW.

Washington, DC 20460

Re: Environmental Protection Agency, Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units  
 Docket ID No. EPA-HQ-OAR-2011-0660

On behalf of Environmental Defense Fund, Inc. ("EDF"), we respectfully offer the following comments with regard to the U.S. Environmental Protection Agency's ("EPA") proposed Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources ("GHG NSPS") and its applicability to certain "transitional" or potentially "transitional" sources. See 77 Fed. Reg. 22,392 (April 13, 2012). EDF submits these comments on behalf of its hundreds of thousands of members nationwide and its tens of thousands of members in Texas and surrounding states. EDF has participated in this rulemaking proceeding for some time and these comments and all other comments submitted by EDF and its members, alone or jointly with other commenters, should be considered to reflect the comments and views of EDF as part of this proceeding. All documents referred to herein and all Attachments should be incorporated as part of the administrative record of this rulemaking proceeding.

In the proposed GHG NSPS, EPA states that it is not proposing a standard of performance for transitional sources. EPA proposes the following regulatory text to delineate "transitional" sources as part of § 60.5510 as follows:

"(3) Transitional Sources.

(i) You are not subject to this subpart if you own or operate a transitional source that commences construction within 12 months after April 13, 2012.

(ii) For purposes of paragraph (b)(3)(ii) a 'transitional source' is defined as an EGU with a base load rating of more than 73 megawatts (MW) (250 million British thermal units per hour (MMBtu/h)) heat input of fossil fuel, except as provided for in § 60.5510(b)(1) and (2), and that received a complete permit that meets the requirements of the Prevention of Significant Deterioration Program under part C of Title I of the Clean Air Act prior to April 13, 2012 (*or that had an approved PSD permit that has expired and is in the process of being extended, if the source is participating in a Department of Energy CCS funding program*).

In the GHG NSPS proposal, EPA has identified 15 proposed sources for potential treatment as “transitional” sources. EDF together with several additional environmental groups submitted joint comments in response to the GHG NSPS proposal. Those comments explained that EPA's “transitional” source proposal is contrary to the plain language and fundamental purposes of the NSPS program, unnecessary as the various sources in question either can meet the 1000 lb CO<sub>2</sub>/MWhr standard of performance proposed or are highly unlikely to ever complete construction, and practically unenforceable.

One of those 15 proposed sources is the White Stallion Energy Center (“WSEC”) in Texas. Although not included on the list of transitional sources, another source that may seek status as a transitional source is the Las Brisas Energy Center (“LBEC”) in Texas. EDF participated in the contested case proceedings for both sources. These additional comments supplement the Joint Environmental Commenters comments, joined by EDF, on the transitional source proposal by adducing further evidence that even if the “transitional” proposal is viable – and we believe it is fundamentally flawed for the reasons stated – that neither WSEC nor LBEC are entitled to transitional source status. As explained in the more detailed comments below, WSEC and LBEC fail to meet EPA's own core criteria for transitional sources as they have *not* “received a complete permit that meets the requirements of the Prevention of Significant Deterioration Program under part C of Title I of the Clean Air Act prior to April 13, 2012.”

### WSEC

WSEC received a PSD preconstruction permit in December of 2010 based on an October 19, 2010 Final Order issued by the Texas Commission on Environmental Quality (“TCEQ”) overturning an earlier decision made by two independent Administrative Law Judges (“ALJs”) to deny WSEC’s application for a PSD permit and against the recommendations of EPA’s Region 6 Office. The ALJs stated that they “cannot recommend that WSEC’s application be granted at this time.” EPA Region 6 stated in one of its comment letters to TCEQ that “[b]ecause of the deficiencies identified in our written correspondence and the lack of required NAAQS demonstrations, if TCEQ were to issue the permits as they are proposed they would not be consistent with federal requirements.” Attachment A. Ignoring EPA’s comments and the recommendations of the ALJs, TCEQ issued the permits. Consequently, WSEC’s PSD preconstruction permit fails to address the health-based 1-hour SO<sub>2</sub> and NO<sub>2</sub> NAAQS, fails to address the ozone NAAQS at all and is otherwise not in compliance with the federal Clean Air Act and the Texas Clean Air Act. Additionally, as discussed below, WSEC’s PSD preconstruction permit is based on an out-dated site plan. Since WSEC’s PSD preconstruction permit is incomplete and based on an out-dated site plan, it should not qualify as a transitional source.

As background, in September 2008, WSEC filed an application with TCEQ for federal and state air quality permits for a 1,320 megawatt petroleum coke and coal-fired power plant which included a site plan showing the location of various facilities and equipment that will be sources of air pollutant emissions. Randy Bird, WSEC’s Chief Operating Officer, signed the application and certified that the “facts included in the application” including the Air Permit Site Plan were “true and correct.” Attachment B, Exhibit A, Tab 2. In December 2008 and again in February 2009, WSEC supplemented its application with an “Air Quality Modeling Analysis” which analyzed air quality impacts as required under 40 CFR §52.21(k), an EPA rule incorporated into TCEQ’s air quality

rules.<sup>1</sup> Attachment B, Exhibit A, Tab 3. WSEC's air quality impacts analysis and supporting modeling were based only on the now outdated Air Permit Site Plan. Attachment B, Exhibit A, Tab 3 at White Stallion Exhibit 103, p. 15 of 515.

In February 2010, two ALJs from the State Office of Administrative Hearings ("SOAH") conducted an evidentiary hearing on WSEC's air permit application. At the outset of the hearing, evidence was introduced showing that WSEC's sworn and certified application for a wastewater discharge permit, filed with the TCEQ's Water Quality Division in February 2009, and its sworn application for a § 404 wetlands permit, filed with the US Army Corps of Engineers (the "Corps") in September 2009, included site plans that were different from WSEC's September 2008 Air Permit Site Plan, even though all three plans were for the same power plant. Attachment B, Exhibit B, pp. 11-12. When the site plans submitted to the Water Quality Division and the Corps were compared to the Air Permit Site Plan, the evidence showed that more than 20 emissions points were at different locations. Attachment B, Exhibit C, pp. 148-154. Despite the fact that these subsequently filed site plans were different than and conflicted with the Air Permit Site Plan, WSEC's CEO Frank Rotondi testified on cross examination:

It is my testimony that we have submitted a site plan in the air application for this project to which we are fully and completely prepared to build this project in every respect.

Attachment B, Exhibit B, p. 12; Exhibit C, p. 77. Mr. Rotondi further testified that the only site plan that had been approved by WSEC's so-called "development committee" was the Air Permit Site Plan.<sup>2</sup> Attachment B, Exhibit B, p. 12; Exhibit C, p. 88-90.

Emails were introduced (dated 2009) among WSEC's consultants and management that discussed further revisions to the site plan to minimize impacts to wetlands. Attachment B, Exhibit A, Tab 4. These e-mails, exchanged more than a year before the contested case held on the air permit application, acknowledged that these changes "may affect the wastewater permit and the air dispersion modeling."<sup>3</sup> *Id.*

Based on this evidence, a motion to dismiss or alternatively remand WSEC's application to TCEQ pursuant to § 382.0291(d) of the Texas Health & Safety Code was made. Attachment B, Exhibit C, pp. 6-9. Section 382.0291(d) provides:

(d) An applicant for a license, permit, registration, or similar form of permission required by law to be obtained from the commission **may not amend the application after the 31st day before the date on which a public hearing on the**

<sup>1</sup> See 30 Tex. Admin. Code § 116.160(c)(2)(B).

<sup>2</sup> Both Mr. Rotondi and Mr. Bird (who signed both of the sworn and certified applications filed with TCEQ's Water Quality and Air Permit Divisions respectively) are on WSEC's so-called "development committee."

<sup>3</sup> The following persons were included in this email chain: WSEC CEO Frank Rotondi who testified at the air permit hearing in support of the application; Larry Shell, Vice President & Sr. Project Manager for Stanley Consultants, Inc. (the firm that designed and engineered the proposed plant) who testified as an expert in support of the Application; Joe Kupper, air dispersion modeler with the RPS Group who testified as an expert at the hearing in support of the Application; Shanon DiSorbo, consultant with RPS Group who testified as an expert at hearing in support of the Application; and Scott Jecker, wetlands consultant who prepared WSEC's wetlands application filed with the Corps. Attachment B, Exhibit A, Tab 4.

**application is scheduled to begin. If an amendment of an application would be necessary within that period, the applicant shall resubmit the application to the commission and must again comply with notice requirements and any other requirements of law** or commission rule as though the application were originally submitted to the commission on that date.

Tex. Health & Safety Code Ann. § 382.0291(d). It was argued that WSEC's subsequent site plans, filed under sworn certification and subject to criminal penalty, constituted an amendment to the Air Permit Site Plan or showed at least that an "amendment to the application would be necessary." It was further argued that EDF and the public were entitled to notice, comment, and an opportunity for hearing on the power plant that WSEC actually intended to build, which was unclear at that time.

The ALJs denied the motion. In doing so, the ALJs expressed concern with WSEC's changing site plans but expressly relied on WSEC's CEO's sworn testimony that WSEC was "fully willing to comply in every respect with construction of this project according to [the air permit] site layout." Attachment B, Exhibit C, pp. 77-78. As the ALJs state in their Proposal for Decision (PFD):

Mr. Rotondi testified that WSEC intended to build the facility as stated in this [the air] application. Although we were concerned about WSEC's actions in filing other site plans, we concluded that those actions did not change the facts that led the Commission to refer this case to SOAH. **If WSEC intended to build the proposed facility as shown in the site plan in this application, then Protestants' concerns did not rise to the level of a legal basis for continuing the hearing.**

Attachment B, Exhibit B, p. 13-14 (emphasis added).

Following a six-day evidentiary hearing, the ALJs recommended that TCEQ deny WSEC's application on grounds other than the multiple-site-plan issue. However, on October 19, 2010, TCEQ issued the Final Order granting WSEC's air permit application. Attachment B, Exhibit A, Tab 1. On November 10, 2010, a motion for rehearing was filed.

On December 2, 2010, EDF received documents in response to a FOIA request filed with the Corps. Attachment B, Exhibit A, Tab 6. These documents showed that, on or about October 25, 2010, within six days of TCEQ issuing the Final Order, WSEC had revised its wetlands permit site plan. *Id.* WSEC then filed this revised site plan (i.e. the October 25<sup>th</sup> Site Plan) with the Corps in November 2010. As an expert air dispersion modeler, Roberto Gasparini, Ph.D., attested in support of the Motion for Remand, the October 25<sup>th</sup> Site Plan is materially different from the Air Permit Site Plan and moves 73 of the 84 emissions points modeled by WSEC in the air permit proceeding. Attachment B, Exhibit D, ¶ 7.<sup>4</sup> Sixty-four (64) of the 73 relocated emissions points moved 100 meters or more and at least two moved more than 750 meters. *Id.* Dr. Gasparini further testified that: "In order to determine whether the plant as depicted in the October 2010 Site Plan complies with applicable air quality standards, it is necessary to verify the location of the emissions sources

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<sup>4</sup> Non-substantive changes were made to Exhibits D and D-1 in May of 2011 to correct typographical errors in the affidavit and a copying error with Exhibit D-1. These new exhibits are behind the "Revised Exhibits D" tab of Attachment B to this letter.



and perform new air dispersion modeling.” Attachment B, Exhibit D, ¶ 9. In the Reply to WSEC’s response to the Motion for Remand, Dr. Gasparini explained that one of the 73 emission source that moved is the Railcar Unloading Building (EPN DCRAILUL). Attachment B, Exhibit E, ¶ 5. This emission source represents the third largest emitter of particulate matter at the proposed WSEC power plant and it was moved approximately 788 meters from the middle of the property to a location very close to the property line. *Id.* Another of the 73 emission sources that moved is Conveyor 3 (EPN CONV3). *Id.* This emission source is a conveyor used for transporting materials. *Id.* By moving the Railcar Unloading Building farther from the material storage piles, the length of this conveyor must be increased. *Id.* Therefore, the emission rate from this conveyor must be increased since conveyor emission rates are based in part on conveyor length. *Id.* Dr. Gasparini concluded that [without] remodeling the emissions from the sources as they would be located on White Stallion’s new site plan, it is not possible to determine whether the net effect would be a violation of one or more of the federal or state clean air standards.” *Id.* ¶ 6. TCEQ and WSEC presented no evidence in the District Court challenging Dr. Gasparini’s affidavits or controverting those conclusions.

On December 6, 2010, a motion was filed with TCEQ to reopen the record, extend the time for filing a supplemental motion for review, and extend the time for motions for rehearing. By letter dated December 17<sup>th</sup>, TCEQ stated that the motions for rehearing had been overruled by operation of law on December 8<sup>th</sup> but TCEQ did not rule on, or even mention, the motion to reopen the record based on this newly discovered evidence.

An administrative appeal with the Travis County District Court was filed and the previously mentioned Motion for Remand was filed, which included Dr. Gasparini’s affidavits. After oral argument on the motion, the District Court granted the motion and ordered a remand for the taking of additional evidence stating that: the additional evidence was material; there were good reasons why it was not presented before SOAH and TCEQ in the air permit proceedings; and absent granting the motion, the “public would not be afforded meaningful participation in the [air] permit application review process.” Attachment C, Remand Order. Specifically, that Court stated that additional evidence should be taken on: (1) the October 25<sup>th</sup> site plan submitted by White Stallion to the Corps; and (2) on the site plan’s “impacts on WSEC’s TCEQ air permit application under applicable law.”

TCEQ and WSEC then challenged the Court’s Remand Order and filed petitions for writs of mandamus with the Texas Third Court of Appeals, which denied the petitions. Both WSEC and TCEQ then filed petitions with the Texas Supreme Court seeking writs of mandamus. Like the Third Court of Appeals, the Supreme Court denied the petitions.

On or about October 4<sup>th</sup>, 2011, the Corps granted WSEC its § 404 wetlands permit based on what appears to be the October 25<sup>th</sup> Site Plan.<sup>5</sup>

More recently on June 13, 2012, the TCEQ admitted into the record the evidence offered as requested by the District Court, subject to objections, and informed the District Court that it was not changing its decision. This evidence, which remains the only evidence in the record on this issue, establishes that the new site plan violates the short-term PM<sub>10</sub> PSD increment standard and the short-

<sup>5</sup> <http://www.swg.usace.army.mil/whitestallion/whitestallion.asp>

term SO<sub>2</sub> NAAQS. Attachment D, Exhibits 200 – 207. WSEC and TCEQ did not offer any evidence to the contrary. As a result, WSEC has not and cannot meet its burden under 40 CFR § 52.21(k) and TCEQ's own rules which require WSEC to demonstrate that emissions from the plant it actually intends to build will not cause or contribute to a violation of any NAAQS or PSD increment standard.

WSEC should not be granted transitional source status based on a preconstruction air permit for site plan that WSEC does not intend to build. We know that WSEC does not intend to build the plant according to the Air Permit Site Plan because WSEC has subsequently represented to the Corps, subject to criminal penalty, that it intends to build an entirely different plant. The Corps has now issued WSEC a wetlands permit based on this new site plan. Neither EPA nor the public has had an opportunity to review and comment on this site plan in the context of air permitting. Granting WSEC transitional source status based on what may amount to be a “*bait-and-switch*” would be rewarding WSEC for its actions at the expense of the public and is exactly what EPA Region 6 warned TCEQ about in its May 13, 2011 comment letter. Attachment A.

Even if WSEC takes the position that its new site plan is not an amendment of its air permit application and that it plans to construct the plant according to the Air Permit Site Plan then WSEC must amend their wetlands permit because it is based on a different site plan – one that moves 73 of 84 emissions points. Alternatively, if WSEC plans to construct the proposed plant according to the wetlands permit site plan then WSEC must amend its air permit. Either way WSEC cannot construct without amending one or the other.

However, WSEC's PSD preconstruction permit is not incomplete merely due to its reliance on an out-dated site plan that the public has never had the opportunity to review. The PSD preconstruction permit is also incomplete because it wholly fails to address several legally applicable NAAQS, including the NAAQS for ozone, and the new NAAQS for NO<sub>2</sub> and SO<sub>2</sub>. Instead of modeling ozone impacts or otherwise estimating those impacts, WSEC relied on a simple mathematical ratio of its estimated NO<sub>x</sub> emissions to VOC emissions to conclude that its 1,320 megawatt coal and petroleum coke fired power plant located within 20 miles of the adjoining Houston-Galveston-Brazoria Severe Non-Attainment Area will be ozone neutral. Attachment E. Consistent with TCEQ's rules and Appendix W, EPA Region 6 specifically requested in two comment letters to TCEQ that WSEC/TCEQ consult with it on the use of a modeling protocol that would estimate potential ozone impacts from WSEC. Attachment A. Neither WSEC nor TCEQ elected to consult with EPA or conduct photochemical modeling. In a third comment letter to the TCEQ, EPA Region 6 again reiterated its request for consultation and expressed its serious concern about the “ozone analysis” (or lack thereof) conducted by WSEC. *Id.* TCEQ ultimately issued WSEC its PSD preconstruction permit based on that limited ratio without actually considering the ozone impacts caused by WSEC.

WSEC has also not demonstrated compliance with the health-based 1-hour NAAQS for NO<sub>2</sub> and SO<sub>2</sub>. WSEC received its air permit in December of 2011 based on a Final Order dated October 19, 2011, well after the effective dates of the health-based 1-hour NAAQS for NO<sub>2</sub> and SO<sub>2</sub>. But WSEC did not conduct any modeling to demonstrate compliance with 40 CFR § 52.21(k) and TCEQ rules for the NAAQSs. But others did. The resulting dispersion modeling predicts that emissions from WSEC will result in multiple exceedances of the 1-hour NAAQS for SO<sub>2</sub> with the Highest 4<sup>th</sup> High being 240 µg/m<sup>3</sup>. Attachment D, Exhibits 200 and 207. This evidence was recently admitted

into the administrative record by TCEQ. There is no evidence to the contrary.

The bottom-line is that (1) WSEC does not have a complete PSD preconstruction permit because it fails to address the ozone NAAQS and the health-based 1-hour NAAQS for SO<sub>2</sub> and NO<sub>2</sub> and (2) WSEC does not have a permit that authorizes construction immediately because of the inconsistent site plans. EPA Region 6 itself continues to have serious concerns about this permit as evidenced by its numerous comment letters. Attachment A. Thus WSEC should not be rewarded for its actions and granted transitional source status when it obtained a permit based on a site plan it has no intention of building and an application that is wholly deficient.

EPA also requested information about sunk costs and legal challenges associated with WSEC. EDF offers the following additional comments that may factor into EPA's consideration of those issues. Based on hearing testimony and administrative records we know the following:

- WSEC has no employees. Attachment F, p. 71.
- WSEC is a limited liability corporation that is owned in part by Sky Energy, which itself has just four employees. *Id.*
- Neither Sky Energy nor WSEC own or operate any power plants. *Id.*
- WSEC has an option to purchase the real property where the proposed plant is to be located, but there is no evidence in the record indicating whether WSEC has exercised that option.
- WSEC was not required to conduct an Environmental Impact Statement, although one was requested by EPA Region 6, Texas Parks & Wildlife and the City of Houston, among others. Attachment G (Comment Letters).
- In response to EPA's concern that certain transitional sources may lack space for CO<sub>2</sub> removal equipment, attached are copies of WSEC's Air Permit Site Plan and TPDES site plan both of which identify specific areas reserved for future CO<sub>2</sub> removal equipment. Attachment B, Exhibit A, Tab 4; Attachment H.
- At the time of the hearing WSEC had not secured a fuel contract for petroleum coke. Attachment F, p. 107.
- At the time of the hearing WSEC had not secured a contract with a retail provider of electricity or contract operator of the proposed plant. Attachment F, pp. 94, 104-105.
- In late 2011, the Lower Colorado River Authority declined to enter into a water supply contract with WSEC.<sup>6</sup>

Regarding legal challenges, at present WSEC is facing a number of legal challenges. Currently WSEC's air permit application is under challenge in District Court by a number of parties.

There will be additional challenges to the recent action taken by the TCEQ during the remand period. WSEC's TPDES permit application is still pending at TCEQ and will likely be referred by the TCEQ to the State Office of Administrative Hearings for a contested case hearing sometime this year. Over 90 hearing requests were filed on WSEC's TPDES permit application according to TCEQ Commissioners' Integrated Database.<sup>7</sup> WSEC is also facing legal challenges in its

<sup>6</sup> <http://lcra.org/newsstory/2011/boardmeetingcanceledWStallion.html>;

[http://www.statesman.com/blogs/content/shared-](http://www.statesman.com/blogs/content/shared-gen/blogs/austin/green/entries/2011/11/16/lcra_rejects_white_stallion_co.html)

[gen/blogs/austin/green/entries/2011/11/16/lcra\\_rejects\\_white\\_stallion\\_co.html](http://www.statesman.com/blogs/content/shared-gen/blogs/austin/green/entries/2011/11/16/lcra_rejects_white_stallion_co.html)

<sup>7</sup> [http://www12.tceq.state.tx.us/crpub/index.cfm?fuseaction=iwr.itemdetail&addn\\_id=858429022009061](http://www12.tceq.state.tx.us/crpub/index.cfm?fuseaction=iwr.itemdetail&addn_id=858429022009061).

groundwater proceeding before the local groundwater conservation district.

EDF believes that these factors coupled with WSEC's incomplete PSD preconstruction permit compel exclusion of WSEC from consideration as a transitional source.

### LBEC

Las Brisas Energy Center, LLC ("Las Brisas") has applied for preconstruction permits to build the Las Brisas Energy Center ("LBEC"), a proposed petroleum coke-fired power plant in Corpus Christi, Texas. Las Brisas received a *partial* PSD preconstruction permit by virtue of a TCEQ Final Order dated February 22, 2011. Because Las Brisas did not receive its permit until after the effective date of EPA's PSD permitting requirements for greenhouse gases, Las Brisas additionally filed a GHG PSD permit application with EPA on or about October 28, 2011. It is EDF's understanding that this application remains pending. Accordingly, Las Brisas has not received a complete PSD preconstruction permit by the date of the GHG NSPS proposal, and as such, has not been listed by EPA among the 15 potential transitional sources.

To the extent that Las Brisas may assert that it should be treated as a transitional source, EDF believes it is important for EPA to consider the procedural history of Las Brisas's PSD permit application. This history demonstrates that Las Brisas's failure to receive a complete PSD permit prior to the effective date of the GHG PSD requirements is attributable to its own repeated refusals to comply with applicable requirements under the CAA.

Las Brisas filed its application with the TCEQ on May 19, 2008, seeking various air quality permits including a PSD permit authorizing the construction of the proposed LBEC facility. The proposed LBEC plant is located near downtown Corpus Christi, Texas and would be a major new source of air pollution consisting of four (4) petroleum coke-fired circulating fluidized bed ("CFB") boilers and associated facilities with an output of 1,200 megawatts. Las Brisas also sought a permit to emit hazardous air pollutants. During 2008, Las Brisas submitted multiple subsequent revisions to its application, including air dispersion modeling for purposes of demonstrating compliance with applicable NAAQS and PSD Increments.

On January 7, 2009, TCEQ issued a Draft Permit Nos. 85013, PSD-TX-1138 and HAP-48 (collectively "the Draft Permit") and a Preliminary Determination Summary describing TCEQ's review to date. Numerous persons and organizations protested Las Brisas's application, including EDF, the Texas Clean Air Cities Coalition ("TCACC"), the Sierra Club, the Clean Economy Coalition ("CEC"), the League of Latin American Citizens ("LULAC") and a number of individual protestants.

Pursuant to TCEQ regulations and Las Brisas's own request, the application was referred to SOAH for a contested case hearing on whether the requested permits should be issued. On November 2 through 12, 2009, SOAH Administrative Law Judges Tommy Broyles and Craig Bennett conducted a nine-day hearing on the merits on Las Brisas's application (the "Initial Hearing").

Las Brisas's evidence indicated that the proposed LBEC plant would utilize approximately 7.2 million tons per year of petroleum coke and limestone. The application states that material

handling facilities for this petroleum coke and limestone are “required” for LBEC to operate. However, in its application Las Brisas failed to include the emissions from these required facilities in its inventory of emissions, nor did Las Brisas include such emissions in its air dispersion modeling for purposes of demonstrating compliance with applicable NAAQS and PSD Increments. In a motion filed months before the November 2009 hearing, Las Brisas was notified that its application was deficient due to failure to address the material handling facilities, yet Las Brisas failed to make any amendment to its application.

Las Brisas also failed to perform a case-by-case Maximum Achievable Control Technology (“MACT”) analysis for the LBEC boilers. A December 2000 EPA decision (the “2000 Listing Decision”) subjected coal-fired and oil-fired electric utility generating units (“EGUs”) to case-by-case MACT analysis. See 65 FR 79825 (December 20, 2000). Las Brisas contended that the petroleum coke-fired LBEC EGUs were neither “coal-fired” nor “petroleum-fired” (even though petroleum coke is a by-product of oil and has been included in multiple definitions of “coal” utilized by EPA) and as such no MACT analysis was necessary. However, it was undisputed at hearing that the LBEC boilers will emit large quantities of the exact same HAPs – including arsenic, mercury, lead, chromium, cadmium, beryllium and nickel – which were cited in EPA’s 2000 Listing Decision as the reason for requiring a MACT analysis for “coal-fired” and “oil-fired” boilers. TCEQ’s own permit engineer Randy Hamilton testified that there was no technical reason why petroleum coke-fired boilers should be treated differently from coal-fired and oil-fired boilers and exempted from the MACT analysis requirements. Furthermore, EPA specifically notified TCEQ that MACT applies to the proposed LBEC pet-coke fired boilers, setting forth in a February 2009 comment letter to TCEQ a list of detailed considerations “for [TCEQ] to consider as you develop the case-by-case section 112(g) MACT standard for the LBEC.” See Attachment I at p. 1.

After the Initial Hearing, the SOAH judges issued a Proposal for Decision (“Initial PFD”) dated March 29, 2010, recommending that TCEQ not grant the application on multiple grounds. Among these grounds, SOAH concluded that MACT applied to the LBEC boilers and that as a result the application must either be denied or remanded to the TCEQ for further technical review. In addition, the SOAH judges concluded that Las Brisas failed to demonstrate that it complied with applicable air quality standards in light of its failure to disclose the actual material handling facilities required for LBEC to operate, and to model emissions impacts from those facilities.

TCEQ considered SOAH’s Initial PFD and issued an Interim Order on July 1, 2010 (the “Interim Order”). In the Interim Order, TCEQ ruled, contrary to both SOAH’s and EPA’s position, that the LBEC boilers were not subject to case-by-case MACT requirements. However, TCEQ remanded the case to SOAH to take additional evidence on various other issues cited by SOAH, including the material handling facilities for LBEC.

Thus, as a direct result of Las Brisas’s failure to disclose and address its material handling plans, an additional hearing before SOAH was required, significantly delaying the issuance of any permit. This hearing was originally scheduled for September 7-10, 2010, but was postponed for six weeks until October 18, 2010 after Dr. Roberto Gasparini, Ph.D, one of the expert witnesses on air dispersion modeling, was seriously injured in an auto accident. Las Brisas complained of this postponement, arguing that it would be harmed by the continuance because of the potential for the EPA to implement its GHG Tailoring Rule (Tailoring Rule) before a final order can be issued in this case, thus potentially requiring consideration of GHG emissions. In response, SOAH stated as

follows:

[T]he [Judges] note that [Las Brisas] finds itself in this predicament of its own making. As noted in the [Initial PFD], [Las Brisas] failed to meet its burden of proof when given a two-week hearing to present its application—even though it had been made aware of many of the issues by the protestants months before the hearing (on, for example, secondary emissions and materials handling concerns). [Las Brisas] never addressed some of those deficiencies . . . Thus, [Las Brisas] finds itself in the present predicament because it failed to prove its application met all applicable rules and regulations during the first hearing.

See Attachment J at pp. 3-4. SOAH thus denied Las Brisas's request for reconsideration of the six week continuance.

Prior to the October, 2010 hearing, Las Brisas presented two new "hypothetical" material handling scenarios, neither of which was included in its application. Although Las Brisas quantified emissions from each of the two hypothetical scenarios and included those emissions in its air dispersion modeling, Las Brisas refused to commit to either scenario, and ultimately stated that the "hypothetical" scenarios were "strictly for demonstrative purposes." In addition, Las Brisas treated the material handling facilities as "secondary emissions" rather than emissions from the LBEC stationary source, even though its application stated the material handling facilities were "required" for LBEC to operate. Las Brisas submitted its additional air dispersion modeling to TCEQ prior to July 2010, and that modeling was subjected to technical review by the TCEQ's Air Dispersion Modeling Team ("ADMT") prior to the October 2010 hearing.

SOAH conducted a four-day evidentiary hearing on remand from October 18-21, 2010. Undisputed evidence was presented through expert witness Dr. Gasparini showing that, if the required material handling facilities are included as part of LBEC "stationary source" for purposes of performing air dispersion modeling, LBEC greatly exceeds the maximum 24-hour PSD increment for PM<sub>10</sub> of 30 µg/m<sup>3</sup>. Thus, it was contended that by excluding the required material handling facilities from LBEC and dividing the stationary source in two, Las Brisas seeks to permit a new source of air pollutants that, as a matter of law cannot be permitted as a single stationary source.

On December 1, 2010, SOAH issued a Proposal for Decision on Remand ("Remand PFD"). In the Remand PFD, SOAH once again concluded that Las Brisas failed to meet its burden of proof by failing to demonstrate compliance with the 24-hour PSD increment for PM<sub>10</sub>, finding that, the TCEQ improperly assisted Las Brisas in carrying its burden of proof in violation of a Texas statute (Texas Water Code § 5.228(e)) by performing its own air dispersion modeling correcting deficiencies in the Las Brisas's modeling. In the Remand PFD, the ALJs also found that the Las Brisas's reliance on "hypothetical" material handling scenarios did not demonstrate compliance with applicable PSD increments absent a binding requirement to utilize such scenarios, stating "[t]o make the necessary showing, an applicant has to be bound to the operations it has modeled . . . [o]therwise, any showing is merely illusory."

By letter dated January 24, 2011, EPA notified TCEQ that it still harbored significant concerns about Las Brisas's compliance with federal requirements. Attachment K. In this letter, EPA noted that it had promulgated a health-based 1-hour nitrogen dioxide (NO<sub>2</sub>) and sulfur dioxide (SO<sub>2</sub>) NAAQS and that EPA interpreted CAA and PSD regulations to require a showing of

compliance with these NAAQS. EPA noted that it had not been provided any records demonstrating compliance with these standards. In fact, it is undisputed that no demonstration of compliance has been made by Las Brisas as to the new 1-hour NO<sub>2</sub> and SO<sub>2</sub> NAAQS. In the February 24, 2011 letter, EPA also notified TCEQ that Las Brisas would need to work with EPA to determine whether it is subject to new GHG permitting requirements which became effective January 2, 2011.

Notably, the health-based 1-hour NO<sub>2</sub> and SO<sub>2</sub> NAAQS were enacted effective April 12, 2010 and August 23, 2010, respectively. Thus, the application of SO<sub>2</sub> NAAQS and GHG permitting requirements – which each became effective after TCEQ’s remand on July 1, 2010 – to Las Brisas resulted directly from its complete failure to disclose its material handling plans in the initial SOAH hearing and resulting failure to meet its burden of proof. In short, Las Brisas and Las Brisas alone is to blame for the applicability of NAAQS and GHG requirements to its project.

Despite SOAH’s and EPA’s concerns, TCEQ nevertheless issued a Final Order on February 22, 2011 granting the permits. In addition to erroneously granting the permits, TCEQ failed to include in the Final Order any requirement (as recommended by the SOAH) that Las Brisas actually utilize one of the two “hypothetical” material handling scenarios that Las Brisas relied upon for its “demonstration” of compliance with the NAAQS and PSD Increments.

Thus, in granting the requested permits, TCEQ ignored EPA’s position: (1) that a MACT analysis was required for the LBEC boilers; (2) that LBEC is subject to the health-based NO<sub>2</sub> and SO<sub>2</sub> NAAQS, and (3) that LBEC is subject to GHG permitting requirements. In addition, TCEQ ignored SOAH’s conclusions on at least three legal issues: (1) SOAH’s conclusion in the Initial PFD that a case-by-case MACT analysis was required; (2) SOAH’s conclusion in the Remand PFD that the permits could not be issued without violating Texas Water Code § 5.228(e); and (3) SOAH’s conclusion in the Remand PFD that Las Brisas could not demonstrate compliance with applicable PSD Increments for PM<sub>10</sub> absent a binding commitment to utilize the “hypothetical” material handling facilities that Las Brisas made the basis of its application.

TCEQ’s decision granting the permits was appealed to the 345<sup>th</sup> Judicial District Court of Travis County, Texas. The appeal was briefed by all parties and oral argument was held May 7, 2012. By letter dated May 14, 2012, 345<sup>th</sup> District Court Judge Hon. Stephen Yelenosky announced that he intends to reverse TCEQ’s Final Order granting the Las Brisas permits on at least four grounds, concluding TCEQ erred: (1) by failing to require a MACT demonstration for the LBEC CFB boilers; (2) by allowing to Las Brisas to rely on non-binding material handling scenarios for purposes of “demonstrating compliance” with applicable CAA requirements; (3) by failing to require Las Brisas to demonstrate compliance with the new NO<sub>2</sub> and SO<sub>2</sub> NAAQS, which “became effective while Las Brisas application was still under review and months prior to the second hearing before SOAH, on remand from the [TCEQ]”; and (4) by assisting Las Brisas in meeting its burden of proof in violation of Texas Water Code § 5.228(e). Attachment L at pp. 2-6. As of the date of these comments, plaintiffs have submitted a proposed order, but no formal order has been entered yet.

In conclusion, the history of this case reveals:

- Las Brisas filed its application in 2008, and had a full evidentiary hearing on that permit application before SOAH in 2009;



- Prior to the 2009 hearing, concerns were raised with Las Brisas's failure to address emissions from its required material handling, yet Las Brisas failed to amend its application to address this failure;
- As a direct result of Las Brisas's failure to address emissions from the required material handling facilities, TCEQ remanded its application to SOAH in mid-2010 for further review, resulting in significant delay in permit issuance;
- As a result, Las Brisas became subject to the health-based 1-hour NO<sub>2</sub> and SO<sub>2</sub> NAAQS which took effect in 2010;
- SOAH held an additional evidentiary hearing in October 2010, prior to which TCEQ performed additional technical review of Las Brisas's air dispersion modeling;
- During this hearing, Las Brisas could have, but elected not to, submit evidence regarding compliance with the health-based 1-hour NO<sub>2</sub> and SO<sub>2</sub> NAAQS;
- As a result of Las Brisas's failure to address material handling in its application and other errors, no permit was issued until after January 2, 2011, when EPA's new GHG PSD requirements took effect;
- As of the current date, Las Brisas has an incomplete PSD permit because its application for a GHG PSD permit is still pending; moreover, it has failed to meet multiple other applicable pre-construction requirements under the CAA including (i) any MACT demonstration for the LBEC boilers; (ii) any attempt to demonstrate compliance with the new 1-hour NO<sub>2</sub> and SO<sub>2</sub> NAAQS; and (iii) any demonstration of compliance with the 24-hour PM<sub>10</sub> PSD increment; and
- As an additional result of Las Brisas's and TCEQ's failures to comply with multiple CAA requirements, a Texas District Court Judge has announced he intends to reverse TCEQ's February, 2011 order granting Las Brisas's permit.

The history of Las Brisas's application demonstrates a repeated refusal to comply with multiple core requirements of the CAA, despite the admonishments of both EPA and SOAH. Had it complied with applicable CAA requirements, Las Brisas could have received a permit shortly after the November 2009 SOAH hearing. However, it did not do so, despite ample notice of the deficiencies in its application. Las Brisas has only itself to blame for its current predicament.

Finally, it has come to EDF's attention that Las Brisas has claimed in a Petition for Review of EPA's GHG New Source Performance Standards filed with the United States Court of Appeals for the District of Columbia Circuit that it "has invested approximately \$40 million in the development of LBEC." Attachment M at p. 3. Las Brisas does not itemize or otherwise describe the nature of the expenses that comprise this alleged \$40 million sum. It appears possible that a large portion of this sum may consist of a lease covering the LBEC property which contains a 30 to 35 year term and annual rents of up to \$948,520.00. Attachment N at pp. 1, 3 (copy of Lease Agreement between Las Brisas Energy Center, LLC and Port of Corpus Christi Authority of Nueces County,



Texas, filed with Water Quality Division of TCEQ). To the extent Las Brisas contends that this lease is included in its claimed \$40 million investment, EPA should be aware that the copy of the LBEC lease agreement filed with TCEQ indicates that the rental obligation is not absolute, as Las Brisas has the right to terminate this Lease Agreement if its financing for improvements is not closed by January 31, 2013. Attachment N at p.2, last paragraph of Section 1.01. And in any event, even if Las Brisas has in fact expended substantial sums in connection with its project, such an expenditure does not excuse its own willful failure to comply with applicable requirements under the CAA.

In light of the history of its application, absolutely no equitable or extenuating circumstances exist justifying inclusion of Las Brisas among the transitional sources. To the exact contrary, EDF submits that making any exception would be particularly unjustified and inappropriate, and would simply reward Las Brisas for its own refusal to comply with core CAA requirements.

# # #

Thank you for your consideration of these comments.



June 25, 2011

Via Website and Email

<http://www.epa.gov/oar/docket.html>

[a-and-r-docket@epa.gov](mailto:a-and-r-docket@epa.gov), Attn: Docket ID No. EPA-HQ-OAR-2011-0660

EPA Docket Center

U.S. EPA, Mail Code 2822T

1200 Pennsylvania Ave. NW.

Washington, DC 20460

Re: Environmental Protection Agency, Standards of Performance for  
Greenhouse Gas Emissions for New Stationary Sources: Electric Utility  
Generating Units  
Docket ID No. EPA-HQ-OAR-2011-0660

Environmental Defense Fund, Inc. ("EDF") respectfully offers the following comments on the U.S. Environmental Protection Agency's ("EPA") proposed Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources ("GHG NSPS").<sup>1</sup> EDF submits these comments on behalf of our hundreds of thousands of members nationwide. EDF has participated in this rulemaking proceeding for some time and these comments and all other comments submitted by EDF and its members, alone or jointly with other commenters, should be considered to reflect the comments and views of EDF as part of this proceeding. All documents referred to herein and all Attachments should be incorporated as part of the administrative record of this rulemaking proceeding.

The comments provided below address the following topics:

- (I) The Need to Curb Climate-Destabilizing Emissions from Power Plants Is Urgent. The New Source Carbon Pollution Standards Are a Vitally Important Step Towards Accomplishing this Critical Task.
- (II) EPA Has Failed to Carry Out Its Legal Responsibilities to Address Greenhouse Gas Emissions from Power Plants Under § 111 of the Clean Air Act.

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<sup>1</sup> 77 Fed. Reg. 22,392 (April 13, 2012).

- (III) Both Climate Science and the Clean Air Act Require EPA To Act To Control Carbon Pollution from Existing Power Plants, and Solutions Are Readily Available to Reduce Emissions From These Sources.
- (IV) The Determination that Natural Gas Combined Cycle Technology is the Best System of Emission Reduction Was a Proper Exercise of EPA's Authority Under § 111(b).
- (V) The Alternate Pathway Provided for Coal Plants Is Consistent with Both the NSPS Program's Technology-Forcing Purpose and Agency Regulatory Practice.
- (VI) EPA Is Not Obligated to Make A New Endangerment Finding Once Sources Have Been Listed Under § 111.
- (VII) The Social Cost of Carbon Estimate Used in Federal Benefits Analyses Must Be Updated to Reflect Current Science.
- (VIII) EPA Should Ensure Future Accessibility of Emission Records.

I. The Need to Curb Climate-Destabilizing Emissions from Power Plants Is Urgent. The New Source Carbon Pollution Standards Are a Vitally Important Step Towards Accomplishing this Critical Task.

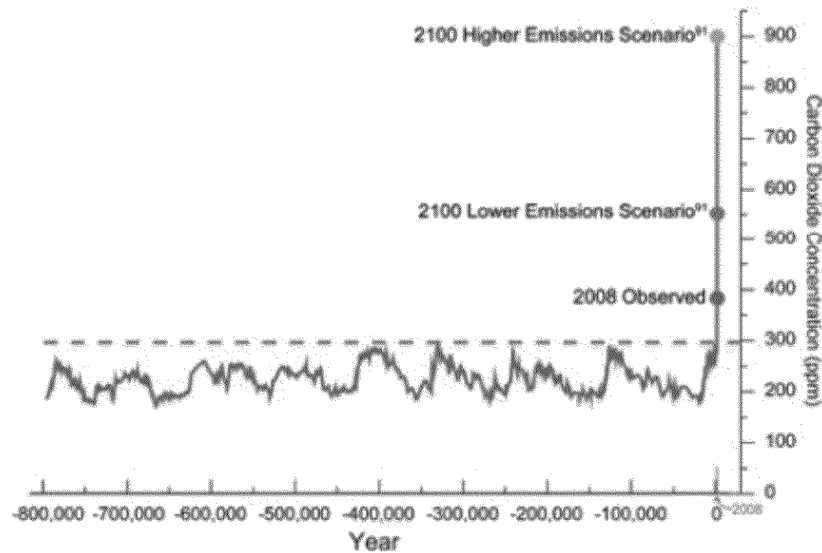
In December of 2009 the U.S. Environmental Protection Agency ("EPA") concluded—after reviewing a comprehensive and massive body of peer-reviewed scientific research on climate change—that heat-trapping greenhouse gas emissions may reasonably be anticipated to endanger public health and welfare of both current and future generations.<sup>2</sup> Due to human activities—primarily the combustion of fossil fuels and deforestation—the concentration of these gases in the atmosphere is rapidly rising. Atmospheric carbon dioxide (CO<sub>2</sub>) levels have increased by approximately 38% since the Industrial Revolution (see Figure 1); current atmospheric concentrations of both CO<sub>2</sub> and methane (an even more potent greenhouse gas) are significantly higher than they have been for the last 800,000 years.<sup>3</sup>

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<sup>2</sup> See Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (to be codified at 40 C.F.R. ch. I).

<sup>3</sup> See U.S. Env'tl. Prot. Agency, Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act ES-1 to -2 (2009) (hereinafter TSD); Intergovernmental Panel on Climate Change, Climate Change 2007: The Physical Science Basis, at 512 (S. Solomon et al. eds., 2007) (hereinafter IPCC 2007); U.S. Global Change Research Program, Global Climate Change Impacts in the United States (2009) (hereinafter USGCRP 2009).

Figure 1. 800,000-Year Record of Carbon Dioxide Concentration



This chart shows CO<sub>2</sub> concentrations in the atmosphere over the last 800,000 years, based upon analyzing air bubbles trapped in an Antarctic ice core. It also shows that unless we curb greenhouse gas emissions, atmospheric CO<sub>2</sub> concentrations will likely double or triple by the end of this century from pre-industrial levels.<sup>4</sup>

The increase in the amount of solar radiation that is trapped in the earth's atmosphere is causing average global temperatures to rise. Global temperature records independently assembled by National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, and the United Kingdom's Hadley Center indicate that global mean surface temperatures have risen by  $1.3 \pm 0.32^{\circ}\text{F}$  over the past 100 years (1906-2005), with the greatest warming occurring during the past 30 years.<sup>5</sup> Climate models can successfully replicate historic climates, but they cannot replicate the observed temperature rise over the past 50 years without incorporating the rising quantities of anthropogenic greenhouse gas emissions.<sup>6</sup> See Figure 2. Further, only models including anthropogenic greenhouse gas emissions can replicate the observed pattern of warming observed in different regions and in different parts of the atmosphere.<sup>7</sup>

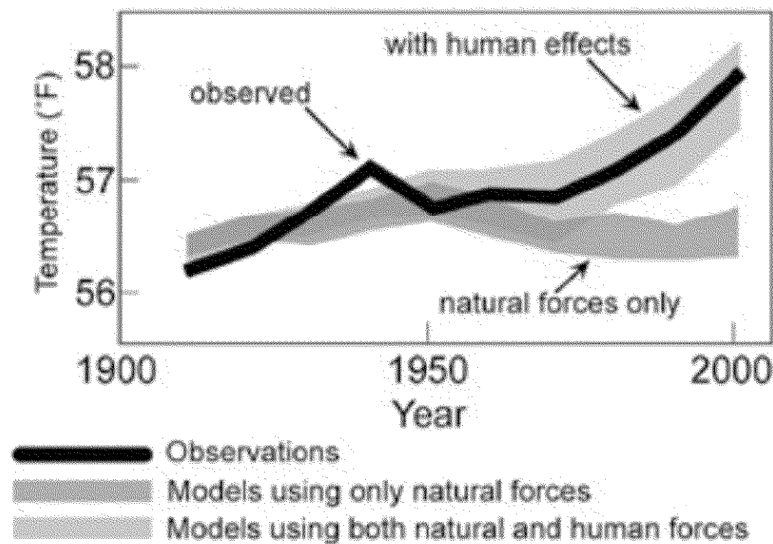
<sup>4</sup> USGCRP 2009 at 2.

<sup>5</sup> See Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. at 66,522; TSD at ES-2, -28 to -29; IPCC 2007 at 683.

<sup>6</sup> USGCRP 2009 at 19, 74 Fed. Reg. at 66518.

<sup>7</sup> IPCC 2007 at 74; Fed. Reg. at 66518.

Figure 2. Separating Human and Natural Influences on Climate



This figure shows that models using only natural forces cannot replicate observed warming – in fact, they would predict a slight cooling. Only models accounting for greenhouse gases can duplicate the observed warming trend.<sup>8</sup>

Rising temperatures are causing thermal expansion of the oceans and accelerated melting of snow and ice, driving the rise in global sea levels observed during the 20<sup>th</sup> century.<sup>9</sup> In addition, approximately half of anthropogenic greenhouse gas emissions have been absorbed by plants and the oceans.<sup>10</sup> Because carbonic acid forms when CO<sub>2</sub> dissolves in water, global average sea surface pH has dropped by approximately .1 pH units since the Industrial Revolution (equivalent to a 30% increase in acidity).<sup>11</sup>

Climate change presents severe risks to the health and well-being of Americans.

Most areas of the United States are likely to warm by 1.8-5.4°F between 2010 and 2039 and by 7-11°F by the end of the century under a high emissions scenario (one assuming business-as-usual emissions) and by 4-6.5°F under a lower emissions scenario (assuming reductions in emission rates).<sup>12</sup> This increase in average temperatures is expected to have wide-ranging impacts. Rising temperatures will increase emissions of volatile organic compounds from plants

<sup>8</sup> USGCRP 2009 at 20.

<sup>9</sup> 74 Fed. Reg. at 66518.

<sup>10</sup> TSD at 17.

<sup>11</sup> IPCC 2007 at 750; 74 Fed. Reg. at 66518.

<sup>12</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Impacts, Adaptation and Vulnerability* at 626 (M. L. Parry et al. eds., 2007); USGCRP 2009 at 29; TSD at 69.

and soils (precursors of smog), accelerate ozone (and smog) formation, and increase the frequency and duration of stagnant air masses that allow pollution to accumulate. (TSD at 89-93, USGCRP 2009 at 93-94) Higher ozone levels exacerbate respiratory illnesses, increasing asthma attacks and hospitalizations and increasing the risk of premature death.<sup>13</sup>

Rising temperatures will also result in heat waves that are hotter, longer, and more frequent.<sup>14</sup> Under high emission scenarios, extreme heat waves that currently occur once every twenty years are expected to occur at least every other year in much of the country by the end of the century, with the hottest days approximately 10°F hotter than they are today.<sup>15</sup> The sick and elderly are particularly vulnerable to such impacts. In Los Angeles, annual heat-related deaths are projected to double or triple under a low emissions scenario and to increase by five to seven times under a higher emissions scenario, assuming acclimatization to higher temperatures.<sup>16</sup>

Rising temperatures will reduce snowpack and accelerate snow melt, threatening water supplies in late summer in the West.<sup>17</sup> In addition, significant reductions in winter and spring precipitation are projected for the South, especially in the Southwest, further imperiling water supplies.<sup>18</sup> Rising temperatures will likely increase the length and severity of droughts, especially in the American West.<sup>19</sup> Precipitation events in general and some types of storms, particularly hurricanes, are expected to become more intense, increasing the likelihood of severe flooding.<sup>20</sup>

Droughts are expected to be more frequent, and the extent of drought-limited ecosystems is projected to increase by 11% for every degree C of warming in the United States.<sup>21</sup> This is expected to exacerbate the water scarcity already affecting regions of the United States.<sup>22</sup>

Water shortages and heavy precipitation events are likely to further stress flood control, drinking water, and wastewater infrastructure.<sup>23</sup>

Global sea levels are likely to rise between seven inches and four feet during the 21st century, both because of ice sheet melting and because seawater expands as it warms.<sup>24</sup> This amount of sea level rise, in combination with more powerful hurricanes, will increase the risks of erosion,

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<sup>13</sup> Environmental Protection Agency, Regulatory Impact Analysis for the Proposed Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Generating Units (March 2012) at 3-2 -3-3, 5-24 (hereinafter RIA).

<sup>14</sup> IPCC 2007 at 750; 74 Fed. Reg. at 66524-25)

<sup>15</sup> USGCRP 2009 at 33-34.

<sup>16</sup> USGCRP 2009 at 90-92.

<sup>17</sup> USGCRP 2009 at 10, 45-46.

<sup>18</sup> USGCRP 2009 at 30; 74 Fed. Reg. at 66,532.

<sup>19</sup> USGCRP 2009 at 30, 41-46; IPCC 2007 at 262-263, 783; 74 Fed. Reg. at 66,532-34.

<sup>20</sup> USGCRP 2009 at 34-36, 44, 64; TSD at ES-4, 115; AR4, IPCC 2007 at 783; 74 Fed. Reg. at 66,525.

<sup>21</sup> RIA at 3-5, 3-8.

<sup>22</sup> RIA at 3-5.

<sup>23</sup> USGCRP 2009 at 47-51, 132-36; 74 Fed. Reg. at 66,532-33.

<sup>24</sup> USGCRP 2009 at 37, 150; AR4, IPCC 2007 at 750.

storm surge damage, and flooding for coastal communities, especially along the Atlantic and Gulf coasts, Pacific Islands, and parts of Alaska.<sup>25</sup> Under a higher emission scenario, what is currently a once-a-century flood in New York City is projected to be twice as common by mid-century and 10 times as frequent by the end of the century.<sup>26</sup> With accelerated sea level rise, portions of major coastal cities, including New York and Boston, would be subject to inundation during storm surges or even during regular high tides.<sup>27</sup> In the Gulf Coast area, an estimated 2,400 miles of major roadways are at risk of permanent flooding within 50 to 100 years due to anticipated sea level rise in the range of 4 feet.<sup>28</sup>

The RIA reports, based on findings of the National Research Council, that ocean acidity has increased “25 percent since pre-industrial times, and is projected to continue increasing.”<sup>29</sup> If atmospheric carbon dioxide doubles, oceanic acidity will also increase, leaving almost nowhere in the ocean where coral reefs can survive and threatening the ocean’s food webs, which rely upon coral reefs as fish nurseries and planktonic animals that may be unable to survive a more acidic sea.<sup>30</sup> The loss of healthy ocean ecosystems would have devastating effects on the global food supply.

In addition, the more temperatures rise, the greater the risk that non-linear climate thresholds could be reached, generating abrupt changes with potentially catastrophic impacts for natural systems and human societies.<sup>31</sup> Such thresholds include rapid ice sheet disintegration with related acceleration of sea level rise, abrupt shifts in drought frequency and duration, severe acidification-related impacts on marine ecosystems, and runaway warming due to the release of methane from thawing permafrost and methane hydrates in oceanic sediments.<sup>32</sup>

The need to act to mitigate these harms is truly urgent.

## II. EPA Has Failed to Carry Out Its Legal Responsibilities to Address Greenhouse Gas Emissions from Power Plants Under § 111 of the Clean Air Act.

In 2005, Environmental Defense Fund asked EPA to carry out its responsibilities under the Clean Air Act to address the climate destabilizing greenhouse gas emissions associated with electric generating units. See April 2005 Comments of Environmental Defense Fund et al re

<sup>25</sup> USGCRP 2009 at 12, 36, 109-10, 142-43, 149-50.

<sup>26</sup> USGCRP 2009 at 109-10.

<sup>27</sup> USGCRP 2009 at 150.

<sup>28</sup> USGCRP 2009 at 62.

<sup>29</sup> RIA at 3-9.

<sup>30</sup> RIA at 3-7, 3-9 – 3-10; National Research Council, *Advancing the Science of Climate Change* at 55-56, 59-60 (2010), available at [http://www.nap.edu/openbook.php?record\\_id=12782](http://www.nap.edu/openbook.php?record_id=12782).

<sup>31</sup> USGCRP 2009 at 26; National Research Council, *Abrupt Climate Change, Inevitable Surprises* at v, 16, 154 (2002); US Climate Change Science Program, *Abrupt Climate Change* at 10 (2008); TSD at 66.

<sup>32</sup> USGCRP 2009 at 26, 155 (JA 5349, 5478); TSD 75-78, 134, 137-38 (JA 3423-26, 3482, 3485-86).

“Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978; Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units; and Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.” 70 Fed. Reg. 9706 (Feb. 28, 2005).

Since that time, the power sector has discharged over 10 billion tons of climate-disruptive greenhouse gases. And since 2005, over seven years ago, EPA has neither finalized a standard for new EGUs nor taken any action to address the vast volume of emissions from existing plants. EPA's failure to act is manifestly contrary to law.

EPA is required to establish standards of performance addressing the GHGs from new and existing EGUs under section 111(b), (d) of the Clean Air Act. EDF filed a petition for judicial review in the U.S. Court of Appeals for the D.C. Circuit when EPA refused to establish such emission standards in response to our 2005 comments. The court held the briefing on this claim in abeyance when the U.S. Supreme Court granted review in *Massachusetts v. EPA*.

On April 2, 2007 the Supreme Court held that greenhouse gases were air pollutants within the capacious definition of that term under the Clean Air Act and directed EPA to carry out its responsibility under section 202 of the Clean Air Act to determine whether greenhouse gases endanger human health and welfare on the basis of science. In September 2007, the D.C. Circuit remanded the case challenging EPA's flawed NSPS for EGUs in light of the Supreme Court's ruling in *Massachusetts v. EPA*, 549 U.S. 497 (2007). See *New York v. EPA* (D.C. Cir. 06-1322) (order of Sept. 24, 2007).

EPA has a clear and plain responsibility to take action under the law. As a threshold matter, the Clean Air Act commands EPA to publish a list of each category of stationary source that “causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” 111(b)(1)(A); see also *id.* § 111(a)(3) (defining “stationary source”). All of the predicates for EPA to carry out its long overdue rulemaking responsibilities under section 111 are complete. EPA has issued its finding that six greenhouse gases endanger human health and the environment. See 74 Fed. Reg. 66,496 (Dec. 15, 2009); see also 75 Fed. Reg. 49,556 (Aug. 13, 2010) (denying reconsideration petitions). Demonstrated technologies can significantly reduce greenhouse gas emissions from power plants. Indeed, the legal and policy framework for EPA action has long been explicated. See, e.g., CRS, *Climate Change: Potential Regulation of Stationary Source Greenhouse Gas Sources Under the Clean Air Act* (May 14, 2009).

But EPA has failed to carry out its responsibilities leaving public health and the environment imperiled. Once EPA has listed a source category, the Agency must promulgate federal standards of performance to regulate emissions from new, modified and reconstructed sources in that category. Section 111(b)(1)(B); see also 111(a)(2) (defining “new source”); 111(a)(4) (defining “modification”); 40 C.F.R. § 60.15(b) (defining “reconstruction”). Such standards are commonly referred to as “new source performance standards” or “NSPS.”

By definition, an NSPS is



a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of 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.

Section 111(a)(1).

Section 111(b)(1)(B) explicitly requires that EPA complete a timely review and revision of the NSPS, mandating that “[t]he Administrator shall, at least every 8 years, review and, if appropriate, revise such standards following the procedure required by this subsection for promulgation of such standards.” 111(b)(1)(B). This provision further mandates that the 8-year review is required unless “the Administrator determines that such review is not appropriate in light of readily available information on the efficacy of such standard.” *Id.* Similarly, the Administrator must revise the standard “at least every 8 years” unless she promulgates a determination that such a revision is not “appropriate” under the Clean Air Act. *Id.*

For existing sources, section 111(d) of the Clean Air Act, 42 U.S.C. § 7411(d), requires that the Administrator ensure the promulgation of standards that are based on the new source performance standards. *Id.* § 7411(d)(1). The procedure that EPA has promulgated for this purpose starts with the required promulgation of federal “emission guidelines” (“EG”) for existing sources. See 40 C.F.R. §§ 60.21(e), 60.22; see also 40 C.F.R. §§ 60.20-60.29 (describing overall procedure for existing sources). Specifically, the section 111(d) procedure mandates that:

Concurrently upon or after proposal of standards of performance for the control of a designated pollutant from affected facilities, the Administrator will publish a draft guideline document containing information pertinent to control of the designated pollutant from [sic] designated facilities. . . . After consideration of public comments and upon or after promulgation of standards of performance for control of a designated pollutant from affected facilities, a final guideline document will be published and notice of its availability will be published in the Federal Register.

*Id.* § 60.22(a) (emphasis added).

These required emission guidelines for existing sources, like NSPS, must reflect the best demonstrated technology. See *id.* § 60.22(b)(5); *id.* § 60.21(e). After EPA establishes these required emission guidelines for existing sources under 40 C.F.R. § 60.22, each State must implement and enforce EPA’s guidelines, by submitting a plan that includes standards to control emissions from these sources that are “no less stringent” than the federal emission guidelines. *Id.* §§ 60.23(a), 60.24(c); see also *id.* § 60.27.

While EPA has failed to complete its delegated rulemaking responsibilities, the U.S. has represented to the U.S. Supreme Court that EPA is taking action to address greenhouse gases

from the power sector. In nuisance claims maintained by a coalition of states against the nation's largest power companies under the federal common law, the U.S. Government expressly pointed to its Settlement Agreement over its failure to address power plant greenhouse gases and represented to the U.S. Supreme Court that EPA was carrying out the Clean Air Act in a way that “speak[s] directly” to the particular claims in question – the regulation of greenhouse gases from power plants – and the common law nuisance claims were thereby displaced:

In another significant step indicating EPA's active engagement in the process of determining how and when greenhouse-gas emissions will be regulated, EPA announced on December 23, 2010 that it had entered into a proposed settlement agreement in an earlier case about whether the new source performance standards (NSPS) for utility boilers (i.e., power plants like defendants') should include standards for greenhouse-gas emissions.<sup>24</sup> That proposed settlement (which was subject to a 30-day public-comment period that expired on January 31, 2011, see 75 Fed. Reg. at 82,392) would commit EPA to complete a NSPS rulemaking under Section 111 of the CAA (42 U.S.C. 7411). If the settlement is adopted by EPA, the purpose of the ensuing rulemaking would be to consider standards applicable to new and modified facilities; it would simultaneously consider standards under which States would be required (under 42 U.S.C. 7411(d)) to impose regulatory limitations on emissions from existing facilities. See p. 4, *supra*. Under the settlement, EPA would issue a proposed rule by July 26, 2011 and promulgate final regulations by May 26, 2012.<sup>25</sup> Thus, if the settlement is formally adopted, EPA will have established a precise time line for deciding whether and to what extent emissions standards under the CAA will apply to the very carbon-dioxide emissions at issue in this case.

3. As the foregoing discussion demonstrates, EPA now regulates greenhouse-gas emissions under the currently existing statutory scheme of the CAA, and it may soon be specifically committed to completing a rulemaking to address greenhouse-gas-emissions standards applicable to defendants' already-existing power plants, even if they are not modified. Thus, it is abundantly clear that the CAA, as it is now being implemented by EPA, “speak[s] directly” (*Milwaukee II*, 451 U.S. at 315 (quoting *Mobil Oil*, 436 U.S. at 625)) to the particular issue presented by plaintiffs' federal common-law nuisance claims about climate change: regulation of greenhouse-gas emissions, and in particular emissions from stationary sources (like defendants' power plants). The conclusion that EPA's actions have displaced any common-law emissions standards is unaffected by EPA's decision to adopt an incremental approach that will not necessarily lead to standards specifically governing greenhouse-gas emissions from defendants' already existing power plants (unless they are modified and thus require a PSD permit under the new regulations), at least until some time after May 26, 2012. In *Middlesex County Sewerage Authority*, the Court held that the Marine Protection, Research, and Sanctuaries Act of 1972 displaced federal common law immediately and entirely, even though “Congress allowed some continued dumping of sludge” for nine years after the statute was enacted based on its “considered judgment that it made sense to allow entities like petitioners to adjust to the coming change.” 453 U.S. at 22 n.32; see also *Massachusetts v. EPA*, 549 U.S. at 533 (recognizing that EPA possesses “significant

latitude as to the manner, timing, content, and coordination of its regulations”); *id.* at 524 (“Agencies, like legislatures, do not generally resolve massive problems in one fell regulatory swoop. They instead whittle away at them over time, refining their preferred approach as circumstances change and as they develop a more nuanced understanding of how best to proceed.”).

Although EPA has not yet done precisely what plaintiffs demand here (i.e., cap defendants’ carbon-dioxide emissions and require them to be reduced annually for at least a decade, J.A. 110, 153), that is not the relevant test. As this Court has stated: “Demanding specific regulations of general applicability before concluding that Congress has addressed the problem to the exclusion of federal common law asks the wrong question. The question is whether the field has been occupied, not whether it has been occupied in a particular manner.” *Milwaukee II*, 451 U.S. at 324; see also *id.* at 323 (“Although a federal court may disagree with the regulatory approach taken by the agency with responsibility for issuing permits under the Act, such disagreement alone is no basis for the creation of federal common law.”); *Illinois v. Outboard Marine Corp.*, 680 F.2d 473, 478 (7th Cir. 1982) (refusing “to find that Congress has not ‘addressed the question’ because it has not enacted a remedy against polluters,” because that “would be no different from holding that the solution Congress chose is not adequate,” and “*Milwaukee II* \* \* \* precludes the courts from scrutinizing the sufficiency of the congressional solution”).

Because EPA’s regulatory activities speak directly to the issue of greenhouse-gas emissions, any common-law claims seeking to reduce such emissions have been displaced.

Brief of U.S. Government Brief in *AEP v. Connecticut* (No. 10-174) at ps. 50-53.

While EPA’s mandatory responsibilities to act in addressing new and existing sources under section 111 are manifest and the U.S. Government has pointed to its commitment to act in addressing emissions from the power sector, including existing power plants, as the basis for the U.S. Supreme Court to displace federal common law of nuisance claims, no final standards have been adopted. Moreover, EPA has failed to take any regulatory action at all to address the massive emissions from existing sources. EPA’s failure to act contravenes its manifest responsibilities under the law. See, e.g., 42 U.S.C. §7604; 40 CFR part 54; see also *Telecomms. Research & Action Center v. FCC*, 750 F.2d 70 (D.C. Cir. 1984).

### III. Both Climate Science and the Clean Air Act Require EPA to Act to Control Carbon Pollution from Existing Power Plants, and Solutions Are Readily Available to Reduce Emissions From These Sources.

If promptly finalized the proposed carbon pollution standards for new power plants will help ensure that new American power generation infrastructure is cleaner, more efficient, and less damaging to human health and well-being. Such standards are, however, insufficient to satisfy EPA’s legal obligation under the Clean Air Act to control dangerous pollution from existing

sources, and incapable of cutting power sector emissions by the amounts demanded by the rigorous science documenting the severe risks posed by climate change to Americans and American communities.

CO<sub>2</sub> emissions from existing power plants are the single largest source of U.S. emissions and are a significant component of global emissions. The EPA's Inventory of Greenhouse Gas Emissions and Sinks reports that electrical generation was responsible for 2,258 million metric tons of CO<sub>2</sub> in 2010 (the most recent year of the inventory), which is 39% of annual U.S. CO<sub>2</sub> emissions.<sup>33</sup> Globally, U.S. power sector emissions constitute approximately 5% of emissions from all anthropogenic sources.<sup>34</sup> It is urgent that we act to reduce greenhouse gas emissions and prevent atmospheric concentrations of these heat-trapping gases from reaching levels that could destabilize our climate with catastrophic impacts for humans and our environment.<sup>35</sup> Dramatically reducing emissions from dominant pollution sources such as the power sector is therefore a necessary component of climate mitigation.

Section 111(d) is well suited to achieving GHG emission reductions from existing sources. Section 111(d) establishes a collaborative, iterative process through which EPA and the States can identify emission reduction opportunities at existing fossil fuel fired power plants and design tailored programs to achieve the required level of reductions. Under § 111(d), EPA will issue Emission Guidelines that identify the best system or systems of emission reduction that have been adequately demonstrated, and establish minimum levels of emission reductions that must be achieved by State plans. The States, however, have considerable flexibility in determining how to achieve the emission reductions identified in the Emission Guidelines. EPA will approve State plans that achieve emission reductions that are equivalent to the emission reductions required in the Emission Guidelines.

There is a wealth of opportunities available to cost-effectively reduce climate-destabilizing emissions from existing power plants. We urge EPA to look broadly across the electric sector in identifying opportunities for emission reductions. Individual plants can reduce their emissions by improving their efficiency, which will allow them to generate more power with less fuel and lower fuel costs. Mobilizing the nation's vast resources of energy efficiency offers the potential to cut not only carbon pollution but also harmful co-pollutant emissions while lowering utility bills for American families and businesses, creating jobs, stimulating local economies via re-channeled energy bill savings, improving energy security, and enhancing grid reliability. Deploying renewable energy and supply-side energy efficiency solutions such as combined heat and power to meet energy demand both have tremendous potential to reduce emissions from fossil fuel fired plants. We can also shift our utilization of fossil-fuel-fired plants to use our cleaner plants more and our dirtier plants less.

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<sup>33</sup> U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010 (2012) at Table ES-2.

<sup>34</sup> According to the EDGAR database, global emissions in 2008 were 46,917 million metric tons CO<sub>2</sub>e.

<sup>35</sup> National Research Council, Climate Stabilization Targets (2011) at 10.

Marshalling demand-side energy efficiency to secure emission reductions offers a win-win-win solution. A McKinsey analysis of the national economic potential for demand side energy efficiency, for example, indicates that energy efficiency improvements could reduce energy demand by more than 2% each year.<sup>36</sup> Achieving just 70% of the economic energy efficiency potential identified by the McKinsey 2009 analysis would reduce power sector emissions to 10% below 2011 levels by 2020—without considering the emission reduction potential of adding renewables, shifting utilization, or onsite efficiency improvements at power plants. Vermont is already achieving a 2% annual reduction in energy demand through its energy efficiency program.<sup>37</sup> Four states (including Vermont) have binding annual energy savings targets of 2% or above in existing policies: Massachusetts (2.4%), Vermont (2.25%), Arizona (2.2%), and Rhode Island (2.0%). An additional four states have binding annual energy savings targets of 1% or above: New York (1.9%), Minnesota (1.5%), Hawaii (1.5%), and California (1.0%).<sup>38</sup> Demonstrating the potential for reducing emissions via demand side energy efficiency alone will go far towards demonstrating the eminent achievability of significant power sector emission reductions in the near term.

Reducing electricity demand via energy efficiency and demand side management – with available technologies – has been demonstrated to be one of the most cost-effective means of reducing GHG emissions from the power sector.<sup>39</sup> The McKinsey 2009 study found that after

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<sup>36</sup> McKinsey, *Unlocking Energy Efficiency in the U.S. Economy* (2009), available at: [http://www.mckinsey.com/Client\\_Service/Electric\\_Power\\_and\\_Natural\\_Gas/Latest\\_thinking/Unlocking\\_energy\\_efficiency\\_in\\_the\\_US\\_economy.aspx](http://www.mckinsey.com/Client_Service/Electric_Power_and_Natural_Gas/Latest_thinking/Unlocking_energy_efficiency_in_the_US_economy.aspx). EPRI's 2009 analysis of the economic potential for demand-side energy efficiency, though more limited in scope than McKinsey's, found that the interventions to capture the economic energy efficiency potential could generate a .9% reduction in energy demand per annum—eliminating projected demand growth. EPRI, *Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S. (2010-2030)* (2009), available at: [http://www.edisonfoundation.net/iee/reports/EPRI\\_AssessmentAchievableEEPotential0109.pdf](http://www.edisonfoundation.net/iee/reports/EPRI_AssessmentAchievableEEPotential0109.pdf).

<sup>37</sup> *Efficiency Vermont, Year 2010 Savings Claim* (April 1, 2011) at 3, available at: [www.efficiencyvermont.com](http://www.efficiencyvermont.com). Energy efficiency programs in Nevada, Hawaii, Rhode Island, Minnesota, and Vermont all achieved energy demand reductions equivalent to 1% or more of electricity sales in 2009. American Council for an Energy-Efficiency Economy, *2011 State Scorecard* (2011) at 17, available at: <http://www.aceee.org/research-report/e115>.

<sup>38</sup> American Council for an Energy-Efficiency Economy, *2011 State Scorecard* (2011) at 21-22, available at: <http://www.aceee.org/research-report/e115>.

<sup>39</sup> “RGGI investment in energy efficiency depresses regional electrical demand, power prices, and consumer payments for electricity. This benefits all consumers through downward pressure on wholesale prices, yet it particularly benefits those consumers who actually take advantage of such programs, implement energy efficiency measures, and lower both their overall energy use and monthly energy bills. These savings stay in the pocket of electricity users. But positive macroeconomic impacts exist as well: the lower energy costs flow through the economy as collateral reductions in natural gas and oil consumption in buildings and increased consumer disposable income (from fewer dollars spent on energy bills), lower payments to out-of-state energy suppliers, and increased local spending or savings. Consequently, there are multiple ways that investments in energy efficiency lead to positive economic impacts; this reinvestment thus stands out as the most

taking into account the upfront costs of installing efficiency improvements, the efficiency measures they identified would save American families and businesses \$500 billion over ten years.<sup>40</sup> In addition, the study estimated that it would require 600,000-900,000 workers during the duration of the 10-year period to develop, produce, and implement the efficiency improvements, administer the programs, and verify the results.<sup>41</sup>

EPA can and must act to curb climate-destabilizing emissions from existing power plants, and can do so in a way that will stimulate the economy, reduce harmful air pollution, and lower utility bills for American families and businesses.

#### IV. The Determination that Natural Gas Combined Cycle Technology is the Best System of Emission Reduction Was a Proper Exercise of EPA's Authority Under § 111(b).

##### A. The NSPS Program Is Intended to Be Technology Forcing to Reduce Emissions from High-Emitting Sectors.

##### 1. Congress Established and the Courts Have Affirmed the NSPS as a Program Intended to Drive Innovation to Reduce Emissions.

Congress created the NSPS program in order to drive down emissions of dangerous air pollutants from major sources of pollution, and designed it to be technology-forcing in systems of emission reduction. The Senate Committee Report issued prior to passage of the Clean Air Act in 1970 stated that “[s]tandards of performance should provide an incentive for industries to work toward constant improvement in techniques for preventing and controlling emissions from stationary sources.”<sup>42</sup> The Senate Report also clarified that an emerging control technology used as the basis for standards of performance need not “be in actual routine use somewhere.”<sup>43</sup>

Long-established case law confirms that NSPS is intended to be a technology-forcing regulatory mechanism to drive reductions in emissions from major pollution-generating sectors. See *Sierra Club v. Costle*, 657 F.2d 298, 364 (D.C. Cir. 1981) (“[W]e believe EPA does have authority to hold the industry to a standard of improved design and operational advances, so long as there is substantial evidence that such improvements are feasible.”); *Portland Cement Association v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973) (The court “reject[ed] the suggestion of the cement manufacturers that the [Clean Air] Act’s requirement that emission limitations be ‘adequately demonstrated’ necessarily implies that any cement plant now in existence be able to

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economically beneficial use of RGGI dollars.” The Analysis Group, *The Economic Impacts of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States* (Nov. 15, 2011) at 7, available at: [http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic\\_Impact\\_RGGI\\_Report.pdf](http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic_Impact_RGGI_Report.pdf).

<sup>40</sup> McKinsey, *Unlocking Energy Efficiency in the U.S. Economy* at 14.

<sup>41</sup> *Id.* at 99.

<sup>42</sup> S. Rep. No. 91-1196, at 17 (1970).

<sup>43</sup> *Id.* at 16.

meet the proposed standards.”). The D.C. Circuit has explained that as EPA fulfills its innovation-forcing mandate, the Agency should be forward-looking when determining what systems of emission reduction are available: “Section 111 looks toward what may fairly be projected for the regulated future, rather than the state of the art at present.”<sup>44</sup>

## 2. New Source Performance Standards Have Played Key Technology-Forcing Roles in the Past.

The Congressional Research Service (CRS) documented the technology-forcing function that NSPS have played in its report on the potential regulation of GHG sources under the Clean Air Act. The report notes that the flexibility inherent in the Administrator’s authority to determine which technologies have been adequately demonstrated “has been used to authorize control regimes that extended beyond the merely commercially available to those technologies that have only been demonstrated, and thus are considered by many to have been ‘technology-forcing.’”<sup>45</sup>

The CRS report focuses on the 1971 and the 1978 NSPS for sulfur dioxide (SO<sub>2</sub>) emitted by coal-fired electric generating units as a prime example of the Agency incentivizing technology development and thereby facilitating ambitious emission reductions through NSPS. The 1971 NSPS required a 70% reduction in new power plant SO<sub>2</sub> emissions, on average, and could be met initially only by burning low-sulfur coal or by using an emergent technology known as flue gas desulfurization (FGD). When the 1971 utility SO<sub>2</sub> NSPS was promulgated, there was only one FGD vendor and only three FGD units in operation. The 1979 NSPS retained the 1971 emission standard but also required a 70-90% reduction in combustion emissions, depending upon the sulfur content of the coal. This requirement could then be met only by using an FGD device.

A history of the development of FGD devices (cited in the CRS report) further illustrates how much the SO<sub>2</sub> NSPS motivated the development of this technology:

The Standards of Performance for New Sources are technology-forcing, and for the utility industry they forced the development of a technology that had never been installed on facilities the size of utility plants. That technology had to be developed, and a number of installations completed in a short period of time. The US EPA continued to force technology through the promulgation of successive regulations. The development of this equipment was not an easy process.

. . .

Chemical and mechanical engineers had never dealt with the challenges they faced in developing FGD systems for utility plants during this period. Chemical engineers had never designed process equipment as large as was required, nor had they dealt with the complex chemistry that occurred in the early FGD

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<sup>44</sup> Id.

<sup>45</sup> Larry Parker & James E. McCarthy, Cong. Research Serv., R40585, Climate Change: Potential Regulation of Stationary Greenhouse Gas Sources Under the Clean Air Act 12 (2009).

systems. Mechanical engineers were faced with similar challenges. While they had designed equipment for either acid service or slurry service, they typically had not designed for a combination of the two. Generally, equipment was larger than what they normally dealt with in chemical plants and refineries.

It is an understatement to say that the new source performance standards promulgated by the EPA were technology-forcing. Electric utilities went from having no scrubbers on their generating units to incorporating very complex chemical processes. Chemical plants and refineries had scrubbing systems that were a few feet in diameter, but not the 30- to 40-foot diameters required by the utility industry. Utilities had dealt with hot flue gases but not with saturated flue gases that contained all sorts of contaminants. Industry, and the US EPA, has always looked upon new source performance standards as technology-forcing, because they force the development of new technologies in order to satisfy emission requirements.<sup>46</sup>

As can be seen in Figure 3, analysis of patenting activity further demonstrates the dramatic rise in control technology innovation in the U.S. that followed the 1971 SO<sub>2</sub> NSPS promulgation.<sup>47</sup>

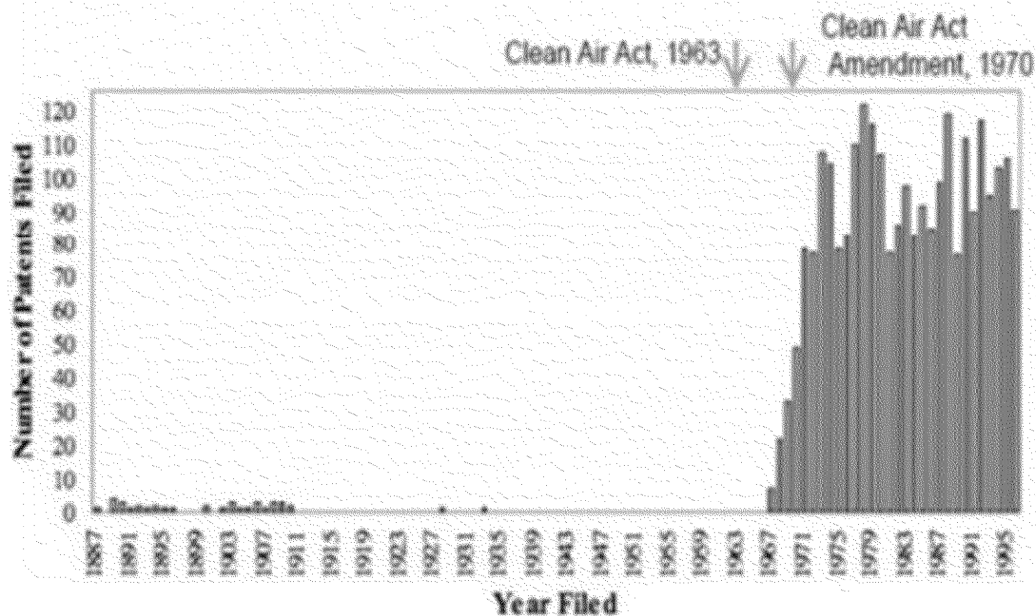
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<sup>46</sup> Donald Shattuck et al., A History of Flue Gas Desulfurization (FGD) – The Early Years at 15, 3.

<sup>47</sup> M. Taylor, The Influence of Government Actions on Innovative Activities in the Development of Environmental Technologies to Control Sulfur Dioxide Emissions from Stationary Sources 211-12 (Jan. 2001) (unpublished Ph.D. thesis, Carnegie Mellow University) [hereinafter Taylor Ph.D.] (on file with author); see also ICF Consulting, The Clean Air Act Amendments: Spurring Innovation and Growth While Cleaning the Air 106-08, 118-20, 211-12 (2005).



Figure 3: U.S. Patents Relevant to SO<sub>2</sub> Control Technology as Identified with the Patent Subclass Method<sup>48</sup>



Thanks to these technology advances, when Germany subsequently implemented a program to control acid rain, 33% of the FGD systems installed were licensed from U.S. companies.<sup>49</sup> Researchers of this and similar regulatory initiatives have observed that stringent regulation is required to stimulate significant innovation in control technologies; neither weak regulation nor legislation supporting control technology research have this effect.<sup>50</sup>

The 1979 NSPS is a compelling example of both the flexibility of the Agency's authority under Section 111 and the efficacy of innovation-focused standards in incentivizing technology development.

B. Congress Expanded EPA's Consideration of Solutions, Including Consideration of Cleaner Fuels and Combustion Methods, to Achieve the Protective Emission Standard Reflected in the "Best System of Emission Reduction"

1. Congressional Changes to the NSPS Statutory Provisions Have Authorized Expansive Flexibility to Achieve Rigorous Performance Standards.

In 1990, Congress redefined "standard of performance" to provide expansive flexibility in designing and meeting rigorous performance standards. The 1990 amendments eliminated two requirements from the NSPS provisions (both added via the 1977 amendments): (1) that the

<sup>48</sup> Id. at 107.

<sup>49</sup> Id. at 56, 131.

<sup>50</sup> See id. at 220; M. Taylor et al., Control of SO<sub>2</sub> Emissions from Power Plants: A Case of Induced Technological Innovation in the U.S., 72 Technological Forecasting & Soc. Change 697 (2005).

NSPS be based on a “technological” system of emission reduction and (2) that combustion emissions from “fossil fuel fired stationary sources” be reduced by a set percentage. The 1977 amendments had precluded satisfying the NSPS by simply burning a relatively cleaner fuel (low-sulfur coal).

Throughout the existence of the NSPS program, Congress’s statutory mandate has required the Agency to establish strong, protective emission standards based on the best system of emission reduction that could be utilized. The 1990 amendments, however, made statutory adjustments conferring expansive discretion on EPA in considering the solutions that could be deployed to achieve emission reductions – allowing that solution set to go beyond technologies, and to include use of cleaner fuels.<sup>51</sup> The House Committee Report articulated “the effect of the new standard” as “giv[ing] units the flexibility to meet the emission rates established under the new standards through whatever combination of fuels and emission controls the units choose.”<sup>52</sup> EPA’s proposed establishment of a fuel-neutral “standard of performance” based on the best available clean burning fossil fuels and more efficient combustion methods, such as efficient combined cycle natural gas turbines, together with an alternative compliance pathway for coal-fired EGUs, is thoroughly consonant with these statutory adjustments to EPA’s delegated rulemaking authority.<sup>53</sup>

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<sup>51</sup> EPA has previously relied on a particular type of fuel as a means by which a source (gas turbines in Subpart GG of 40 C.F.R. Part 60) can meet the NSPS for sulfur dioxide emissions. See Standards of Performance for New Stationary Sources: Gas Turbines, 44 Fed. Reg. 52,792, 52,800 (Sept. 10, 1979) (codified at 40 C.F.R. § 60.333 (2011)) (providing options for compliance including not burning “fuel which contains sulfur in excess of 0.8% by weight”). The current version of the standard also presents fuel selection as one possible means of compliance. See What emission limits must I meet for sulfur dioxide (SO<sub>2</sub>)?, 40 C.F.R. § 60.4330 (2011) (providing options for compliance including not burning “fuel which contains total sulfur with potential sulfur emissions in excess of 180 ng SO<sub>2</sub>/J (0.42 lb SO<sub>2</sub>/MMBtu) heat input”). The *Sierra Club v. Costle* decision specifically approves EPA’s practice of setting emission standards based on fuel characteristics (the sulfur content of coal), even though it was decided under the 1977 version of the Clean Air Act. In addition to finding that “the text of the statute nowhere forbids a distinction based on [a fuel’s] sulfur content,” the D.C. Circuit stated that “reading section 111 to permit a variable standard based on the sulfur content of coal comports with common sense” because “the amount of sulfur in coal is the most relevant factor in designing standards to reduce emissions of sulfur.” *Sierra Club v. Costle*, 657 F.2d 298, 319 (D.C. Cir. 1981). Both of the court’s findings are directly analogous to the present rulemaking. EPA’s historic consideration of sulfur content parallels its current consideration of GHG emission potential, and it comports with common sense to consider carbon content—the most relevant factor to GHG emissions—when designing GHG emission standards.

<sup>52</sup> H.R. Rep. No. 101-490, pt. 1 (1990) (emphasis added).

<sup>53</sup> Numerous states have likewise adopted or are in the process of adopting fuel-neutral greenhouse gas performance standards for baseload electricity generation based on the emission rates achievable by natural gas fuel combusted in an efficient combined cycle turbine. See, e.g., Wash. Rev. Code § 80.80.040 (2011); Cal. Pub. Util. Code § 8341(d)(1) (West 2012); Or. Rev. Stat. Ann. §§ 757.524, 757.528 (West 2012); N.Y. Comp. Codes R. & Regs. tit. 6, § 251.3 (New

## 2. The “Best System of Emission Reduction” Language Is Broad and Easily Encompasses a Combined Cycle Turbine Design Burning Natural Gas.

EPA emphasized as early as 1976 that BSER could encompass low-emission production methods.<sup>54</sup> In setting the smelter NSPS, the agency rejected the notion that BSER determinations must rely exclusively on emission control hardware:

For some classes of sources, the different processes used in the production activity significantly affect the emission levels of the source and/or the technology that can be applied to control the source. For this reason, the Agency believes the ‘best system of emission reduction’ includes the processes utilized and does not refer only to emission control hardware. It is clear that adherence to existing process utilization could serve to undermine the purpose of section 111 to require maximum feasible control of new sources.<sup>55</sup>

The 1970 “best system of emission reduction” language that the agency interpreted is nearly identical to the current language, adopted in 1990.<sup>56</sup>

In today’s electricity sector, coal- and combined-cycle gas-burning power plants—two systems of electricity generation—are largely functionally interchangeable in providing baseload and load-following generation.<sup>57</sup> Indeed, as EPA’s proposal notes, the only new generation projected to be built to serve baseload and intermediate demand is from combined cycle natural gas plants.<sup>58</sup> In

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York Department of Environmental Conservation, Proposed Part 251 CO<sub>2</sub> Performance Standards for Major Electric Generating Facilities (proposed 6 NYCRR Part 251, available at <http://www.dec.ny.gov/regulations/79520.html>).

<sup>54</sup> See Standards of Performance for New Stationary Sources, Primary Copper, Zinc, and Lead Smelters, 41 Fed. Reg. 2332, 2333 (Jan. 15, 1976).

<sup>55</sup> *Id.*

<sup>56</sup> Compare CAA Amendments of 1970, PL 91-604, § 111(a)(1), 84 Stat. 1676, 1683 (1970) (“The term ‘standard of performance’ means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction) the Administrator determines has been adequately demonstrated.”) with CAA § 111(a)(1), 42 U.S.C. § 7411(a)(1) (2006) (“The term ‘standard of performance’ means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of 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.”).

<sup>57</sup> 77 Fed. Reg. at 22411.

<sup>58</sup> Courts have explicitly approved EPA’s practice of taking into account industry trends when setting standards. See *National Lime Ass’n v. EPA*, 627 F.2d 416, 426 n.28 (D.C. Cir. 1980) (“It is expected that as supplies of natural gas and oil become more expensive or unavailable, all new kilns would be rotary lime kilns designed to burn coal.”); *Standards of Performance for New Stationary Sources: Lime Manufacturing Plants*, 42 Fed. Reg. 22,506, 22,507 (May 3, 1977).

identifying BSER, EPA has an obligation to consider the substantial emission advantages of combined-cycle plants burning natural gas as compared to coal-fired plants and to set the performance standard accordingly. The substantial cost advantages of NGCC further reinforce the reasonableness of NGCC as BSER. When considering two functionally interchangeable processes, not to set BSER based on the lower-emitting process, especially when that process is also less expensive, would fail to fulfill the statutory directives of CAA § 111(b) to maximize emission reductions considering cost and other relevant impacts.<sup>59</sup>

#### V. The Alternate Pathway Provided for Coal Plants is Consistent with Both the NSPS Program's Technology-Forcing Purpose and Agency Regulatory Practice.

##### A. Designing an NSPS to Incentivize the Development of Low-Emitting Technologies Is Consistent with § 111.

Through the alternative compliance pathway EPA has signaled that carbon capture and sequestration technology will play a role in controlling CO<sub>2</sub> emissions from fossil-fuel-fired power plants—making investments in developing and deploying this technology secure. This regulatory certainty is what power sector participants have identified as the missing link in the development of CCS. In discussing the decision to stop moving forward with a broader deployment of CCS at its West Virginia Mountaineer plant, American Electric Power Chairman and CEO Mike Morris said: “Going forward without a carbon legislation or without an appropriate approach to carbon and its impact it was simply not able for us to go forward and continue that project. . . . We are encouraged by what we saw, we’re clearly impressed with what we learned and we feel that we have demonstrated to a certainty that the carbon capture and storage is in fact viable technology for the United States and quite honestly for the rest of the world going forward.”<sup>60</sup>

As noted above, the NSPS is intended to drive innovation in methods of reducing emissions. The Sierra Club court determined that legislative history reinforced its interpretation of the statute that one of the purposes of NSPS is to “create incentives for new technology.”<sup>61</sup> The court cited several examples from the legislative history about the CAA Amendments of 1977 in which legislators address technology-forcing portions of CAA § 111.<sup>62</sup> The House Committee Report, for instance, noted that “it is prudent public policy to require achievement of the

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(“[V]irtually all the new kilns that have been built in the last few years have been of the rotary type. . . . [T]he present trend is to build and operate rotary kilns whenever possible.”).

<sup>59</sup> While there is a cost advantage of natural gas, section 111 calls for the “best system of emission reduction” to be determined “taking into account the cost of achieving such reduction” and other pertinent statutory factors. 42 U.S.C. §7411(a)(1). The costs of a fuel neutral standard based on this best system, therefore, do not require a cost advantage but must not be unreasonable.

<sup>60</sup> American Electric Power Q2 2011 Earnings Call (July 29, 2011), CallStreet Raw Transcript.

<sup>61</sup> See *Sierra Club v. Costle*, 657 F.2d 298, 346-47 (D.C. Cir. 1981).

<sup>62</sup> See *id.* at 346 n.174.

maximum degree of emission reduction from new sources, while encouraging the development of innovative technological means of achieving equal or better degrees of control.”<sup>63</sup>

The Senate Committee Report on the CAA Amendments of 1970 also clarified that “[s]tandards of performance should provide an incentive for industries to work toward constant improvement in techniques for preventing and controlling emissions from stationary sources.”<sup>64</sup> An emerging control technology used as the basis for standards of performance need not “be in actual routine use somewhere.”<sup>65</sup> The D.C. Circuit, analyzing the Senate’s intent, found that “[t]he essential question was [] whether the technology would be available for installation in new plants.”<sup>66</sup>

The D.C. Circuit sanctioned the tailoring of an NSPS to incentivize the development of specific innovative, low-emitting technologies in *Sierra Club v. Costle*.<sup>67</sup> There, EPA declined to adopt a uniform requirement that all entities in the regulated category reduce SO<sub>2</sub> emissions by 90% because that requirement would have prevented some low-sulfur-coal facilities from using the new technology known as dry scrubbing.<sup>68</sup> EPA thought that it was important to “provid[e] an opportunity for full development of dry SO<sub>2</sub> technology.”<sup>69</sup> The court found that, provided that EPA balanced the factors listed in the NSPS provision, designing the NSPS to incentivize new technologies was consistent with the text of the CAA.<sup>70</sup>

EPA’s alternative pathway for coal plants serves this well-established technology-forcing purpose by providing regulatory certainty and thus regulatory “pull” for CCS as an emerging control technology. As discussed above, the SO<sub>2</sub> NSPS served this purpose for scrubbers in the 1970s. The CRS report noted that the NSPS could play a similar role for deployment of carbon capture and sequestration: “The [SO<sub>2</sub> scrubber] example indicates that technology-forcing regulations can be effective in pulling technology into the market—even when there remain some operational difficulties for that technology. . . . As an entry point to carbon capture deployment, a regulatory approach such as NSPS may represent a first step.”<sup>71</sup>

EPA’s alternative compliance pathway for coal plants is thus providing an innovation-driving mechanism for CCS that power sector participants deploying CCS have called for, consistent with the court-affirmed Congressional intent that NSPS serve a technology-forcing role in order to drive down emission reductions.

#### B. EPA’s Analysis of BSER Availability Should Be Forward-Looking and Is Owed Deference.

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<sup>63</sup> *Id.*

<sup>64</sup> S. Rep. No. 91-1196, at 17 (1970).

<sup>65</sup> *Id.* at 16.

<sup>66</sup> *Portland Cement Ass’n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973).

<sup>67</sup> See *Sierra Club v. Costle*, 657 F.2d 298 (D.C. Cir. 1981).

<sup>68</sup> See *id.* at 343.

<sup>69</sup> *Id.* at 327-28.

<sup>70</sup> See *id.* at 346.

<sup>71</sup> Larry Parker & James E. McCarthy, *supra* note 4, at 19-20.

The thirty-year compliance framework for coal plants using CCS that EPA has proposed involves a forward-looking availability analysis. The courts have affirmed EPA's authority to make such projections. In *Portland Cement Association v. Ruckelshaus*, the court found that "[t]he Administrator may make a projection based on existing technology, though that projection is subject to the restraints of reasonableness and cannot be based on 'crystal ball' inquiry. . . . [T]he question of availability is partially dependent on 'lead time', the time in which a technology will have to be available."<sup>72</sup> Further, the court noted that "[i]t would have been entirely appropriate if the Administrator had justified the standards, not on the basis of tests on existing sources or old test data in the literature, but on extrapolations from this data, and on testimony from experts and vendors made part of the record."<sup>73</sup>

As discussed above, courts have properly deferred to EPA's analysis of the best systems of emission reduction available.<sup>74</sup> In *Sierra Club*, the court "on close questions [gave] the agency the benefit of the doubt out of deference for the terrible complexity of its job."<sup>75</sup>

#### C. NSPS May Alter Business as Usual.

By its very nature, technology forcing may prevent some actors from proceeding with business as usual, if business as usual would entail a lagging process that is more polluting, or would need greater investment to meet a standard, than a lower-emission technology. In setting NSPS for copper smelters, EPA explained that it could set a "single standard [that] would effectively preclude using a process which is much less expensive than the permitted process" so long as the total cost of the standard was reasonable.<sup>76</sup> This precedent demonstrates that "effectively preclud[ing]" a production method can be entirely consistent with reasonableness and economic achievability. Given the entirely reasonable cost of the standard proposed here and the enormous harm to Americans' health, safety, and environment caused by the pollution generated by uncontrolled coal-fired power plants, EPA was entirely justified – indeed, required – to set a standard that will require any new coal plant to be designed and operated in a manner that will make deep cuts in the amount of harmful pollution generated.

#### D. The Alternative Compliance Option in the Proposed Rule Closely Resembles Flexibility Mechanisms in Other Rules that EPA Has Promulgated and Courts Have Approved.

##### 1. EPA Has Adopted Other Flexibility Mechanisms.

<sup>72</sup> *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973).

<sup>73</sup> *Id.* at 401-02. The standards challenged in *Portland Cement* were finalized after the Agency conducted testing at seven plants, which the D.C. Circuit found to be sufficient. See *Portland Cement Ass'n. v. Train*, 513 F.2d 506, 509 (D.C. Cir. 1975).

<sup>74</sup> See *Sierra Club v. Costle*, 657 F.2d at 343, 364 (incentivizing and forcing technology); *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d at 391 (relying on cutting-edge technology).

<sup>75</sup> *Sierra Club v. Costle*, 657 F.2d at 410.

<sup>76</sup> See *Standards of Performance for New Stationary Sources: Primary Copper, Zinc, and Lead Smelters*, 41 Fed. Reg. 2332, 2333 (Jan. 15, 1976) (emphasis added).

The provision of alternate compliance pathways is a familiar approach under § 111. As noted above, in Subpart GG of 40 C.F.R. Part 60, EPA established burning a particular type of fuel as one option for meeting the SO<sub>2</sub> emissions standard. The agency described that option as “an alternative SO<sub>2</sub> emissions limit.”<sup>77</sup> The main limit set a numeric emission standard to be met at the stack, regardless of the fuel burned.<sup>78</sup> In essence, EPA provided an alternative compliance option that remains valid.

The 1981 Sierra Club decision provides another clear example of an alternative compliance option. At issue were the NSPS for EGUs finalized by EPA in June 1979.<sup>79</sup> The main standard required a maximum of 1.20 lbs SO<sub>2</sub>/MMBtu and a 90% reduction from uncontrolled levels.<sup>80</sup> EPA, however, also allowed for an optional method of compliance – what the Sierra Club court called an “optional standard” – similar to the “alternative compliance option” in the proposed GHG NSPS.<sup>81</sup> The option provided that, if a fuel’s potential SO<sub>2</sub> emissions were less than 0.60 lbs/MMBtu, the emission-reduction requirement decreased from 90% to 70%.<sup>82</sup> As a practical matter, the optional standard allowed low-sulfur-coal facilities to use dry scrubbing rather than wet scrubbing.

Under the Municipal Waste Combustors NSPS for existing sources (also promulgated under a “best system of emission reduction” analysis), EPA authorized states to permit municipal waste combustors to average nitrogen oxides emissions from different units at the same facility or to trade emission reduction credits with other facilities.<sup>83</sup>

EPA’s alternative compliance pathway for coal fits within this regulatory tradition.

## 2. These Types of Flexibility Mechanisms Have Been Judicially Approved.

In *Sierra Club v. Costle*, environmental petitioners argued that an NSPS’s optional standard violated CAA § 111.<sup>84</sup> The court disagreed, relying on § 111(b)(2), which authorizes EPA to “distinguish among classes, types, and sizes within categories of new sources for the purpose of establishing . . . standards.”<sup>85</sup>

Also of note, the Sierra Club court was more deferential to EPA when reviewing the optional standard than the main standard. The court did not ask if dry scrubbing could have served as an

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<sup>77</sup> Standards of Performance for New Stationary Sources: Gas Turbines, 44 Fed. Reg. 52,792, 52,792 (Sept. 10, 1979) (emphasis added).

<sup>78</sup> See *id.*

<sup>79</sup> New Stationary Source Performance Standards: Electric Utility Steam Generating Units, 44 Fed. Reg. 33,580 (June 11, 1979).

<sup>80</sup> See *id.* at 33,580.

<sup>81</sup> *Sierra Club v. Costle*, 657 F.2d 298, 316 (D.C. Cir. 1981).

<sup>82</sup> See 44 Fed. Reg. at 33,580.

<sup>83</sup> See Standards of Performance for Municipal Waste Combustors, 60 Fed. Reg. 65,387, 65,402 (Dec. 19, 1995).

<sup>84</sup> See 657 F.2d at 316-17.

<sup>85</sup> CAA § 111(b)(2), 42 U.S.C. § 7411(b)(2) (2006); see also *Sierra Club v. Costle*, 657 F.2d at 319-20.

independent basis for the standard because it had already found that wet scrubbing was the BSER.

Instead, the court limited its analysis to whether EPA had a reasonable basis for its technical analysis of dry scrubbing. The court determined that “the support in the record for selecting 70% as the magic percentage for encouragement of dry scrubbing [was] less than overwhelming” but recognized that EPA was trying to encourage the development of dry scrubbing technology.<sup>86</sup> Because “it was reasonable for EPA to seek to encourage dry scrubbing and to be concerned with the effect of the NSPS on the future of the new technology,” the court upheld the optional standard.<sup>87</sup>

As with the SO<sub>2</sub> NSPS’s optional standard in *Sierra Club*, the alternative compliance option in the proposed GHG NSPS merits respect because it reasonably balances the relevant statutory factors required to be considered in establishing a standard of performance under the law.

#### VI. EPA Is Not Obligated to Make a New Endangerment Finding Once Sources Have Been Listed Under § 111.

Section 111(b)(1)(A) states that the Administrator “shall include” a category of sources in the list for which performance standards are required “if in [her] judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” Section 111(b)(1)(B) then directs the Administrator to “establish[] Federal standards of performance for new sources within” a listed category. Section 111(a)(1) defines a “standard of performance” as “a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction” which the Administrator determines to have been adequately demonstrated. The statutory language separates the “endangerment” and “contribution” findings, both components of the process of listing a category of sources, from the mandate to promulgate standards of performance for particular air pollutants emitted by those sources. Long Agency practice confirms that EPA’s legal obligation to make an endangerment finding under § 111 is satisfied once the initial endangerment finding is made when a group of sources is added to the list of regulated sectors for which NSPS are promulgated. The statutory command directing EPA to promulgate standards of performance for the air pollutants emitted by those sources is separate, and does not include a requirement for an endangerment determination.

In accordance with the statutory language, EPA has never issued a new or revised endangerment finding when revising an NSPS under CAA § 111. See *Commercial and Industrial Solid Waste Incineration Units: Reconsideration and Proposed Amendments, Non-Hazardous Secondary Materials that are Solid Waste*, 76 Fed. Reg. 80,452 (Dec. 23, 2011) (amending 65 Fed. Reg. 75,338 (Dec. 1, 2000)); *Standards of Performance for Stationary Compression Ignition and Spark Internal Combustion Engines*, 76 Fed. Reg. 37,954 (June 28, 2011) (amending 71 Fed. Reg. 39,153 (July 11, 2006)); *Standards of Performance for New Stationary Sources and*

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<sup>86</sup> 657 F.2d at 351.

<sup>87</sup> *Id.*



Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units, 76 Fed. Reg. 15,704 (Mar. 21, 2011) (amending 65 Fed. Reg. 75,338 (Dec. 1, 2000)); Standards of Performance for New Stationary Sources and Emissions Guidelines for Existing Sources: Hospital/Medical/Infectious Waste Incinerators, 74 Fed. Reg. 51,368 (Oct. 6, 2009) (amending 62 Fed. Reg. 48,348 (Sept. 15, 1997)); Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Is Commenced After August 17, 1971, Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978, Industrial-Commercial-Institutional Steam Generating Units, and Small Industrial-Commercial-Institutional Steam Generating Units, 74 Fed. Reg. 5072 (Jan. 28, 2009) (amending 36 Fed. Reg. 24,876 (Dec. 23, 1971)); Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries, 72 Fed. Reg. 64,860-01 (Nov. 16, 2007) (amending 49 Fed. Reg. 22,598-01 (May 30, 1984), 48 Fed. Reg. 48,328-01 (Oct. 18, 1983)); Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Is Commenced After August 17, 1971, Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978, Industrial-Commercial-Institutional Steam Generating Units, and Small Industrial-Commercial-Institutional Steam Generating Units, 72 Fed. Reg. 32,710 (June 13, 2007) (amending 36 Fed. Reg. 24876 (Dec. 23, 1971)); Standards of Performance, Emission Guidelines, and Federal Plan for Municipal Solid Waste Landfills and National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, 71 Fed. Reg. 53,272 (Sept. 8, 2006) (amending 61 Fed. Reg. 9905 (Mar. 12, 1996)); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors, 71 Fed. Reg. 27,324 (May 10, 2006) (amending 60 Fed. Reg. 65,387 (December 19, 1995)); Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978, Industrial-Commercial-Institutional Steam Generating Units, and Small Industrial-Commercial-Institutional Steam Generating Units, 71 Fed. Reg. 9866 (Feb. 27, 2006) (amending 44 Fed. Reg. 33,580 (June 11, 1979)); Standards of Performance for Municipal Solid Waste Landfills, 67 Fed. Reg. 36,476 (May 23, 2002) (amending 61 Fed. Reg. 9905 (Mar. 12, 1996)); New Source Performance Standards for New Small Municipal Waste Combustion Units, 65 Fed. Reg. 76,378 (Dec. 6, 2000) (amending 60 Fed. Reg. 65,382 (Dec. 19, 1995)); New Source Performance Standards for New Small Municipal Waste Combustion Units, 65 Fed. Reg. 76,350 (Dec. 6, 2000) (amending 60 Fed. Reg. 65,382 (Dec. 19, 1995)); Amendments for Testing and Monitoring Provisions, 65 Fed. Reg. 61,744 (Oct. 17, 2000) (amending testing and monitoring procedures throughout 40 C.F.R. pt. 60); Revision of Standards of Performance for Nitrogen Oxide Emissions From New Fossil-Fuel Fired Steam Generating Units: Revisions to Reporting Requirements for Standards of Performance for New Fossil-Fuel Fired Steam Generating Units, 63 Fed. Reg. 49,442 (Sept. 16, 1998) (amending 51 Fed. Reg. 42,768 (Nov. 25, 1986)); Revision of New Source Performance Standards for the Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities, 62 Fed. Reg. 18,277 (Apr. 15, 1997); Amendment to Standards of Performance for New Stationary Sources: Small Industrial-Commercial-Institutional Steam Generating Units, 61 Fed. Reg. 20,734 (May 8, 1996) (amending 55 Fed. Reg. 37,674 (Sept. 12, 1990)); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Municipal Waste Combustors, 60 Fed. Reg. 65,387 (Dec. 19, 1995) (amending 54 Fed. Reg. 52,251 (Dec. 20, 1989), 54 Fed. Reg. 52,209 (Dec. 20,

1989)); Standards of Performance for New Stationary Sources: Automobile and Light-Duty Truck Surface Coating Operations, 59 Fed. Reg. 51,383 (Oct. 11, 1994) (amending 45 Fed. Reg. 85,410 (Dec. 24, 1980)); Standards of Performance for New Stationary Sources: Fossil-Fuel-Fired Steam Generators, 52 Fed. Reg. 28,946 (Aug. 4, 1987) (amending 50 Fed. Reg. 3688 (Jan. 25, 1985)); Standards of Performance for New Stationary Sources: Volatile Organic Liquid Storage Vessels, 52 Fed. Reg. 11,420 (Apr. 8, 1987) (amending 38 Fed. Reg. 15,406 (June 11, 1973), 45 Fed. Reg. 23,374 (Apr. 4, 1980)); Review and Amendment of Standards of Performance for New Stationary Sources; Kraft Pulp Mills, 51 Fed. Reg. 18,538, 18,544 (May 20, 1986); Review and Amendment of Standards of Performance for New Stationary Sources Hot Mix Asphalt Facilities, 51 Fed. Reg. 3298 (Jan. 24, 1986) (amending 39 Fed. Reg. 9308 (Mar. 8, 1974)); Standards of Performance for New Stationary Sources Glass Manufacturing Plants, 49 Fed. Reg. 41,030 (Oct. 19, 1984); Standards of Performance for New Stationary Sources: Stationary Gas Turbines, 47 Fed. Reg. 3767 (Jan. 27, 1982) (amending 44 Fed. Reg. 52,798); Emission Monitoring Requirements and Revisions to Performance Testing Methods, 40 Fed. Reg. 46,250 (Oct. 6, 1975).

The Agency has not issued an endangerment finding even when the revised NSPS adds a new pollutant to those already regulated for a category. See Standards of Performance for Coal Preparation and Processing Plants, 74 Fed. Reg. 51,950, 51,957 (Oct. 8, 2009) (“The plain language of section 111(b)(1)(A) provides that such findings are to be made for source categories, not for specific pollutants emitted by the source category. . . . Determinations regarding the specific pollutants to be regulated are made, not in the initial endangerment finding, but at the time the performance standards are promulgated.”) (amending subpart Y, which had set PM standards since 1976); Primary Aluminum Industry, 41 Fed. Reg. 3826 (Jan. 26, 1975) (relying on an endangerment finding for one pollutant when setting standards for two pollutants); National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 77 Fed. Reg. 9304 (Feb. 16, 2012) (amending 71 Fed. Reg. 9866 (Feb. 27, 2006)); National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants, 75 Fed. Reg. 54,970 (Sept. 9, 2010) (amending 36 Fed. Reg. 24,876 (Dec. 23, 1971)); Standards of Performance for Petroleum Refineries, 73 Fed. Reg. 35,838 (June 24, 2008) (amending 39 Fed. Reg. 9308 (Mar. 8, 1974)); Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, 70 Fed. Reg. 28,606 (May 18, 2005) (amending 36 Fed. Reg. 24,876 (Dec. 23, 1971)); Standards of Performance for New Stationary Sources; Fluid Catalytic Cracking Unit Regenerators, 54 Fed. Reg. 34,008 (Aug. 17, 1989) (amending 39 Fed. Reg. 9308 (Mar. 8, 1974)); Standards of Performance for New Stationary Sources; Industrial-Commercial-Institutional Steam Generating Units, 52 Fed. Reg. 47,826 (Dec. 16, 1987) (amending 51 Fed. Reg. 42,768 (Nov. 25, 1986)).

The Agency has maintained its practice of not issuing a new or revised endangerment finding even when adding a new source to a category. See Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews, 76 Fed. Reg. 52,738, 52,745 (proposed Aug. 23, 2011) (proposing to regulate VOC

emissions from several new source categories of natural gas operations based on existing endangerment finding for SO<sub>2</sub> emissions from natural gas processing plants) (amending 50 Fed. Reg. 40,158 (Oct. 1, 1985)); Standards of Performance for Large Municipal Waste Combustors for Which Construction Is Commenced After September 20, 1994, or for Which Modification or Reconstruction Is Commenced After June 19, 1996 and Emission Guidelines and Compliance Times for Large Municipal Waste Combustors That Are Constructed on or Before September 20, 1994, 66 Fed. Reg. 36,473 (July 12, 2001) (amending 60 Fed. Reg. 65,387 (Dec. 19, 1995)).

#### VII. The Social Cost of Carbon Estimate Used in Federal Benefits Analyses Must Be Updated To Reflect Current Science.

It is critical that EPA collaborate with other federal agencies and carry out its responsibilities to accurately account for the Social Cost of Carbon (“SCC”).

The Social Cost of Carbon is a monetary measure of the incremental damage resulting from greenhouse gas emissions. The SCC assigns a net present value to the marginal impact of one additional ton of carbon dioxide-equivalent emissions released at a specific point in time. EDF commented extensively on the consideration of the SCC in the first light-duty vehicle greenhouse gas rulemaking, the heavy-duty vehicle greenhouse gas rulemaking, and the Notice of Intent for Draft EIS. Those comments are hereby incorporated.

It is imperative that EPA rigorously and transparently account for the SCC in analyzing the impact of the GHG NSPS. In the proposal, EPA used the SCC as estimated by the Interagency Working Group on Social Cost of Carbon (February 2010). While we support the collaboration and work of the Group, the SCC used should always be based on models reflecting the latest science, as the Agency has itself committed to do. All three modeling teams, whose work led to the report by the Interagency Working Group, have since updated their models to reflect the latest research and methodological developments. At the very least, the SCC used should be updated using the current versions of the models.

We make additional suggestions below as to how current modeling approaches can and should be improved in order to meet the Agency’s commitment to update the social cost of carbon as the underlying models and methodologies are improved:<sup>88</sup>

- Declining discount rate over time: In assigning a dollar value to reductions in CO<sub>2</sub> emissions, the Agency uses the social cost of carbon and the discount rates included in the Interagency Working Group on Social Cost of Carbon. This includes the use of 5 percent, 3 percent and 2.5 percent discount rates. Recent advances in economic theory indicate that it is not appropriate to use such high and constant discount rates in the context of the social cost of carbon analysis, with a constant 5 percent discount rate being particularly inappropriate. A certainty-equivalent approach, for example, would yield much lower constant discount rates than those currently used. At the very least, we

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<sup>88</sup> Interagency Working Group on the Social Cost of Carbon, United States Government, Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis – Under Executive Order 12866 (February 2010).

encourage the Agency to use a range of discount rates of 3 percent and below in its SCC analysis. We strongly recommend, however, that the Agency move as soon as possible to the use of a declining social discount rate. Appropriately accounting for uncertainty around the discount rate over long time horizons generates a discount rate that declines over time. As demonstrated at an academic workshop convened by Resources for the Future on Intergenerational Discounting, September 22-23, 2011, there is broad support for the use of declining discount rates within the relevant community of experts.<sup>89</sup> These declining rates reflect the scientific, economic, and ethical complexities and uncertainties inherent in inter-generational discounting.

- **Evaluating catastrophic risks:** The SCC numbers currently used seriously undervalue low-probability/high-consequence climate impacts. Functional form assumptions in the models used in the Interagency Report misrepresent these risks and lead to inaccurately low SCC numbers. In particular, they cut off the tails of distribution functions too quickly, ignoring potentially catastrophic climate risks.<sup>90</sup> The SCC numbers used should reflect the uncertainty range around different functional forms and standard assumptions around risk aversion in order to more accurately value potentially catastrophic climate impacts.<sup>91</sup>
- **Evaluating non-monetized benefits:** GHG reduction policies can significantly undervalue benefits simply because some of these benefits are not easily quantifiable. The White House Office of Management and Budget recognizes that some costs and benefits will be difficult to monetize, but directs agencies to consider other means of quantification.<sup>92</sup> We request that the social cost calculations be updated to include the latest results on newly monetized benefits. All additional climate impacts omitted from the models should at the very least be identified explicitly. A table should be provided that lists, for each economic model, what impacts were not included in the model's estimate of monetized damages. Accompanying text should serve to explain and complement the table entries but not be a substitute for them. Below, we have provided an example table listing impacts typically omitted from SCC models.

List of Impacts Typically Omitted from SCC Models<sup>93</sup>

Agriculture	Reduction in growing season (e.g., in Sahel/southern Africa)
	Increase in growing season in moderate climates
	Impact of precipitation changes on agriculture

<sup>89</sup> See "Workshop on Intergenerational Discounting," 22-23 September 2011, Resources for the Future. <http://www.rff.org/Events/Pages/Intergenerational-Discounting-Workshop.aspx>

<sup>90</sup> See Martin Weitzman, "Fat-Tailed Uncertainty in the Economics of Climate Change," Review of Environmental Economic Policy, 5(2), 275-292 (Summer 2011).

<sup>91</sup> See Robert E. Kopp, Alexander Golub, Nathaniel O. Keohane, and Chikara Onda, The Influence of the Specification of Climate Change Damages on the Social Cost of Carbon, 6 Economics: The Open-Access, Open-Assessment E-Journal 2012-13 (2012), url <http://dx.doi.org/10.5018/economics-ejournal.ja.2012-13>.

<sup>92</sup> See OFFICE OF MGMT. & BUDGET, CIRCULAR A-4, 26 (2003).

<sup>93</sup> Information and format for table based on EPA, TECHNICAL SUPPORT DOCUMENT ON BENEFITS OF REDUCING GHG EMISSIONS 16-17 (2008), and EPA, 420-D-09-001, DRAFT REGULATORY IMPACT ANALYSIS: CHANGES TO RENEWABLE FUEL STANDARD PROGRAM 691 tbl. 5.3-4 (2009).

	Impact of weather variability on crop production
Biomes/ Ecosystems	Reverse of carbon uptake, amplification of climate change
	Thresholds or “tipping points” associated with species loss, ecosystem collapse, and long-term catastrophic risk (e.g., Antarctic ice sheet collapse)
	Species existence value and the value of having the option for future use
	Earlier timing of spring events; longer growing season
	Poleward and upward shift in habitats; species migration
	Shifts in ranges of ocean life
	Increases in algae and zooplankton
	Range changes/earlier migration of fish in rivers
	Impacts on coral reefs
	Ecosystem service disruption (e.g., loss of cold water fish habitat in the U.S.)
	Coral bleaching due to ocean warming
Energy	Energy production/infrastructure
	Water temperature/supply impacts on energy production
Foreign Affairs	Social and political unrest abroad that affects U.S. national security (e.g., violent conflict or humanitarian crisis)
	Damage to foreign economies that affects the U.S. economy
	Domestic valuation of international impacts
Forest	Longer fire seasons, longer burning fires, and increased burn area
	Disappearance of alpine habitat in the United States
	Tropical forest dieback in the Amazon
GDP/ Economy	Insurance costs with changes in extreme weather, flooding, sea level rise
	Global transportation and trade impacts from Arctic sea ice melt
	Distributional effects within regions
	Vulnerability of societies highly dependent on climate-sensitive resources
	Infrastructure costs (roads, bridges)
	Extreme weather events (droughts, floods, fires, and heavy winds)
Health	Increased deaths, injuries, infectious diseases, stress-related disorders with more frequent extreme weather (droughts, floods, fires, and heavy winds)
	Increases in malnutrition, food-borne illnesses
	Air quality interactions (e.g., ozone effects, including premature mortality)
Snow/ Glacier	Changes in Arctic/Antarctic ecosystems
	Enlargement and increased numbers of glacial lakes; increased flooding
	Snow pack in southeastern United States

Tourism	Changes in tourism revenues due to changes in ecosystems and weather events
	Arctic hunting/travel/mountain sports
Water	River flooding
	Infrastructure; water supply
	Precipitation changes on water supply; increased runoff in snow-fed rivers
	Increasing ground instability and avalanches

#### VIII. EPA Should Ensure Future Accessibility of E mission Records.

EPA should take specific and transparent action to ensure forward-compatibility of and continued access to all records submitted from sources that make use of the 30-year compliance pathway under 60.5520(b). Because computer and records technology changes rapidly, it is very likely that data formats used in 2012 will not be the same as those in effect in 2042 or beyond. EPA should take specific actions, including consulting with appropriate experts, to ensure that data are stored and maintained in a format that continues to be accessible for future enforcement, review, and policy-making actions. In addition, and for the same reasons, EPA should modify 60.5565(b) to require sources to prepare and annually update plans for maintaining access to all data required to be maintained under the 60.5520(b) pathway.

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Thank you for your consideration of our views. If you have any questions about the content of these comments, please contact:

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

	)	
<b>Standards of Performance for</b>	)	<b>Docket No. EPA-HQ-OAR-2011-0660</b>
<b>Greenhouse Gas Emissions for</b>	)	
<b>New Stationary Sources: Electric</b>	)	<i>Via regulations.gov</i>
<b>Utility Generating Units</b>	)	<i>June 25, 2012</i>
	)	

Thank you for accepting these comments on EPA's proposed Standards of Performance for Greenhouse Gas Emissions for Stationary Sources; Electricity Utility Generating Units ("EGU NSPS"), 72 Fed. Reg. 22,392 (Apr. 13, 2012).

We submit these comments on behalf of Sierra Club, Environmental Defense Fund, Natural Resources Defense Council, Earthjustice, National Wildlife Federation, Environmental Law and Policy Center, Southern Environmental Law Center, and Clean Air Council ("Joint Environmental Commenters").

## **I. Introduction**

As EPA has properly concluded, the scientific record demonstrating that "elevated concentrations of greenhouse gases in the atmosphere may reasonably be anticipated to endanger the public health and welfare of current and future U.S. generations is robust, voluminous, and compelling."<sup>1</sup> Electric generating units (EGUs) are the single largest source of domestic greenhouse gas emissions. Accordingly, as we discuss at length below, EPA must control greenhouse gas pollution from this source category under section 111 of the Clean Air Act, 42 U.S.C. § 7411. Indeed, unless emissions from new and existing power plants are reduced, the United States will be unable to prevent or mitigate serious harm from climate change.

In this introductory section, we briefly describe some of the harms associated with greenhouse gas emissions and show why the emissions profile of the EGU sector demands expeditious regulation under section 111.

### **A. Climate Change and Ocean Acidification Caused by EGU Emissions Threaten Public Health and Welfare**

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<sup>1</sup> 75 Fed. Reg. 49,556, 49,557 (Aug. 13, 2010) (Endangerment Reconsideration Denial), attached as **Ex. 1**; *see also* 74 Fed. Reg. 66,496, 66,523 (Dec. 15, 2009) (Endangerment Finding), attached as **Ex. 2**.

EPA's Regulatory Impact Analysis (RIA)'s overview of the pressing threats associated with greenhouse gas emissions ably canvasses the dangers which the NSPS must combat. The RIA is based largely on the EPA's 2009 Endangerment Finding, along with a 2010 report by the National Research Council.<sup>2</sup> The climate science that forms the basis of the 2009 Endangerment Finding provides a legally sufficient and scientifically compelling justification for curbing greenhouse gas emissions from power plants. Global greenhouse gas emissions and atmospheric concentrations, and hence the risk of catastrophic damage, have increased since they were issued, underlining the importance of emissions controls. Climate science published since 2009 further underlines the urgency of mitigating greenhouse gas emissions.<sup>3</sup>

## 1. Harms Associated with Climate Change

Climate change will comprehensively alter our world. As the RIA recognizes, these changes will cause a wide variety of harms.

### a. Direct Threats to Public Health and Welfare from Climate Change

Climate change is threatening, and can be expected to continue to threaten, public health in many regards. It is expected, for instance, to increase the incidence and severity of heat waves which are particularly dangerous to the elderly, very young, and infirm.<sup>4</sup> Warmer days lead to enhanced ozone, or smog, formation, which can exacerbate respiratory illnesses, contributing to asthma attacks and hospitalizations and an increased risk of premature death.<sup>5</sup> Because a warmer atmosphere will hold more moisture, climate change will also be associated with heavier precipitation events, stronger tropical cyclones, and associated flooding, which can damage infrastructure and injure or kill people.<sup>6</sup> Pathogens and pests are expected to spread among susceptible populations due to changes in those species' survival, persistence, habitat

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<sup>2</sup> See RIA at 3-1, 3-8. Many of the fundamental assessment reports upon which the Endangerment Finding and the RIA rely are attached and incorporated by reference. The Fourth Synthesis Report by the Intergovernmental Panel on Climate Change is attached as **Ex. 3**, the National Research Council's Report on *Advancing the Science of Climate Change* is attached as **Ex. 4**, and the U.S. Global Change Research Program's Report on *Global Climate Change Impacts in the United States* is attached as **Ex. 5**.

<sup>3</sup> See, e.g. Natural Research Council, *Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia* (2010), attached as **Ex. 6**; RIA 3-9; Natural Research Council, *Advancing the Science of Climate Change*, **Ex. 4**, *supra*; RIA, 3-8.

<sup>4</sup> RIA at 3-1 – 3-2.

<sup>5</sup> *Id.* at 3-2 -3-3, 5-24.

<sup>6</sup> *Id.* at 3-3.