

ORAL ARGUMENT NOT YET SCHEDULED

No. 11-1101 (Consolidated with 11-1285, 11-1328, and 11-1336)

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL DIVERSITY, et al.,
Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondents.

Petition for Review of Final Agency Action

OPENING BRIEF OF PETITIONERS (CORRECTED)

Ann Brewster Weeks
Helen D. Silver
Clean Air Task Force
18 Tremont Street, Suite 530
Boston, MA 02108
Phone: (617) 624-0234 ext. 156
Counsel for Conservation Law
Foundation and Natural Resources
Council of Maine

Frank Rambo
Morgan Butler
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
Phone: (434) 977-4090
Counsel for Coastal Conservation
League, Dogwood Alliance, Georgia
ForestWatch, and Wild Virginia

Kevin Bundy
Vera P. Pardee
Brendan Cummings
Center for Biological Diversity
351 California Street, Suite 600
San Francisco, CA 94104
Phone: (415) 436-9682 ext. 313
Counsel for Center for Biological
Diversity

David Doniger
Meleah A. Geertsma
Natural Resources Defense Council
1152 15th Street NW, Suite 300
Washington, D.C. 20005
Phone: (202) 289-2403
Nathaniel S.W. Lawrence
Natural Resources Defense Council
3723 Holiday Drive, SE
Olympia, WA 98501
Phone: (360) 534-9900
Counsel for Natural Resources Defense
Council

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filing)

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)	(Consolidated with 11-1285,
UNITED STATES ENVIRONMENTAL)	11-1328, and 11-1336
PROTECTION AGENCY, et al.,)	
)	
Respondent.)	

**PETITIONERS' CERTIFICATE AS TO PARTIES,
RULINGS, AND RELATED CASES**

Pursuant to Circuit Rules 15(c)(3) and 28(a)(1), Center for Biological Diversity, Coastal Conservation League, Conservation Law Foundation, Dogwood Alliance, Georgia ForestWatch, Natural Resources Council of Maine, Natural Resources Defense Council, and Wild Virginia ("Petitioners") submit this certificate as to parties, rulings, and related cases:

(A) Parties and *Amici*

(i) Parties, Intervenor, and *Amicus Curiae* Who Appeared in the District Court:

These cases are consolidated petitions for review of final agency actions, not appeals from rulings of a district court.

(ii) Parties to the Consolidated Challenges:

Case No. 11-1101:

Petitioners are Center for Biological Diversity, Conservation Law Foundation, and Natural Resources Council of Maine.

Respondents are the United States Environmental Protection Agency and Lisa P. Jackson, Administrator of EPA.

Intervenors in Support of Respondents are American Forest & Paper Association, American Wood Council, Biomass Power Association, Corn Refiners Association, Florida Sugar Industry, National Oilseed Processors Association, Rubber Manufacturers Association, Treated Wood Council, Renewable Fuels Association, Utility Air Regulatory Group, and National Alliance of Forest Owners.

Case Nos. 11-1285, 1328, 1336

Petitioners are Center for Biological Diversity, Conservation Law Foundation, Natural Resources Council of Maine, Georgia ForestWatch, and Wild Virginia (Case No. 11-1285), Natural Resources Defenses Council (Case No. 11-1328), and Coastal Conservation League and Dogwood Alliance (Case No. 11-1336).

Respondents in all above-mentioned consolidated cases are EPA and Lisa P. Jackson.

Intervenors in Support of Respondents are American Forest & Paper Association, American Wood Council, Biomass Power Association, Corn Refiners Association, Florida Sugar Industry, National Oilseed Processors Association, Rubber Manufacturers Association, Treated Wood Council, Renewable Fuels Association, Utility Air Regulatory Group, and National Alliance of Forest Owners.

(iii) *Amici Curiae*

Petitioners are aware of no *amici curiae* in any of these consolidated cases.

(iv) Circuit 26.1 Disclosures

Petitioners' disclosures under Circuit Rule 26.1 are in a separate disclosure statement, below.

(A) Rulings Under Review

These Petitions for Review challenge (1) the Environmental Protection Agency's decision to grant a petition for reconsideration filed by the National Alliance of Forest Owners, as published in *Deferral for CO₂ Emissions from Bioenergy and Other Biogenic Sources Under the Prevention of Significant Deterioration (PSD) and Title V Programs: Proposed Rule* at 76 Fed. Reg. 15,249 (Mar. 21, 2011) and (2) the Environmental Protection Agency's final rule titled *Deferral for CO₂ Emissions From Bioenergy and Other Biogenic Sources Under*

the Prevention of Significant Deterioration (PSD) and Title V Programs: Final Rule at 76 Fed. Reg. 43,490 (July 20, 2011).

(B) Related Cases

Petitioners are aware of one additional case related to the EPA final actions challenged here, *National Alliance of Forest Owners et al. v. Environmental Protection Agency* (Case No. 10-1209). Pursuant to this Court's Order of May 27, 2011, that case was severed from *Coalition for Responsible Regulation et al. v. Environmental Protection Agency* (Case No. 10-1073 and consolidated cases) and held in abeyance pending further order of this Court.

Respectfully submitted, this 15th Day of March, 2012

/s/ Ann Brewster Weeks (NL)

Ann Brewster Weeks
Helen D. Silver
Clean Air Task Force
18 Tremont Street, Suite 530
Boston, MA 02108
Phone: (617) 624-0234 ext. 156
aweeks@catf.us

Counsel for Conservation Law
Foundation and Natural Resources
Council of Maine

/s/ Frank Rambo (NL)

Frank Rambo
Morgan Butler
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
Phone: (434) 977-4090
frambo@selcva.org

Counsel for Coastal Conservation
League, Dogwood Alliance, Georgia
ForestWatch, and Wild Virginia

/s/ Kevin Bundy (NL)

Kevin Bundy
Vera P. Pardee
Brendan Cummings
Center for Biological Diversity
351 California Street, Suite 600
San Francisco, CA 94104
Phone: (415) 436-9682 ext. 313
kbundy@biologicaldiversity.org

Counsel for Center for Biological
Diversity

David Doniger
Meleah A. Geertsma
Natural Resources Defense Council
1152 15th Street NW, Suite 300
Washington, D.C. 20005
Phone: (202) 289-2403
ddoniger@nrdc.org
mgeertsma@nrdc.org

/s/ Nathaniel S.W. Lawrence

Nathaniel S.W. Lawrence
Natural Resources Defense Council
3723 Holiday Drive, SE
Olympia, WA 98501
Phone: (360) 534-9900
nlawrence@nrdc.org

Counsel for Natural Resources
Defense Council

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PETITIONERS' RULE 26.1 DISCLOSURE STATEMENT

Pursuant to Fed. R. App. P. 26.1 and D.C. Circuit Rule 26.1, Petitioners make the following disclosures.

Center for Biological Diversity. Center for Biological Diversity, a not-for-profit organization organized under the laws of the State of New Mexico, is focused on the preservation, protection, and restoration of biodiversity, native species, ecosystems, public lands and waters, and public health. Its core organizational missions include securing protection for species threatened by the impacts of global warming, ensuring compliance with applicable law in order to reduce greenhouse emissions and other air pollution, and educating and mobilizing the public on global warming and air quality issues. Center for Biological Diversity has no parent companies, and no publicly held company has a 10% or greater ownership interest in Center for Biological Diversity.

Coastal Conservation League. Coastal Conservation League is a nonprofit organization organized under the laws of the State of South Carolina and incorporated under Section 501(c)(3) of the Internal Revenue Code that works to protect the natural environment and communities of the South Carolina coastal plain. Coastal Conservation League has no parent companies, and no publicly held company has a 10% or greater ownership in Coastal Conservation League.

Conservation Law Foundation. Conservation Law Foundation is a not-for-profit corporation organized under the laws of the Commonwealth of Massachusetts that uses law, science, policy, and the business market to find pragmatic, innovative solutions to New England's toughest environmental problems. Conservation Law Foundation has no parent companies, and no publicly held company has a 10% or greater ownership interest in Conservation Law Foundation.

Dogwood Alliance. Dogwood Alliance is a nonprofit organization organized under the laws of the State of North Carolina and incorporated under Section 501(c)(3) of the Internal Revenue Code. Dogwood Alliance works to preserve and restore native forest ecosystems in the southeastern United States. Dogwood Alliance has no parent companies, and no publicly held company has a 10% or greater ownership interest in Dogwood Alliance.

Georgia ForestWatch. Georgia ForestWatch is a nonprofit organization organized under the laws of the State of Georgia and incorporated under Section 501(c)(3) of the Internal Revenue Code that works to promote healthy forests and watersheds in national forest lands in Georgia. Georgia ForestWatch has no parent companies, and no publicly held company has a 10% or greater ownership interest in Georgia ForestWatch.

Natural Resources Council of Maine. Natural Resources Council of Maine, a not-for-profit corporation organized and existing under the laws of the State of Maine, is a membership organization dedicated to preserving the quality of the air, water, forest and other natural resources of the State of Maine, for the benefit of its people and its environment. Natural Resources Council of Maine has no parent companies, and no publicly held company has a 10% or greater ownership interest in Natural Resources Council of Maine.

Natural Resources Defense Council. Natural Resources Defense Council, a corporation organized and existing under the laws of the State of New York, is a national nonprofit organization dedicated to improving the quality of the human environment and protecting the nation's endangered resources. The Natural Resources Defense Council has no parent companies, subsidiaries, or affiliates that have issued shares or debt securities to the public.

Wild Virginia. Wild Virginia is a nonprofit organization organized under the laws of the State of Virginia and incorporated under Section 501(c)(3) of the Internal Revenue Code. Wild Virginia works to preserve wild forest ecosystems in Virginia's National Forests. Wild Virginia has no parent companies, and no publicly held company has a 10% or greater ownership interest in Wild Virginia.

Respectfully submitted, this 15th Day of March, 2012

/s/ Ann Brewster Weeks (NL)

Ann Brewster Weeks
Helen D. Silver
Clean Air Task Force
18 Tremont Street, Suite 530
Boston, MA 02108
Phone: (617) 624-0234 ext. 156
aweeks@catf.us

Counsel for Conservation Law
Foundation and Natural Resources
Council of Maine

/s/ Frank Rambo (NL)

Frank Rambo
Morgan Butler
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
Phone: (434) 977-4090
frambo@selcva.org

Counsel for Coastal Conservation
League, Dogwood Alliance, Georgia
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/s/ Kevin Bundy (NL)

Kevin Bundy
Vera P. Pardee
Brendan Cummings
Center for Biological Diversity
351 California Street, Suite 600
San Francisco, CA 94104
Phone: (415) 436-9682 ext. 313
kbundy@biologicaldiversity.org

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David Doniger
Meleah A. Geertsma
Natural Resources Defense Council
1152 15th Street NW, Suite 300
Washington, D.C. 20005
Phone: (202) 289-2403
ddoniger@nrdc.org
mgeertsma@nrdc.org

/s/ Nathaniel S.W. Lawrence

Nathaniel S.W. Lawrence
Natural Resources Defense Council
3723 Holiday Drive, SE
Olympia, WA 98501
Phone: (360) 534-9900
nlawrence@nrdc.org

Counsel for Natural Resources
Defense Council

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

BACT	Best Available Control Technology
CBD	Center for Biological Diversity
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFI	Call For Information
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
EPA	Environmental Protection Agency
GHG	Green House Gas
NAAQS	National Ambient Air Quality Standards
NAFO	National Alliance of Forest Owners
NO _x	Nitrogen Oxides
NRDC	Natural Resources Defense Council
NSR	New Source Review
PM	Particulate Matter
PM _{2.5}	Particulate Matter of 2.5 microns diameter
PSD	Prevention of Significant Deterioration
RTC	Response to Comments
SELC	Southern Environmental Law Center

JURISDICTIONAL STATEMENT

Petitioners seek review of a final action of the Environmental Protection Agency (EPA) entitled *Deferral for CO₂ Emissions From Bioenergy and Other Biogenic Sources Under the Prevention of Significant Deterioration (PSD) and Title V Programs*, 76 Fed. Reg. 43,490 (July 20, 2011) (“Biomass Exemption” or “Exemption”) (JA ____). The petition in No. 11-1101 was filed on April 7, 2011. The petition in No. 11-1285 was filed on August 15, 2011. The petitions in Nos. 11-1328 and 11-1336 were filed on Sept. 19, 2011. All petitions for review were filed within the 60-day period provided under Clean Air Act Section 307(b)(1), which gives this Court exclusive jurisdiction over petitions to review final EPA actions of nationwide applicability. 42 U.S.C. § 7607(b)(1); *see also* 76 Fed. Reg. at 43,491/1 (JA ____). Pursuant to section 307(b)(2), this includes jurisdiction to review any final action deferring performance of a nondiscretionary statutory action to a later time. 42 U.S.C. § 7607(b)(2)

STATEMENT OF THE ISSUES

In the final action under review, the Environmental Protection Agency issued a rule exempting stationary sources of biogenic carbon dioxide (CO₂) pollution from the construction and operating permit requirements of the Clean Air Act. EPA identified neither any express authority, nor any gap or ambiguity, in the

Act that might authorize this exemption. Rather, EPA relied on last-resort doctrines allowing deviations from statutory requirements in extremely narrow circumstances. This presents the following issues:

1. Is the exemption authorized under the administrative necessity doctrine?
2. Is the exemption permissible or authorized under the *de minimis* doctrine?
3. Is the exemption authorized by the “one-step-at-a-time” doctrine?

STATUTES AND REGULATIONS

Pertinent parts of statutes and regulations are reproduced in an addendum to this brief.

STATUTORY AND REGULATORY FRAMEWORK

A. The Clean Air Act’s Construction and Operating Permit Programs

1. Prevention of Significant Deterioration Construction Permits

The Clean Air Act’s Prevention of Significant Deterioration (PSD) program requires each new or modified “major emitting facility” to obtain a construction permit showing that the facility meets specific pollution control requirements.

Sections 165 and 169, 42 U.S.C. §§ 7475, 7479,¹ are the core provisions of the permit program. *See Ala. Power Co. v. Costle*, 636 F.2d 323, 352 (D.C. Cir.

1979). Section 165(a) prohibits construction of any “major emitting facility”

¹ This brief generally refers to statutory provisions by their Clean Air Act section numbers. Parallel U.S. Code citations are given when provisions are first mentioned.

without a permit. To obtain a permit, Section 165(a)(4) requires the facility, among other things, to meet an emission limitation reflecting the “best available control technology” (“BACT”) for “each pollutant subject to regulation under this chapter emitted from, or which results from, such facility.” Section 165(a)(2) also requires a public hearing where interested persons may submit data and views about air quality impacts, control technology options, alternatives to building the proposed facility, and other appropriate considerations.

Section 169(1) defines a “major emitting facility” as any “stationary source[] ... which emit[s], or [has] the potential to emit” more than 100 or, depending on the source type, 250 tons per year of “any air pollutant.”² Section 169(3) defines BACT, in pertinent part, as:

an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant.

In 2010 EPA issued the “Tailoring Rule” to phase in PSD permitting for sources of greenhouse gas emissions in a series of steps. 75 Fed. Reg. 31,514

² Long-standing EPA regulations define “any air pollutant” to mean any “regulated NSR [new source review] pollutant.” 40 C.F.R. § 51.166(a)(7) and (b)(1) (requiring permits of “major stationary sources” that emit certain amounts of “regulated NSR pollutant[s]”). *See, e.g.*, 43 Fed. Reg. 26,380, 26,403, 26,406 (June 19, 1978).

(June 3, 2010) (JA ____). Step 1 (which ran from January 2 through June 30, 2011³) covered only major emitting facilities that already required a permit due to their emissions of non-greenhouse gases. Under Step 1, as part of obtaining a PSD permit, these sources had to meet BACT for their greenhouse gases if those emissions would increase by the equivalent of at least 75,000 tons of CO₂ per year. *Id.* at 31,523/1-2 (JA ____). In Step 2 (which began July 1, 2011) extends coverage to the largest greenhouse gas emitting sources that were not already required to get PSD permits: A new source currently needs a permit if it has the potential to emit at least 100,000 tons of greenhouse gases per year, and a modified source needs a permit if it will increase those emissions by at least 75,000 tons. *Id.* at 31,523/3 – 31,524/1 (JA ____ - ____). EPA also committed to further actions after Step 2 to bring additional sources into the PSD program over time.

2. Title V Operating Permits

Section 502(a) of the Act prohibits the operation of any “major source” without obtaining an operating permit. 42 U.S.C. § 7661a(a). Under Section 501(2), a “major source” means “any stationary source (or any group of stationary sources located within a contiguous area and under common control),” and

³ In an April 2010 final rule, EPA determined that PSD (and Title V) requirements would begin to apply to greenhouse gases on January 2, 2011, the date on which EPA’s greenhouse gas emission standards for light-duty motor vehicles took effect. *Reconsideration of Interpretation of Regulations That Determine Pollutants Covered by Clean Air Act Permitting Programs*, 75 Fed. Reg. 17,004 (Apr. 2, 2010) (JA ____),

includes any “major stationary source” under Section 302(j), i.e., any source that “directly emits, or has the potential to emit,” at least 100 tons per year of any air pollutant. 42 U.S.C. §§ 7661(2), 7602(j). The Tailoring Rule phases in the applicability of Title V to greenhouse gas emission sources on the same schedule as PSD.

3. State and Federal Permitting Agencies

The PSD and Title V programs are mostly implemented by state permitting authorities operating under plans approved by EPA, or as EPA’s delegates under federal plans. EPA directly implements permitting programs in areas with no approved or delegated plan, and on federal lands and in Indian country.⁴

FACTUAL BACKGROUND

A. Biogenic CO₂ Emissions and the Carbon Cycle

Plant life takes up CO₂ in order to grow, and therefore such “biogenic” material can be said to sequester CO₂ from the atmosphere while it is alive. When plant life dies, or is harvested and burned, its stored CO₂ is released, either gradually through decomposition, or immediately upon combustion. Center for Biological Diversity, *et al.* Comments (EPA-HQ-OAR-2011-0083-0350.1) (“CBD

⁴ See 42 U.S.C. § 7410(a)(2)(C) and 40 C.F.R. § 51.166(a) (providing for state implementation plans, including PSD programs); 42 U.S.C. § 7410(c) and 40 C.F.R. § 52.21(a)(1) (providing for federal implementation plans covering PSD). See also 40 C.F.R. §§ 70.1(a), 70.4 (state Title V permitting programs) and 40 C.F.R. §§ 71.1, 71.4 (EPA administration of Title V permitting programs).

Comments”) at 15-16 (JA ____-____). CO₂ released when biomass is burned has the identical heat-trapping properties of CO₂ released when fossil fuels are combusted. As EPA has recognized, once emitted to the atmosphere, “it is not possible to distinguish between the radiative forcing associated with a molecule of CO₂ originating from a biogenic source and one originating from the combustion of fossil fuel.” 76 Fed. Reg. 15,249, 15,254/1 (Mar. 21, 2011) (JA ____).

Because CO₂ from plant matter is released immediately on burning, but grown back (if at all) only over time, there is a “debt” period for each ton of carbon released but not yet resequestered. This debt persists even if regrowth eventually catches up to the sequestration levels that would have been reached had the biomass not been harvested but had continued growing. CBD Comments at 16 (JA ____); Booth Decl. ¶¶ 25, 26, 32; Natural Resources Defense Council Comments (EPA-HQ-OAR-2011-0083-0104) (“NRDC Comments”) at 12 (JA ____). For the fastest growing biomass crops (e.g., perennial grasses), regrowth can be achieved in a year. But for other types of biogenic fuel (e.g., whole trees), the debt period may extend for decades or centuries. CBD Comments at 16 (JA ____). When new areas of forest or other vegetation are harvested for fuel, total CO₂ emissions can *exceed* the amount released directly from the facility where the fuel is burned. One reason is that the soil itself stores carbon, and when trees are cut, soil carbon is released into the atmosphere as CO₂. *Id.*, Exhibit 11 (JA ____-____).

The forest products industry asserts that the net CO₂ emissions from burning any biogenic fuel are zero. *See* National Alliance of Forest Owners (NAFO) Comments (EPA-HQ-OAR-2011-0083-0074) at 3 (JA ____). But EPA itself has found that this claim is not supportable: while *some* biogenic feedstocks may re-sequester given amounts of CO₂ in a short period, the agency acknowledges that the scientific evidence demonstrates this is certainly not true for *all* biogenic fuel. Indeed, in the final rule EPA acknowledges the possibility that burning some biomass feedstocks actually causes significant net CO₂ *increases*. 76 Fed. Reg. at 43,498/1, 43,499/1 (JA ____, ____).

B. Regulation of Greenhouse Gases from *Massachusetts v. EPA* to the Tailoring Rule.

The pathway to the Biomass Exemption starts with the Supreme Court's holding in *Massachusetts v. EPA*, that CO₂ and other greenhouse gases are "air pollutants" under Section 302(g) of the Act, 42 U.S.C. § 7602(g), and the Court's conclusion that EPA had to make a science-based determination whether they may reasonably be anticipated to endanger public health and welfare. 549 U.S. 497 (2007). In 2009, EPA made its determination that these pollutants do indeed endanger public health and welfare, and in 2010 EPA established emission standards for greenhouse gas emissions from motor vehicles under Section 202(a)(1), 42 U.S.C. § 7521(a)(1). 74 Fed. Reg. 66,496 (Dec. 15, 2009)

(Endangerment Finding) and 75 Fed. Reg. 25,324 (May 7, 2010) (Vehicle Standards).

As described above, EPA also determined that greenhouse gases became regulated air pollutants on the effective date of the vehicle standards, triggering the PSD and Title V permit requirements. *Supra* at 4, n.3. EPA also issued the “Tailoring Rule” to implement PSD and Title V permitting for greenhouse gas emission sources in a series of steps covering the largest emitters first. *Supra* at 3-4.

C. The Tailoring Rule’s Treatment of Biogenic CO₂

The Tailoring Rule provided that all CO₂ directly emitted from a source must be counted towards the permitting thresholds, regardless whether it originated from burning fossil fuel or biomass. 75 Fed. Reg. at 31,527/2-29/3, 31,590/1-91/1 (JA ____ - ____, ____ - ____). Thus, any source with sufficient direct CO₂ emissions needs to obtain a PSD permit and meet BACT. In the Tailoring Rule, EPA declined to adopt the suggestion by certain industries, including paper mills and private forest growers, that all biogenic CO₂ was “‘carbon neutral’ (i.e., that combustion or oxidation of such materials would cause no net increase in GHG emissions on a lifecycle basis)” and should be exempted from PSD and Title V permit applicability determinations regardless of their characteristics. *Id.* at 31,590/3 (JA ____). Nonetheless, EPA said it would seek further comment on the

treatment of biogenic CO₂ emissions under the PSD and Title V programs. EPA asserted its understanding that “there is flexibility to apply the existing regulations and policies regarding BACT in ways that take into account [biomass fuels’] lifecycle effects on GHG concentrations.” *Id.* at 31,591/2 (JA ____).

D. The Proposed Biomass Exemption.

In March 2011, EPA proposed a sharp change of course. In a notice of proposed rulemaking, 76 Fed. Reg. 15,249 (Mar. 21, 2011) (JA ____), EPA granted a petition for reconsideration of the Tailoring Rule from NAFO. EPA explicitly rejected the claim that all biomass fuels are carbon neutral. *See* 76 Fed. Reg. at 15,261/3 (JA ____) (possibility remains that some biomass fuels will have a significant impact on the net carbon cycle). Nonetheless, EPA proposed a three-year categorical exclusion of all “biogenic CO₂ emissions” from any applicability or BACT determinations required under the PSD and Title V permitting programs. *Id.* at 15,249/3 (JA ____). EPA also said it intended to undertake a subsequent rulemaking, during the three-year exemption period, on how biogenic CO₂ emissions “should be treated and accounted for in PSD and Title V permitting” after that period. *Id.* at 15,251/3 (JA ____).

EPA opaquely asserted that, absent the proposed exemption, “there would be significant and unique complexities” related to “the unique characteristics and attributes of biogenic CO₂ feedstocks,” leading to “additional permitting burden in

terms of time and resource requirements” beyond that previously anticipated in the Tailoring Rule. *Id.* at 15,259/3 (JA ____). EPA did not expressly state where those asserted burdens and complexities would be experienced. The Tailoring Rule required no consideration of lifecycle emissions in applicability decisions (i.e., when determining if a source emits sufficient CO₂ to require a permit). And EPA further stated its view that “interim guidance” on BACT determinations “will help alleviate some of this burden.” *Id.*; *see also* 75 Fed. Reg. at 31,591/2 (JA ____). (Tailoring Rule on consideration of biomass lifecycle emissions in BACT for greenhouse gases).

Regardless, in the proposed Exemption, EPA stated that it believed it had the authority to exempt all biogenic CO₂ emissions from PSD applicability and from BACT: “EPA believes it has the authority to exclude biogenic CO₂ emissions from the PSD and Title V requirements for the proposed three-year deferral period and will be exploring whether a permanent exemption is permissible for at least some and perhaps all types of feedstocks.” 76 Fed. Reg. at 15,260/3 (JA ____).

EPA acknowledged, however, that

since the relevant provisions of the Act apply to “any air pollutant” or any “air pollutant subject to regulation,” the terms of the [Clean Air Act] suggest that the PSD and Title V requirements should apply to CO₂ emissions from bioenergy or other biogenic sources in the same manner as they apply to emissions of CO₂ from any other type of source, since such emissions are constituents of the regulated pollutant [greenhouse gases].

Id.

After this decidedly brief reference to the statutory language, EPA turned immediately to the *de minimis* doctrine. EPA pointed to examples of prior *de minimis* determinations exempting sources from PSD permit requirements on the basis that compliance would yield only trivial benefits. In each prior example, however, the agency's trivial benefits analysis bore strictly on emissions coming directly from the source in question. *See id.* at 15,261/2 (JA ____). In this proposal, however, EPA asserted that it could consider not only the direct CO₂ emissions from biomass-burning sources, but also the absorption of CO₂ by plants growing tens or hundreds of miles away, even if controlled by some other entity.

On the factual side, EPA claimed it had “sufficient information” to conclude that “at least *some* biomass feedstocks that may be utilized to produce energy have a negligible impact on the net carbon cycle.” *Id.* at 15,261/2 (emphasis added) (JA ____). As an example, EPA suggested “residue material (*e.g.*, sawdust from milling operations) that would have decomposed under natural circumstances” over 10-15 years,” and asserted that “the gain from regulating emissions from combustion of this feedstock for bioenergy *could* be considered to be trivial.” *Id.* at 15,261/2-3 (emphasis added) (JA ____). EPA did not further describe what “sufficient information” supported this conclusion. Instead, EPA asserted that future scientific assessment might identify other such feedstocks:

It appears that the potential may exist for EPA to determine that other types of biomass feedstocks would have a negligible impact on the net

carbon cycle impact after further detailed examination of the science associated with biogenic CO₂ emissions. Thus, if EPA were to require all bioenergy facilities to limit emissions of CO₂ before this assessment is complete, it *may later determine* that such actions have yielded trivial gain.

Id. at 15,261/3 (emphasis added) (JA ____). Finally, EPA made clear its

understanding that other biogenic feedstocks can have non-trivial impacts:

[T]he possibility also remains that more detailed examination of the science of biogenic CO₂ will demonstrate that the utilization of some biomass feedstocks for bioenergy production *will have a significant impact on the net carbon cycle*, making application of the PSD program requirements to such emissions necessary to fulfill Congressional intent.

Id. (emphasis added).

EPA then considered three alternatives to continuing the Tailoring Rule without change (i.e., alternatives to counting only direct emissions when determining whether PSD permits are required and to addressing lifecycle factors, if at all, only in the BACT stage). First, the agency could “apply PSD and Title V to all facilities with biogenic CO₂ emissions that emit at or above the Tailoring Rule thresholds, but without making any effort to take into account net carbon cycle impacts.” *Id.* at 15,262/2 (JA ____). This would have reduced the administrative burdens of the Tailoring Rule, by eliminating consideration of the lifecycle characteristics of biogenic CO₂ in BACT determinations. EPA, however, rejected this alternative because:

we believe that it is *conceivable* that as a result of the scientific examination of biogenic CO₂ emissions [to be conducted over the next three years], we could conclude that the net carbon cycle impact for some biomass feedstocks is negligible. Accordingly, this could result in regulation that yields trivial gain as previously discussed.

Id. (emphasis added). In other words, EPA preferred exempting all biomass-burning sources from permitting, however large the volume of their direct or net emissions, in order to avoid requiring permits for any sources that might later be considered to have *de minimis* impacts based on off-site phenomena.

As a second alternative, EPA said it could base permit applicability on case-by-case determinations of the lifecycle CO₂ emissions of each biomass facility, rather than its direct CO₂ emissions. *See id.* at 15,261/3-15,262/2 (JA ____ - ____). Even though this option would distinguish between biogenic feedstocks with positive and negative lifecycle CO₂ impacts, EPA asserted that it would impose too heavy an administrative burden. Here EPA mixed administrative burden and *de minimis* rationales: “[G]iven the potential that the utilization of at least some biomass feedstocks *may* have a negligible impact on the net carbon cycle, engaging in this type of burdensome analysis *may not be an optimal use* of the limited resources of PSD and Title V permitting authorities.” *Id.* at 15,262/2 (emphasis added) (JA ____).

Even before seeking comment, EPA rejected both of these alternatives in favor of a third option. The agency instead proposed a blanket three-year

exemption under which no biomass-burning sources – even those with clear net adverse carbon cycle impacts – would undergo PSD or Title V permitting. *Id.* at 15,262/1 (JA ____).

E. Comments on the Proposed Exemption

EPA received numerous comments opposing the proposed exemption. For example, the Center for Biological Diversity (CBD), the Natural Resources Defense Council (NRDC), and others told EPA that it lacked legal authority to create an exemption from PSD and Title V applicability based on off-site, “net” lifecycle emissions. *See, e.g.*, CBD Comments at 6-8 (JA __-__). These and other commenters also submitted that the exemption was scientifically unwarranted because combusting many biomass feedstocks will in fact increase CO₂ emissions, even considered on a lifecycle basis. *Id.* at 6, 12, 14-16 (JA ____, ____, __-__); *see also* NRDC Comments at 1, 11-14 (JA ____, __-__). CBD stated that “the most recent and thorough of the studies [submitted to EPA] overwhelmingly demonstrate that biomass burned for energy generation is not ‘always carbon neutral’.” CBD Comments at 12 (JA ____). In fact, there are “greater carbon emissions per unit energy from biomass than fossil fuels,” and scientists have concluded that ““using standing trees for bioenergy immediately transfers carbon to the atmosphere ... increasing overall [GHG] emissions for several decades.”” *Id.* at 16 (JA ____).

CBD also cited studies contradicting EPA's suggestion that combusting "waste" feedstocks expected to decompose within 10-15 years would have a *de minimis* impact. *Id.* at 14, 22-25 (JA ___, ___-___). NRDC and others submitted that EPA currently had the tools to limit the exemption, and that "the science does not justify" exempting feedstocks like whole trees that "are extremely likely to increase net CO₂ emissions for more than 20 years." *See* NRDC Comments at 11-14 (JA __-___).

EPA also received comments from states undercutting the agency's contention that a blanket exemption was needed to avoid unmanageable administrative burdens. For example, Arkansas expected only "one or two" PSD permits "possibly involving biomass sources" per year over the next three years, and did not anticipate a "drastic increase" in biomass Title V permits. Arkansas Department of Environmental Quality Comments (EPA-HQ-OAR-2011-0083-0033) at 2 (JA ___). Florida found it "difficult to predict" how many permits it would need to process. Florida Department of Environmental Protection Comments (EPA-HQ-OAR-2011-0083-0038) at 2 (JA ___). Georgia identified five pending applications, but stated that it was "uncomfortable commenting on future resource constraints; [because] it would be speculation only, and not based on facts." Georgia Department of Natural Resources Comments (EPA-HQ-OAR-2011-0083-0094) at 1 (JA ___). Minnesota expected only one to two applications

over the Exemption Rule time frame, and identified no pending applications.

Minnesota Pollution Control Agency Comments (EPA-HQ-OAR-2011-0083-0102)

at 1 (JA ____). Oklahoma anticipated “no significant increases or decreases” in

permit applications over the next three years. Oklahoma Department of

Environmental Quality Comments (EPA-HQ-OAR-2011-0083- 0037) at 1 (JA ____).

Oregon expected only three to five biomass power plant applications over the same

period. Oregon Department of Environmental Quality Comments (EPA-HQ-OAR-

2011-0083-0058) (JA ____). Pennsylvania found itself “unable to advise EPA, at

this time, of the estimated number and type of biomass sources that will be

operating in Pennsylvania within the next three years.” Pennsylvania Department

of Environmental Protection Comments (EPA-HQ-OAR-2011-0083-0135) at 2 (JA

____). South Carolina, while currently processing four applications, nonetheless

found it “impossible to predict how many biomass applications will be received in

the future.” South Carolina Department of Health and Environmental Control

Comments (EPA-HQ-OAR-2011-0083-0124) at 3 (JA ____).

F. The Final Exemption

On July 20, 2011, EPA adopted the Biomass Exemption as proposed, i.e., a

blanket exemption for sources burning any kind of biomass fuels, without

differentiation, from all PSD or Title V permitting requirements. 76 Fed. Reg.

43,490 (JA ____). The agency asserted once again that determining the net carbon

cycle impact of biogenic emissions is a complex and uncertain undertaking, and “would therefore entail extensive workload requirements by many of the permitting authorities.” *Id.* at 43,496/1. EPA also restated its belief that it has authority to undertake a future rulemaking to exempt sources of biogenic CO₂ permanently, based on lifecycle considerations. *See* 76 Fed. Reg. at 43,498/2 (JA ____). In addition, EPA added an argument that the Exemption was supported by the “one-step-at-a-time doctrine.”⁵ *Id.* at 43,497/1 to 43,498/2 (JA ____ - ____).

In neither the final Exemption notice nor the response-to-comments document did EPA provide any substantial responses to the key comments highlighted above. Notably, EPA provided no cogent response to comments disputing the authority of permitting agencies to look beyond the direct emissions of biomass-burning sources in determining whether such sources require PSD or Title V permits. EPA provided no substantive response to comments from states calling into question the seriousness of the administrative burdens they would face addressing biomass-burning sources. And EPA did not provide any substantive response to comments demonstrating the adverse lifecycle CO₂ emissions from burning various biomass feedstocks, or the adverse public health consequences of the Exemption.

⁵ In the proposal, EPA had specifically found this doctrine irrelevant. 76 Fed. Reg. at 15,255/3 n.13 (JA ____).

Instead, in rote fashion EPA repeated a boilerplate response to each substantive comment, reasserting belief in its authority and views about the complexity of the science issues involved, and saying that it would deal with all such issues in its future rulemaking. *See, e.g.*, Summary of Public Comments and Responses (EPQ-HQ-OAR-2011-0083-0359) at 67, 68, 71, and 94. (JA ____ - ____, ____, and ____)

Petitioners filed these petitions for review.

SUMMARY OF ARGUMENT

The Clean Air Act requires all new and modified stationary sources to obtain preconstruction and operating permits if they have the potential to emit CO₂ or other greenhouse gases into the atmosphere in amounts exceeding the thresholds set forth in EPA's June 2010 Tailoring Rule. The Biomass Exemption challenged here creates a broad and unjustified exemption to that requirement. Under the Tailoring Rule, a biomass-burning source would have triggered PSD and Title V permitting if the facility itself emitted sufficient CO₂. Under the Exemption, the same facility now escapes the permitting programs altogether. Under the Tailoring Rule, such a facility would have had to meet BACT for CO₂ and any other regulated pollutant such as fine particles or nitrogen oxides it emitted in significant amounts. Instead, these facilities are now exempt from BACT. And even facilities

that trigger PSD and Title V because they emit sufficient amounts of *other* air pollutants no longer need to meet BACT for their biogenic CO₂ emissions.

The Exemption is contrary to law and arbitrary and capricious. EPA failed to identify any statutory authority affirmatively supporting the Exemption, nor has it identified any gap or ambiguity in the language of the statute permitting it. Additionally, EPA failed to justify the Exemption under the doctrines on which it does rely.

First, EPA invoked the “administrative necessity” doctrine, but it failed to carry its heavy burden of demonstrating that considering biogenic CO₂ emissions in the PSD and Title V permitting processes would create administrative difficulties rising to the level of *impossibility*. Nor did EPA show that the Biomass Exemption was narrowly tailored to excuse statutory compliance only to the degree demanded for administrability.

Second, EPA improperly invoked the *de minimis* doctrine in several ways. EPA did not show that a *de minimis* exemption from permitting based on “lifecycle” CO₂ emissions is consistent with the Clean Air Act. The agency identified no affirmative statutory authority for subtracting distant off-site CO₂ absorption from the facility’s own CO₂ emissions when determining whether the facility needs a permit, and no statutory gap or ambiguity from which such authority could reasonably be inferred. For these reasons, a *de minimis* exemption

based on lifecycle CO₂ emissions is contrary to the statute. Further, EPA exempted *all* biomass-burning sources, even though the agency claimed to have data showing trivial lifecycle emissions for only *some* such sources. EPA put off all relevant scientific and factual determinations to a future rulemaking, and thus failed to demonstrate in this rulemaking that *any* of the emissions it exempted from the permitting programs were truly *de minimis* or trivial. In fact, EPA admitted that some types of biomass fuel may be significant net CO₂ emitters, e.g., fuels whose emissions when burned add to atmospheric CO₂ for decades or centuries, regardless of what countervailing off-site factors are considered.

Third, EPA failed to show an independent basis for invoking the “one-step-at-a-time” doctrine when the grounds for administrative necessity and *de minimis* exemptions are lacking.

For these reasons, the Biomass Exemption is “arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law; [and] ... in excess of statutory ... authority, or limitation.” 42 U.S.C. § 7607(d)(9)(A), (C). It must be vacated and remanded.

STANDING

Petitioners have standing to challenge EPA’s Biomass Exemption because their members’ health, recreational, and aesthetic interests are harmed by the additional air pollution, forest degradation, and harm to wildlife that have occurred

and will occur as a result of exempting biomass-burning power plants and industrial facilities from the PSD permit program, and by the loss of procedural opportunities to advocate for strong pollution controls and alternatives to construction of those facilities. These harms are the direct result of EPA's decision to exempt biogenic CO₂ from greenhouse gas permitting, and so reversing the Biomass Exemption would remedy these injuries.

To demonstrate Article III standing, Petitioners must establish that at least one of their members has standing to sue in his or her own right, that Petitioners seek to protect interests that are germane to their organizational purposes, and that the participation of individual members is not needed. *See Sierra Club v. EPA*, 292 F.3d 895, 898 (D.C. Cir. 2002). A member has standing if he or she would suffer an injury-in-fact that is both fairly traceable to EPA's action and redressable by a favorable decision of the court. *Lujan vs. Defenders of Wildlife*, 504 U.S. 555, 560 (1992).

Petitioners meet these requirements. They are nonprofit organizations whose purposes include protecting public health and the environment from air pollution, including air pollution from biomass-burning facilities, and preventing degradation of forest ecosystems, including deterioration due to the extraction of biomass fuels consumed by such facilities. *See* Siegel Decl. ¶¶ 4, 10-13; Lopez Decl. ¶¶ 4-5; Harwood Decl. ¶¶ 3, 9-11; Houston Decl. ¶ 6; Reed Decl. ¶¶ 5, 9-11; Quaranda

Decl. ¶ 2; Davis Decl. ¶¶ 4-5; Hitner Decl. ¶¶ 5-6. Petitioners have associational standing on behalf of their members who have been, and will continue to be, injured by EPA's action as explained below. The facts supporting these injuries, their traceability to EPA's Exemption, and their redressability by reversing that Exemption are evident in the record of this rulemaking and in the declarations submitted with this brief.

Biomass combustion results in harmful air pollutants such as CO₂, particulate matter (PM), nitrogen oxides (NO_x). While the former contributes to climate change, the latter two are associated with a host of respiratory and cardiac problems. *See* Sahu Decl. ¶ D.1. In addition, increased demand for biomass feedstocks will contribute to an increased pressure for harvesting, including logging and even clearcutting. *See* Booth Decl. ¶¶ 16 and 32; Plantinga Decl. ¶ 7.⁶ This increased logging is reasonably expected to adversely affect forest habitat and other forest-related environmental values, Booth Decl. ¶ 17, as well as to increase

⁶ *See also* Dogwood Alliance Comments (EPA-HQ-OAR-2011-0083-0119) ("Dogwood Comments") at 2 (JA ____) (logging rates in the Southeastern United States could double in response to increased demand for biomass fuel) and 4 (JA ____ and ____); Natural Resources Defense Council (EPA-HQ-2011-0083-0104) ("NRDC Comments") at 19-23 (JA ____ - ____) and EPA-HQ-OAR-2011-0083-0104 at 19-23 (JA ____ - ____) and The Wilderness Society Comments (EPA-HQ-OAR-2011-0083-0065) at 2 (JA ____); Wild Earth Guardians Comments (EPA-HQ-OAR-2011-0083-0131) at 1-2 (JA ____ - ____) (Industry information and studies based on U.S. Forest Service data similarly show that logging residues are insufficient to supply proposed biomass facilities in other regions across the country – necessitating an increase in whole-tree logging).

atmospheric CO₂, *id.* ¶¶ 20-30. Both air pollution and forest harms will increase as a result of exempting biomass-burning facilities from PSD permitting.

As explained above, all new or modified major emitting facilities must obtain preconstruction permits that comply with the PSD program's BACT and public participation requirements. If a biomass plant is a major emitting facility because of its CO₂ emissions, it must comply with BACT for each other regulated pollutant, including PM_{2.5}, and NO_x, that it has the potential to emit above EPA-established significance thresholds. *See* 42 U.S.C. § 7475(a)(4); 40 C.F.R. §§ 51.166(j), 52.21(j); *see also* Sahu Decl. ¶¶ D.2-3 and 8-10. EPA has established significance thresholds of 10 tons per year for fine particulate matter (PM_{2.5}) and 40 tons per year for NO_x. *See* 40 C.F.R. §§ 51.166(j)(2), (3), 52.21(j)(2), (3); 51.166(b)(23), 52.21(b)(23). A typical biomass-burning facility emitting sufficient biogenic CO₂ to require a PSD permit under the Tailoring Rule will also emit more than 10 tons per year of PM_{2.5} and 40 tons per year of NO_x, and thus would have required BACT for those two pollutants. *See* Sahu Decl. ¶¶ E.1.i and ii, E.2. Under the Exemption, however, the same facility can be constructed without BACT limits for those two pollutants and others. The additional pollution from such facilities harms Petitioners' members.⁷

⁷ Many states also issue permits under state law for new sources that do not require PSD permits. However, such permits generally do not impose emission limits as stringent as BACT. Sahu Decl. ¶ 6. A facility exempted from BACT and other

If a biomass-burning facility requires a PSD permit, it also will be subject to the public participation requirements of Section 165(a)(2), giving Petitioners' members the opportunity to advocate for stringent BACT limits and to press for alternatives. The alternatives analysis is a "distinct" and broader inquiry than whether a particular permit complies with BACT. *See Sierra Club v. EPA*, 499 F.3d 653, 654-55 (7th Cir. 2007). Consideration of the "need" for a facility is a proper part of the alternatives analysis. *In re Prairie State*, PSD Appeal No. 05-05, 13 E.A.D. 1, 31 (EAB 2006). A permitting agency thus may deny a PSD permit on the basis of public input showing the facility is not needed or that any need can be met by a smaller plant, or that there are alternative designs or methods of operation that are better for air quality. *See id.*

A permitting authority also must consider the "environmental ... impacts" of control options when determining BACT. *See* Section 169(3), 42 U.S.C. § 7479(3). In the case of a facility intended to burn whole trees, for example, permitting agencies must consider, and members of the public have the opportunity to comment on, adverse environmental impacts to the forests from which the trees will be harvested.

PSD permit requirements under EPA's Biomass Exemption would be allowed to emit more pollution under such a state law permit. That difference in pollution harms Petitioners' members.

By exempting proposed biomass-burning facilities from PSD permit requirements, EPA has deprived Petitioners' members of these procedural opportunities to advocate lack of need for a proposed facility or unacceptable environmental impacts.

Members of Petitioners' organizations live, work, or recreate in the vicinity of specific biomass-burning facilities that were permitted as minor sources but did not commence construction by July 1, 2011,⁸ or were proposed after July 1, 2011 and obtained minor source permits in direct reliance on the Biomass Exemption, and so in each case are currently exempt from PSD permit requirements as the result of the Biomass Exemption. A non-exclusive list of such projects is provided in the declaration of expert Ron Sahu. Sahu Decl. ¶¶ E.1 and E.2, Table 1. These members have already been harmed by the loss of procedural opportunities to question the need for the facilities or to advocate for more effective air pollution controls. They will also be harmed by exposure to higher pollution levels if the plants are constructed without BACT. If the Biomass Exemption is reversed, of these facilities, those which have not yet commenced construction will have to

⁸ As EPA explained in the Tailoring Rule, PSD permits would be required of facilities that (a) obtained minor source permits prior to July 1, 2011 and (b) would have the potential to emit above the greenhouse gas thresholds for Step 2, but (c) failed to commence construction by that date. 75 Fed. Reg. at 31,594/1-2 (JA ____ - ____); *see also* 42 U.S.C. §7475(a)(1), (4) (no major emitting facility may construct without a permit that complies with BACT for each pollutant subject to regulation).

comply with PSD permit requirements they previously avoided; even if the plants commence construction under the illegal Exemption, upon a reversal of the Exemption they can be required to source more sustainably grown fuel and/or comply with more stringent limits requiring full operation and maintenance of their pollution control equipment. This will directly redress the harms these members have suffered.⁹

The member declarations demonstrate that specific members are currently living, working, or recreating near these proposed plants and are suffering harms redressable by reversal of the Exemption. *See, e.g.*, B. Laffitte Decl. ¶¶ 8 (“Given that my farm is immediately adjacent to [the proposed Allendale plant], I am extraordinarily concerned that construction of this facility without more effective air pollution control devices will be harmful to my health”), and 10 (if Allendale had gone through PSD, “the plant’s air permit would allow the plant to emit less PM, NO_x, and CO”); Colacino Decl. ¶¶ 5-7 (lives near the Klamath Falls

⁹ These facts demonstrate that Petitioners’ members are squarely within the zone of interest protected by the PSD program, which is aimed at reducing air pollution while protecting other environmental values. *See, e.g.*, 42 U.S.C. § 7470 (purpose of Part C is to protect public health and welfare from adverse effects of air pollution); *id.* at § 7479(3) (BACT requires permitting authority to take into account environmental impacts); *Mova Pharmaceutical Corp. v. Shalala*, 140 F.3d 1060, 1074-75 (D.C. Cir. 1998) (court must “consider the purposes of the specific statutory provision that is at issue..., read in the context of the statutory scheme as a whole”); *Animal Legal Defense Def. Fund v. Glickman*, 154 F.3d 426, 444 (D.C. Cir. 1998) (zone inquiry is “generous and relatively undemanding”).

Bioenergy plant and states that “we believe and fear that [our hiking, dog-walking, and bird-watching] activities will be diminished by the Klamath Falls Bioenergy plant, and that they will no longer be safe and healthy activities if the biomass-burning plant is sited here without stringent controls”; “My wife is prone to asthma, so is especially affected by air pollution”; “I am concerned about the effects that additional air pollution from the Klamath Falls Bioenergy plant will have on my health...”), 11 (if the Klamath Falls Bioenergy plant had to comply with BACT, “there would be less health-threatening pollution in my community”), and 13 (alternatives such as energy efficiency “would reduce air pollution from burning biomass at the plant, and also from the many trucks that would drive through the community to deliver fuel to the plant.”); Ludtke Decl. ¶¶ 5 (“I suffer from asthma. My husband uses an inhaler while exercising due to reactive lung tissue.... [M]y husband and I live approximately 2 miles from [the proposed Concord Biomass Plant], and I am concerned that construction of this facility without the appropriate air pollution control mechanism will be harmful to my and my husband’s health”) and 10-12 (“I am familiar with air pollution issues because I, and other members of my family, have engaged in endurance sporting activities for 30 years or more”; “my husband, daughter, and I all suffer from impaired respiratory function that will be exacerbated by additional air pollution from this

plant.”); *see also* Booher Decl. ¶¶ 7, 10-15 (harms from the Wadley plant); Govus Decl. ¶¶ 5, 16-20.

The declaration of expert Ron Sahu demonstrates that the exemption from BACT requirements deprives Petitioners’ members of the benefits of stringent BACT limits, notably for harmful particulate matter and nitrogen oxides, Sahu Decl. ¶¶ D.1 (health effects of air pollutants) and E.1-E.2 (describing lower limits for biomass power plants permitted as minor sources that would likely result from PSD permitting), which will result in their exposure to higher levels of harmful pollution and restrictions on their activities.

The Exemption also harms members who recreate in or enjoy the forests from which fuel for the facilities is harvested, as they are deprived of the opportunity to raise concerns about impacts on forests and the opportunity to mitigate those impacts through alternatives or BACT. Colacino Decl. ¶¶ 5 (describing hiking in Winema National Forest near Klamath Falls) and 8 (“I also am concerned that the Klamath Falls Bioenergy Plant will harm the forests and wildlife areas that my wife and I use and enjoy” because the plant intends to source woody biomass from nearby public lands); Nowicki Decl. ¶¶ 11-17 (exemption rule will increase demand for biomass fuels from plants in Amador, Calaveras and El Dorado Counties, resulting in more intensive logging and harm to forest habitat and wildlife in Eldorado, Tahoe, and Stanislaus National Forests where he

recreates); *see also* Booth Decl. ¶¶ 17-19 (exemption rule will increase demand for biomass fuels, resulting in more intensive logging and harm to forest habitat and wildlife); Plantinga Decl. ¶¶ 5-7 (exemption will result in decreased costs of sourcing fuel from whole trees, which in turn will result in trees being harvested earlier than without the Exemption). In particular, the Exemption prevents Petitioners' members from seeking CO₂ BACT limits that restrict the plants to combusting only sustainably harvested biomass feedstocks with low lifecycle carbon emissions, instead of burning fuel from whole trees. *See* Colacino Decl. ¶ 12 (if the Klamath Falls plant had to comply with BACT for CO₂, it might have to comply with a "requirement to burn only more sustainably grown fuel from sources other than the forests that I and my wife use and enjoy.")

These injuries are concrete and actual or imminent: the Biomass Exemption has already allowed proposed biomass-burning facilities to avoid the public process for major sources and, if unremedied, will allow the facilities to be constructed and operated (a) emitting higher levels of air pollution to which nearby members will be exposed, and (b) running on fuels that degrade forests that members use and enjoy. These injuries are fairly traceable to EPA's Exemption. Were it not for the Exemption, these plants would be subject to BACT and the analysis of needs and alternatives. These injuries can be reduced, and are therefore redressable, by vacating or remanding the Exemption.

ARGUMENT

I. STANDARD OF REVIEW

Under section 307(d)(9) of the Clean Air Act, this Court may reverse EPA's action if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" or "in excess of statutory jurisdiction, authority, or limitations, or short of statutory right." 42 U.S.C. § 7607(d)(9)(A), (C).

II. THE ADMINISTRATIVE NECESSITY DOCTRINE DOES NOT SUPPORT THE BIOMASS EXEMPTION

To justify the three-year Biomass Exemption, EPA asserted that it was necessary to take a "step back" from the Tailoring Rule because considering biogenic CO₂ emissions under that rule had proven to be more "complex[]" and "uncertain[]" than anticipated. 76 Fed. Reg. at 43,496/1-3 (JA ____). But the "administrative necessity" doctrine imposes a heavy burden on EPA. It must show that complying with the statute is literally *impossible*, not merely complicated. EPA failed to carry its burden of showing that the Tailoring Rule created "impossible" burdens for permitting agencies addressing facilities emitting biogenic CO₂. Further, the "administrative necessity" doctrine prohibits an agency from carving out an exemption any wider than needed to resolve the asserted impossibility. Even if EPA had demonstrated that meeting the otherwise applicable statutory requirements was an impossibility, the exemption it created was far broader than necessary to address the issue.

A. The Administrative Necessity Doctrine Allows Departure From Statutory Commands Only Under Very Narrow Circumstances

Categorical exemptions from express statutory requirements on grounds of “administrative necessity” are disfavored. *Ala. Power*, 636 F.2d at 358. This Court has emphasized that EPA bears a “heavy burden” to demonstrate administrative “impossibility,” lest government officials “seize on a remedy made available for extreme illness and promote it into the daily bread of convenience.” *Id.* at 359; *see also Sierra Club v. EPA*, 719 F.2d 436, 462-63 (D.C. Cir. 1983) (agency must make a rigorous showing of administrative impossibility).

This Court noted in *Alabama Power* that courts have upheld “streamlined” procedures only where strict statutory compliance “would, as a practical matter, *prevent* the agency from carrying out the mission assigned to it by Congress,” or “when practical considerations make it *impossible* for the agency to carry out its mandate.” 636 F.2d at 358-359 (emphasis added). The Court also emphasized that “there exists no general administrative power to create exemptions to statutory requirements based upon the agency’s perceptions of costs and benefits.” *Id.* at 357.

Later decisions have confirmed the extremely limited scope of “administrative necessity” exemptions and the heavy burden EPA bears. In *Environmental Defense Fund v. EPA*, the agency failed to show that it “[could not] carry out” relevant “statutory commands” to regulate an entire class of sources of

polychlorinated biphenyls, and thus could not sustain an exemption for low concentrations on “administrative necessity” grounds. 636 F.2d 1267, 1283 (D.C. Cir. 1980); *see also Sierra Club v. EPA*, 719 F.2d at 462-63 (predictions that plume rise determinations would be “difficult” and fell “far short”). Moreover, the doctrine does not allow an agency to deviate from the statute any more than the minimum extent necessary. *See, e.g., Pub. Citizen v. FTC*, 869 F.2d 1541, 1556 (D.C. Cir. 1998) (administrative necessity doctrine creates only a “narrow range of inherent discretion in an agency to create case-by-case exceptions in order to come within the practical limits of *feasibility*” (emphasis original)); *see also Mova Pharm. Corp.*, 140 F.3d at 1069 (agency faulted for “embark[ing] upon an adventurous transplant operation in response to blemishes in the statute that could have been alleviated with more modest corrective surgery”).

EPA has entirely failed either to carry its initial burden to show administrative impossibility or to fashion the narrowest exemption necessary to preserve the statute’s administrability.

B. EPA Failed to Demonstrate that There Are Impossible Burdens Associated With Regulating Biogenic CO₂ Under the Tailoring Rule

EPA failed to show that treating facilities emitting biogenic CO₂ just like other CO₂-emitting sources under the Tailoring Rule created “impossible” burdens for permitting agencies. While claiming that complexity and uncertainty associated with accounting for lifecycle CO₂ emissions from biomass fuels would

“entail extensive workload requirements by many of the permitting authorities,” 76 Fed. Reg. at 43,496/1 (JA ____), EPA did not specify *where exactly* in the permitting process the feared complexity and uncertainty would come into play. Nevertheless, the Agency promulgated a broad exemption from the phrase “subject to regulation,” affecting PSD applicability (decisions about which sources required permits) for plants burning all kinds of biomass. This runs counter to both the Tailoring Rule and 30 years of practice in implementing the PSD program, under which applicability decisions are made strictly on the basis of a source’s own emissions and without regard to the lifecycle emissions of its fuel.

EPA also noted in the Tailoring Rule that it believed that for sources burning biomass “there is flexibility to apply the existing regulations and policies regarding BACT in ways that take into account their lifecycle effects on GHG concentrations.” 75 Fed. Reg. 31,591/2 (JA ____). Yet in the Biomass Exemption EPA now backs away even from this alternative approach in favor of a broad exemption from PSD applicability.

EPA’s argument boils down to an assertion that regulating sources of biogenic CO₂ emissions, including having to make BACT determinations taking into account lifecycle fuel characteristics would paralyze the permitting agencies. The record, however, severely undercuts EPA’s contentions. A number of state permitting agencies – the very permitting authorities EPA wishes to spare from

paralysis – said in comments that they expected only a small number of new and modified biogenic CO₂ sources to require PSD permits under the Tailoring Rule, and that they could handle the load. Other state agencies offered no projections of the number of such permits they anticipated or reasons why they could not manage. *See supra* at 15-16. No state agency asserted that it faced an impossible task in considering plants over the Tailoring Rule thresholds with biogenic emissions.

Mere assertions that the burden of permitting biogenic CO₂ sources has increased are patently insufficient to establish administrative impossibility. *Sierra Club*, 719 F.2d at 462-63; *Env'tl. Def. Fund*, 636 F.2d at 1283. A rational assessment of that burden must address two components: How difficult would the required BACT determinations be, were a PSD permit required, and how many such determinations must be made. EPA provided no data on either component. EPA did not quantify its statements about the difficulty of making individual BACT determinations for biogenic CO₂ emissions, or explain how and why this changed between the Tailoring Rule and the Biomass Exemption. Nor did EPA address whether the number of biomass sources presenting themselves for permitting had increased or decreased. Without such information, EPA could make no rational assessment of the overall burden, let alone demonstrate

impossibility. Without such analysis, there is no record showing that proceeding under the Tailoring Rule approach would result in “impossible” burdens.

EPA’s thin factual assertions in this rulemaking concerning the burden of permitting biomass-burning sources stand in stark contrast to the agency’s robust showing in the Tailoring Rule regarding the burdens of permitting tens of thousands – or even millions – of additional sources. *See* Final Tailoring Rule, 75 Fed. Reg. 31,534/3-41/2 (detailed, quantitative examination of the number of new sources, workload hours, and dollar costs associated with immediately requiring PSD and Title V permits for all greenhouse gas sources above statutory thresholds, and for less inclusive alternatives) (JA ____ - ____). Likewise, EPA’s showing here is a far cry from the “thousands” of case-by-case determinations that the *Alabama Power* Court found persuasive in backing up a claim of administrative necessity. 636 F.2d. at 358 (citing *Permian Basin Area Rate Cases*, 390 U.S. 747, 777 (1968)).

C. EPA Failed to Justify Rejecting the Narrower Alternative of Ignoring Lifecycle Factors at the BACT Stage During the Three-Year Exemption Period

Even if EPA had validly established the administrative impossibility of making BACT determinations for biogenic CO₂ emissions sources under the original Tailoring Rule, the agency would not have been justified in issuing a blanket exemption that excused all biogenic CO₂ emissions from counting towards

permit applicability. As noted above, the administrative necessity doctrine does not allow agencies to hack out broad exemptions from statutory commands but rather tolerates deviations from the statute only to the extent necessary to avoid the identified administrative impossibility. *See Pub. Citizen v. FTC*, 869 F.2d at 1556. Here, EPA acknowledged that it could have resolved any administrative overload simply by carrying out PSD and Title V permitting for biomass-burning sources “without making any effort to take into account net carbon cycle impacts” at either the applicability or BACT stages. 76 Fed. Reg. 43,496/3 (JA at ____).

The agency offered no legally adequate reason for rejecting this option. EPA said only that “this [alternative] could result in regulation of sources with trivial or positive impacts on the net carbon cycle” during EPA’s three-year analytical period. *Id.* There is no case law allowing EPA to upgrade a weak showing of administrative burden into a demonstration of impossibility by claiming that some sources – even though administratively feasible to cover – may in the end have *de minimis* impacts. In other words, EPA hacked a *total* exemption from the Act because it feared that *some* regulation under this alternative might have little benefit – a cost-benefit approach this Court has expressly prohibited. *Pub. Citizen*, 869 F.2d at 1556.

Moreover, EPA did not even consider the competing evil of its sweeping categorical exemption – namely, that it gives complete regulatory immunity to *all*

biogenic CO₂ sources, including those with *adverse* impacts on the net carbon cycle. Nowhere did EPA provide factual support for its assertions that requiring PSD permits for some potentially trivial net CO₂ emitters would be more harmful than exempting biomass-burning sources that in fact increase atmospheric carbon pollution. Nor did EPA assert that there is any statutory barrier to the narrow option of ignoring lifecycle factors in the PSD process during the three-year period. Absent a statutory conflict, EPA lacked authority to reject the narrower statutory deviation in favor of the broader one that EPA selected.

The Biomass Exemption excuses *all* biogenic CO₂ sources from PSD permitting in order to avoid even potential regulation of some as-yet-undetermined class of sources with speculatively “trivial” effects. This is even more egregious than the Federal Trade Commission’s overbroad exemption of all promotional goods from the requirement to carry tobacco warning labels, which this Court struck down in *Public Citizen* because it was not tailored to the few promotional goods the agency had shown were too small to bear a warning, but rather extended to *all* such items no matter their size. 869 F.2d at 1556. The administrative necessity doctrine does not authorize the Biomass Exemption, and the Court must vacate it.

III. THE *DE MINIMIS* DOCTRINE DOES NOT SUPPORT THE BIOMASS EXEMPTION

In addition to relying on administrative necessity, EPA also makes frequent reference to a second last-resort doctrine, the *de minimis* doctrine. Making sense of the agency's jumble of statements about the *de minimis* doctrine is no easy task. EPA repeatedly used the phrase *de minimis* to describe a category of emissions it hypothesizes contribute little or no "net" CO₂ to the atmosphere, once off-site sequestration of CO₂ in growing biomass is taken into account. 76 Fed. Reg. 43,498/2-43,499/1 (JA ____–____). As Petitioners show below, however, the Clean Air Act does not authorize EPA to take off-site CO₂ absorption into account in determining whether sources require PSD and Title V permits, and EPA lacks authority to change the statutory framework under color of making a *de minimis* exemption, even on a temporary basis. Moreover, in addition to explaining the three-year exemption for all biogenic CO₂ in the current rule, EPA also presented a *de minimis* rationale to justify future permanent exemptions for some or all biogenic CO₂:

EPA believes it has the authority to exclude biogenic CO₂ emissions from the PSD and Title V requirements, if scientific analysis supports conclusions about the nature of biogenic CO₂ in question that in turn support such an exclusion; the agency will be using the three-year deferral period to better understand the science associated with biogenic CO₂ emissions and to explore whether or not a permanent exemption is permissible for at least some and perhaps all types of feedstocks.

76 Fed. Reg. 43,498/2 (JA ____).

In this opaque discussion, EPA has left it quite unclear whether it is relying on the *de minimis* doctrine to support the present Biomass Exemption, or whether it is only advertising that doctrine as the basis for a future rulemaking. If the Court finds that EPA did not rely on the *de minimis* doctrine in making the present exemption, then it need not determine in this case the limits on EPA's authority to make future exemptions. If, however, the Court finds that EPA did rely on the *de minimis* doctrine to support the present Exemption, then the Court must decide now whether EPA has legal authority to do so, and whether EPA set forth a rational basis on this record for invoking the doctrine.

A. The Clean Air Act Does Not Allow a *De Minimis* Exemption Based on Off-Site CO₂ Absorption

As with exemptions borne of administrative necessity, an agency bears a heavy burden to justify a categorical *de minimis* exemption. "Determination of when matters are truly *de minimis* naturally will turn on the assessment of particular circumstances, and the agency will bear the burden of making the required showing." *Ala. Power*, 636 F.2d at 360; *see also Sierra Club*, 719 F.2d at 462-463 (agency must make a rigorous showing with regards to the *de minimis* doctrine). A *de minimis* exemption likewise must be no broader than necessary. *New York v. EPA*, 443 F.3d 880, 888 (D.C. Cir. 2006) (an agency relying on the *de minimis* doctrine may "diverge from the plain meaning of a statute only so far as is necessary to avoid its futile application"). *See also Shays v. Fed. Elections*

Comm’n, 414 F.3d 76, 114 (D.C. Cir. 2005) (“situations covered by a *de minimis* exemption must be truly *de minimis*”). As EPA itself acknowledges, 76 Fed. Reg. 43,498/3 (JA ____), the *de minimis* doctrine does not allow EPA to take actions “contrary to the express terms of the statute.” *Ober v. Whitman*, 243 F.3d 1190 (9th Cir. 2001); *see also Ohio v. EPA*, 997 F.2d 1520, 1534-35 (D.C. Cir. 1993). The Clean Air Act, as shown below, unambiguously provides that whether a source needs a PSD or Title V permit turns on the amount of regulated pollutants that the source itself emits. Nowhere does EPA identify a gap or ambiguity in the statute that would make it reasonable for the agency to give the source a credit for off-site CO₂ absorption, offsetting its own emissions.

The *de minimis* doctrine does not provide EPA with authority to “exercise a ‘revisory power’” to change the statute. *Ala. Power*, 636 F.2d at 361. As this Court has held, the *de minimis* doctrine does not allow EPA to change the statute’s meaning based on a view that the costs of carrying out the statute exceed its benefits or based on other factors that are not relevant to the underlying statute. *Id.*

1. The Clean Air Act Does Not Allow Consideration of Off-Site Factors in PSD and Title V Permit Applicability Decisions

Nowhere in the proposed or final rule notices did EPA identify either any statutory language that permits it, under either Step 1 or 2 of *Chevron v. NRDC* to reach beyond the borders of a source to consider lifecycle emissions when determining whether the source requires a PSD or Title V permit. As shown

below, all of the relevant statutory terms – “major emitting facility,” “stationary source,” “emits,” “potential to emit,” “any air pollutant,” “subject to regulation,” “directly,” or “from” – require EPA to count the amount of emissions that the source itself emits when determining if a biomass-burning source needs a PSD or Title V permit. 467 U.S. 837 (1984). None of those terms is in any way ambiguous, leaving no room for considering off-site CO₂ absorption in permit applicability decisions. Analysis begins with the term “major emitting facility.” Under Section 165(a)(1), “no major emitting facility” may be constructed without a PSD permit. 42 U.S.C. § 7475(a). Section 169(1) defines a “major emitting facility,” in relevant part, as a “stationary source[] of air pollutants which *emit[s]*, or [*has*] *the potential to emit*,” certain amounts of any air pollutant “*from*” the source. 42 U.S.C. § 7479(1) (emphasis added). The term “stationary source” itself is defined in Section 111(a)(3) as “any building, structure, facility, or installation which *emits* or *may emit* any air pollutant.” 42 U.S.C. § 7411(a)(3) (emphasis added). These terms do not admit of the far-ranging inquiry into off-site uptake of CO₂ invoked by EPA.

Both this Court and the Supreme Court have held that EPA may define “stationary source” and “major emitting facility” as broadly as an industrial plant as a whole, defined as a set of geographically contiguous or adjacent facilities that are under common ownership and control. *See Ala. Power*, 636 F.2d at 396

(“facility” and “installation” may be defined “broadly enough to encompass an entire plant.”); *Chevron*, 467 U.S. at 861-62 (same for “building, structure, facility, or installation”). Thus, the statutory terms permit EPA or state agencies to count the contemporaneous emission increases and decreases within a given industrial plant when determining, on net, whether a construction project has caused a sufficient emissions increase to trigger the requirement to obtain a PSD permit. But nothing in these statutory terms, or the Courts’ decisions, allows EPA to stretch the maximum geographic ambit of “major emitting facility” to reach sites far distant from the facility in question, let alone under the ownership and control of other entities.

The same analysis holds for Title V operating permits. Under Section 502(a), each “major stationary source” requires an operating permit. 42 U.S.C. § 7661a(a). “Major stationary source” is defined in Section 302(j) as “any stationary facility or source of air pollutants which directly emits, or has the potential to emit” specified levels of “any pollutant.” 42 U.S.C. § 7602(j).

EPA has never before asserted authority for sources to “net out” of PSD or Title V permitting by taking into account distant, off-site, and later emissions decreases, let alone by taking into account distant off-site CO₂ absorption from the atmosphere. To the contrary, EPA has long held that “secondary emissions” – “emissions which occur as a result of ... the operation of a major stationary source

or modification, but *do not come from the major stationary source or major modification itself* – “do not count in determining the potential to emit of a stationary source.” *See* 40 C.F.R. § 51.166(b)(4), (18) (emphasis added).

Whether they increase or decrease, these distant emissions “occur[ing] as result of” the source do not count in determining whether the source needs, or does not need, a permit. *Id.* § 51.166(b)(18). It would be an even greater stretch to count CO₂ absorption during the growth of trees or crops on wholly separate and distant sites, owned or operated by unrelated entities, when determining how much pollution a biomass-burning source emits or has the potential to emit.

The terms “emit” and “potential to emit” are also equally clear. “Emit” means “to send forth; discharge” or “give forth or release.” *Emit Definition*, Dictionary.com, <http://dictionary.reference.com/browse/emit?s=t> (last visited Mar. 14, 2012). “Potential to emit” means a source’s theoretical maximum emissions “under its physical and operational design.” *See, e.g.*, 40 C.F.R. § 51.166(b)(4). The plain meaning of “emit” or “potential to emit” does not encompass anything off-site. There certainly is no ambiguity that allows for reasonably interpreting the terms to encompass carbon absorption during plant growth extrinsic to the emitting source.

EPA’s final rule implements the Biomass Exemption by excluding CO₂ emissions resulting from the combustion of any type of biomass from the mass of

the greenhouse gas emissions that must be tallied to determine PSD applicability, so that such “biogenic CO₂” is excluded from the statutory phrase “any air pollutant subject to regulation.” *See, e.g., Id.* § 51.166(b)(48)(ii)(a). But that phrase’s component terms do not allow such an interpretation. The Supreme Court decided in *Massachusetts v. EPA* that CO₂ and other greenhouse gases are unambiguously “air pollutants.” 549 U.S. at 528-29, 532. And as EPA itself recognizes, greenhouse gases (including CO₂) became a pollutant “subject to regulation” for PSD permitting purposes at the very latest when EPA’s motor vehicle standards took effect in January 2011. 75 Fed. Reg. 17,004 (Apr. 2, 2010)(JA ____).

As EPA acknowledged in the proposal, “since the relevant provisions of the Act apply to ‘any air pollutant’ or any ‘air pollutant subject to regulation,’ the terms of the [Act] suggest that the PSD and Title V requirements should apply to CO₂ emissions from bioenergy or other biogenic sources in the same manner as they apply to emissions of CO₂ from any other type of source, since such emissions are constituents of the regulated pollutant [greenhouse gases].” 76 Fed. Reg. at 15,260/3 (JA ____). In fact, the unambiguous statutory terms do more than “suggest” this result; they require it.

The limitations in the terms in Sections 169, 165, and 502 become more evident when looking at other provisions of the Act. When Congress has intended

EPA to take “lifecycle greenhouse gas emissions” into account in the Clean Air Act, it has provided so expressly. The renewable motor fuels program in Section 211(o) expressly directs the Administrator to ensure that the “lifecycle greenhouse gas emissions” associated with various renewable motor fuels will be equal to, or less than, the “baseline lifecycle greenhouse gas emissions” of conventional petroleum-based fuels. *See* Section 211(o), 42 U.S.C. § 7545(o). There is nothing like this authority to take lifecycle emissions into account in the Act’s PSD or Title V provisions for stationary sources.

Similarly, Congress was explicit when it wished EPA to take into account off-site emissions decreases in stationary source permitting decisions. Section 173 of the Act provides that to obtain a permit to construct in a nonattainment area (an area where pollutant concentrations already exceed a national ambient air quality standard), a new or modified major stationary source must obtain emission reduction offsets, which the statute expressly provides may come from *other sources* in the same region. *See* 42 U.S.C. § 7503(a)(1)(A) (source must obtain “sufficient offsetting emissions reductions ... such that total allowable emissions from existing sources in the region, from new or modified sources which are not major emitting facilities, and from the proposed source[,] will be sufficiently less than total emissions from existing sources ... so as to represent ... reasonable further progress”).

In sum, there is no statutory authority and no statutory ambiguity or gap that allows consideration of lifecycle CO₂ emissions in PSD and Title V permit applicability determinations.

2. The *De Minimis* Doctrine Does Not Allow EPA to Introduce Legislatively Excluded Factors into Permit Applicability Decisions

As noted above, the *de minimis* doctrine is not a roving license to consider factors that are irrelevant under the terms of the statute. At most, the *de minimis* doctrine allows EPA to move away from the statutory terms only when full compliance with them would produce nothing but trivial benefits. For example, *Alabama Power* concluded that Section 165 by its terms required EPA to issue permits for modifications that resulted in *any* emissions increase from a source. The Court then held that EPA could exclude emissions increases so small that regulating them would “yield a gain of trivial or no value.” *Ala. Power*, 636 F.2d at 361. But the Court also made clear that EPA may not “exercise a ‘revisory power’” to change what an “emissions increase” means. *Id.* Thus, while EPA may treat very small emissions increases from a source itself as *de minimis*, it has no authority to excuse the source’s own substantial emissions increases because of off-site emissions decreases or off-site CO₂ absorption. In short, the *de minimis* doctrine does not allow EPA to change what the statute tells it to measure in the course of determining whether the amount emitted is *de minimis*.

Indeed, using the *de minimis* doctrine as EPA does here makes a mockery of the doctrine itself. The doctrine exists to permit agencies to ignore genuine trifles. But here EPA claimed authority to *fabricate* “net trifles” by pairing very large source-specific emissions increases with hypothesized major offsets in far distant forests or fields that might occur, if at all, at some other time. Creating a huge loophole on that basis is well beyond the limited exemption that this Court recognized in *Alabama Power*. .

B. EPA Has No Record Support for a Categorical *De Minimis* Exemption for Biogenic CO₂ Emissions.

EPA’s record simply does not support reliance on the *de minimis* doctrine to create a categorical exemption for all biogenic CO₂. First, EPA cannot reasonably base a *current* categorical exemption on the possibility that a *future* analysis and a future rulemaking may provide the factual support for it. Second, like the agency’s overbroad administrative necessity rationale, EPA cannot base an exemption for *all* biogenic CO₂ emissions on the possibility that EPA may eventually decide that *some* such emissions are *de minimis*. Third, EPA utterly neglected other statutorily relevant effects of the exemption it created, including criteria pollutant emissions increases and forest harms.

1. EPA May Not Base an Exemption on Speculative Future Fact-Finding About Lifecycle CO₂ Emissions

Even assuming it had authority to do so, EPA has failed to show that the benefits of requiring biomass-burning sources to obtain PSD and Title V permits are trivial. Instead of a demonstration of present facts, EPA offered only faint-hearted speculation that future analysis may show some biomass feedstocks may – or may not – prove to yield trivial benefits. EPA “*believe[s]* that it is *conceivable* that as a result of the scientific examination of biogenic CO₂ emissions, we *could* conclude that the net carbon cycle impact for *some* biomass feedstocks is trivial, negative, or positive.” 76 Fed. Reg. at 43,496/3 (JA ____) (emphasis added). But, the *de minimis* doctrine does not allow EPA to make an exemption in advance of demonstrating the basis for it. *See NRDC v. EPA*, 966 F.2d 1292, 1306 (9th Cir. 1992) (“Because of the lack of data, we cannot know whether [EPA’s exemption] will indeed have only a *de minimis* effect.”).

2. EPA Failed to Tailor its Biogenic CO₂ Exemption as Narrowly as Possible

Further, EPA lacks authority to exempt *all* biomass feedstocks now on the basis of future scientific analysis and a subsequent rulemaking that it speculates may show trivial regulatory benefits for *some* such feedstocks. 76 Fed. Reg. at 43,496/3, 43,498/3-43,499/1-2 (JA ____, ____ - ____). The *de minimis* doctrine requires EPA to demonstrate that trivial benefits attend the entire category being exempted, not just part of that category. An exemption may not be any broader than needed to avoid futile regulation. *See New York*, 443 F.3d at 888. Far from

tailoring the Biomass Exemption as narrowly as possible, the agency extended its breadth as far as possible. *See* 76 Fed. Reg. at 43,493/1 (defining “biogenic CO₂ emissions” as including those from “combustion or decomposition” of all “biologically based materials other than fossil fuels and mineral sources of carbon,” including the “biological fraction” of tires and other solid wastes) (JA ____). EPA acknowledged that different types of biomass have very different lifecycle carbon profiles. Some feedstock types, the agency asserted, may later be shown to have “a negligible impact on the carbon cycle.” 76 Fed. Reg. at 15,261/2 (JA ____). Other feedstock types, the record shows, remain net CO₂ emitters over very long time periods – decades or more. *See supra* 15. And for some types – for example, because of the loss of carbon stored in soils converted from forest to agriculture, or simply clear cut – re-growth may never fully recapture the emissions lost to the atmosphere, keeping them from being carbon neutral over any timeframe. CBD Comments at 16, 24-25 (JA __, __-__); Wild Virginia, et al. Comments (EPA-HQ-OAR-2010-0560-0455) at 18 (JA ____).¹⁰ And, as the agency

¹⁰ *See also* Booth Decl. ¶¶ 17, 19, and 26 (citing Michael Ryan, et al., *A Synthesis of the Science on Forests and Carbon for U.S. Forests*, Ecological Society of America: Issues in Ecology, Report No. 13 (Spring 2010) at 7). These studies were among many submitted in response to EPA’s “Call for Information on Greenhouse Gas Emissions Associated with Bioenergy and Other Biogenic Sources,” 75 Fed. Reg. 41,173 (July 15, 2010) (“CFI”), Docket No. EPA-HQ-OAR-2010-0560. This information has been on record before the Agency at least since the Fall of 2010, and has been incorporated into the record for this proceeding. *See* Incorporation by Reference (EPA-HQ-OAR-2011-0083-0003) (JA ____).

also stated: “[t]he possibility also remains that ... the utilization of some biomass feedstocks for bioenergy production will have a significant impact on the net carbon cycle, making application of the PSD program requirements necessary to fulfill congressional intent.” 76 Fed. Reg. at 43,499/1-2 (JA ____).

Moreover, the record demonstrates that for the same usable energy output (e.g., megawatt-hours of electricity), the *direct* emissions of CO₂ from combusting at least some forms of biomass are greater than CO₂ emissions from burning fossil fuels. Some biomass fuels burn less efficiently than fossil fuels because they contain more moisture, and energy must be expended evaporating that water. For example, the record reveals that a source burning chipped-up whole trees and residues produces almost four times more CO₂ per megawatt-hour of electricity than a comparably sized natural gas plant, and twice the CO₂ emissions per megawatt-hour of a comparably sized coal plant. *See* CBD Comments at.¹¹

In comments on the proposed three-year exemption, certain petitioners reminded EPA of its duty to set the narrowest possible exemptions, and demanded that EPA restrict any exemption to only a subcategory of biomass feedstocks that the agency could then demonstrate has clearly trivial carbon cycle impacts. *See*,

¹¹ *See, e.g.*, Clean Air Task Force Comments, et al. on CFI (CFI Docket Nos. EPA-HQ-OAR-2010-0560-0066.2, EPA-HQ-OAR-2010-0560-0157.1, and EPA-HQ-OAR-2010-0560-0564432.1) (comment submittals covering recent peer reviewed studies demonstrating that all biomass does not provide carbon benefits, particularly in the near term) (JA ____).

e.g., NRDC Comments at 23 (JA __) (noting that only “biomass feedstocks that will not add to net carbon emissions going forward from the present time,” could be the subject of a current *de minimis* exemption).

In short, the record demonstrates, and EPA acknowledged, that not all biomass energy facilities produce trivial or inconsequential CO₂ emissions on a net lifecycle basis. Thus even if some facility-fuel pairings were eventually shown to be carbon neutral, EPA’s record would still not support a three-year *de minimis* exemption from PSD permitting for *all* sources of biogenic CO₂ emissions. This situation is in complete contrast to *Ohio v. EPA*, a CERCLA case cited by EPA to support the Exemption. *See* 76 Fed. Reg. 43,498/3 (JA __).

In *Ohio*, the agency could claim, on the basis of detailed studies, that regulating would mean reviewing sites where as little as “a single molecule of hazardous material” remained. 997 F. 2d at 1534. Here, in contrast, EPA has only just begun studying the issue, and admits the distinct possibility that the effect of exempting all major sources of biomass CO₂ now will be to exempt sources whose CO₂ emissions actually are significant on a life-cycle basis. 76 Fed. Reg. at 43,499/1-2 (JA __). Further, in *Ohio* EPA did not create an exemption for all sites based on findings that only some had *de minimis* quantities of hazardous materials remaining. Rather, the rule upheld in *Ohio* exempted only those few sites where the remaining amount of hazardous material was deemed “safe” under

health-based standards, i.e., the site was fit for unlimited and unrestricted public use. 997 F.2d at 1534. Instead of supporting the Biomass Exception, *Ohio* shows how thoroughly short of the *de minimis* mark it falls.

3. EPA Did Not Demonstrate That Other Impacts Will be *De Minimis*

As badly as EPA failed to show that the CO₂ impacts of the Biomass Exemption will be *de minimis*, it failed even to assess the impact on emissions of *criteria* pollutants from biomass-burning plants. The record before the agency demonstrates that sources burning some biomass fuels produce not only more CO₂ per megawatt-hour than sources burning coal or natural gas, but also more criteria pollutants – including PM_{2.5}, and NO_x, and carbon monoxide (CO). Partnership for Policy Integrity Comments (EPA-HQ-OAR-2011-0083-0357) at slides 40-44 (JA ____ - ____). As explained above, when a biomass-burning facility is subject to PSD and requires a permit because of its CO₂ emissions, then it must also comply with BACT for its other regulated pollutants. *See supra* 3. But under the Exemption, these facilities can be constructed and operated for their entire lifetimes without meeting BACT for those pollutants.

Additionally, under Section 165(a)(3) and (a)(5), these facilities would have to meet other PSD requirements, including a demonstration that their criteria pollutant emissions will not cause or contribute to exceedances of relevant health-based national ambient air quality standards (NAAQS) or the maximum allowable

pollution increases (“increments”) allowed in PSD areas. 42 U.S.C. § 7475(a)(3), (5). Under the Exemption, however, biomass-burning facilities with significant criteria pollutant emissions can be constructed without making these health protection demonstrations.

EPA had ample evidence that the health risks – including risks of early death – from these extra PM_{2.5} and NO_x emissions are not *de minimis*. *See, e.g.*, Dogwood Comments at 3 (JA ____).¹² EPA failed even to assert, let alone demonstrate, that the consequences of these emissions will be trivial or of no benefit. EPA simply dismissed these concerns about health impacts in some instances as mere “form letters” in “general opposition” to EPA’s rule and therefore not meriting detailed response. *See generally*, Response to Comments (EPA-HQ-OAR-2011-0083-0359) (RTC) at 146,¹³ 178,¹⁴ and Appendix A at A-9 and Appendix B (JA __, __, and __ and ____).

¹² *See also* Dr. William Blackley Comments (EPA-HQ-OAR-2011-0352) April 30, 2011 (noting serious concerns about the increased health risks of particulate matter associated with biomass combustion) (JA ____), and CBD Comments at 57 (EPA’s proposal will result in non-trivial increases in conventional air pollution emissions that threaten human health) (JA ____).

¹³ Offering no direct response to evidence submitted in CBD Comments that EPA’s proposal will result in non-trivial increases in conventional air pollution emissions that threaten human health.

¹⁴ Offering only that EPA is “studying the question” of biogenic CO₂ emissions, in response to Petitioner Dogwood Alliance’s concerns about the health impacts of increases in non-CO₂ air pollution as a result of the Exemption.

EPA similarly failed to show that the Biomass Exemption will produce *de minimis* impacts on forest resources. Petitioners Dogwood Alliance and Center for Biological Diversity, et al., pointed out significant risks to forests from biomass-burning facilities constructed or modified during the three-year exemption period. *See* Dogwood Comments at 1-3 (JA ____), CBD Comments at 18-22 (JA ____ - ____). Rather than address these “particular circumstances,” in *Alabama Power*, EPA said only that it will “keep [the comments] in mind,” and that “the Agency is proceeding as expeditiously as possible.” 636 F.2d at 360; RTC at 63, 117-18 (JA ____, ____ - ____). EPA provided no evidence whatsoever that impacts of the Biomass Exemption on forest resources will be trifling or inconsequential.

IV. THE ONE-STEP-AT-A-TIME DOCTRINE DOES NOT SUPPORT THE BIOMASS EXEMPTION

EPA mistakenly tries to bolster its case for the Biomass Exemption by relying on what it “call[s] the ‘one-step-at-a-time’ doctrine.” 76 Fed. Reg. at 43,494/1 (JA ____); *see also id.* at 43,497/1-43,498/2 (JA ____ - ____). The agency misconstrues the reach of this doctrine, which applies to how an agency exercises the discretion Congress has conferred. *See, e.g. Nat’l Ass’n of Broadcasters v. FCC*, 740 F.2d 1190, 1207-08 (D.C. Cir. 1984) (condoning stepwise use of congressionally conferred discretion). The doctrine simply does not give agencies more discretion than that. In the context of the administrative necessity doctrine, and others that authorize agencies to depart from a statute’s express terms, one-

step-at-a-time may apply to the way they exercise the limited discretion the departure doctrine allows. The doctrine, however, does not by itself justify exempting otherwise regulated entities from the requirements of a statute. Nor can EPA use this doctrine to expand the limited authority conferred by the administrative necessity and *de minimis* doctrines, without vitiating the strict limits courts have imposed.

The Court has recognized that Congress may write statutes that deal with matters incrementally. *See, e.g., Williamson v. Lee Optical of Okla.*, 348 U.S. 483, 489 (1955) (“reform may take one step at a time, addressing itself to the phase of the problem which seems most acute to the legislative mind”); *see also Pub. Citizen Health Research Grp. v. FDA*, 185 F.3d 898, 903 (D.C. Cir. 1999) (this Court noting that “Congress may, of course, approach matters one step at a time”). This Court also has recognized that agencies may regulate incrementally where Congress entrusts an agency with broad authority to exercise its judgment in a given area. *See, e.g. Nat’l Ass’n of Broadcasters*, 740 F.2d at 1207-08 (noting that the challenged agency rules “are not a statutory requirement” and upholding their exemption of one class of businesses against the argument that the agency’s rationale applied equally to other, unexempted, businesses); *Interstate Natural Gas Ass’n of Am. v. FERC*, 285 F.3d 18, 29, 35 (D.C. Cir. 2002) (reviewing rate setting

required by statute to be “just and reasonable” and finding “the Commission is free to undertake reform one step at a time”).

But where a statute, as here, prohibits facilities from constructing or operating without a permit and limits agency discretion to make exemptions based on off-site emission reductions or absorption, the “one-step” doctrine does not by itself create latitude for an agency to diverge from its clear statutory mandate. Here, having failed to offer any positive statutory authority for the Biomass Exemption, or that either the administrative necessity or *de minimis* doctrines warrant exempting biogenic sources wholesale, the agency adds nothing by asserting that it can proceed one-step-at-a-time.

EPA did not show that the Biomass Exemption was an administrative necessity (as it did for the Tailoring Rule) or warranted under the *de minimis* doctrine, and the agency here did not rely on the absurd results doctrine. Thus, there is no basis for proceeding one step at a time. Having failed to identify a legitimate source of discretion for a blanket exemption, EPA cannot rely on the one-step-at-a-time doctrine as authority for the piecemeal exercise of discretion that it does not actually have.

Allowing an agency to use the one-step-at-a-time doctrine this way would largely render the administrative necessity, *de minimis*, and absurd results doctrines dead letters. All three doctrines are tightly circumscribed to ensure that

agencies do not flout congressional direction. If agencies could conjure up discretion to stray from the explicit language of a statute simply by asserting that they were proceeding one step at a time, there would never be any need to prove administrative necessity or the other conditions, and there would be no requirement to tailor the exemption or deviation from statutory text as narrowly as possible.

This rulemaking contrasts sharply with the Tailoring Rule. There EPA applied the one-step-at-a-time doctrine in a manner consistent with the strict limitations of the other doctrines it invoked, namely administrative necessity and absurd results. EPA primarily grounded the Tailoring Rule in those doctrines, making a detailed, record-based analysis of what would constitute the very least amount of non-compliance necessary. *See, e.g., supra* 35 (calculations to assess and alleviate administrative burden). EPA then used the one-step-at-a-time doctrine to buttress its stepwise approach to full implementation, making enforceable commitments to a schedule for continuing to evaluate compliance down to the statutory thresholds. *See, e.g.,* 75 Fed. Reg. at 31,607/1-2 (promulgating new 40 C.F.R § 52.22(b) setting out additional steps toward implementing the statutory thresholds) (JA ____). No comparable record exists here. And with the failure to justify either administrative necessity or *de minimis* regulatory benefits, EPA lacks a basis for invoking the one-step doctrine.

CONCLUSION

Because EPA did not show that the Biomass Exemption was either needed to avoid an impossible administrative burden or would have only trivial effects, and the agency lacked any other authority for the Exemption, the Exemption was not adopted in accordance with law and was in excess of the agency's statutory authority and/or limitations, and should be vacated on that basis.

Respectfully submitted, this 15th Day of March, 2012

/s/ Ann Brewster Weeks (NL)

Ann Brewster Weeks
Helen D. Silver
Clean Air Task Force
18 Tremont Street, Suite 530
Boston, MA 02108
Phone: (617) 624-0234 ext. 156
aweeks@catf.us

Counsel for Conservation Law
Foundation and Natural Resources
Council of Maine

/s/ Frank Rambo (NL)

Frank Rambo
Morgan Butler
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
Phone: (434) 977-4090
frambo@selcva.org

Counsel for Coastal Conservation
League, Dogwood Alliance, Georgia
ForestWatch, and Wild Virginia

/s/ Kevin Bundy (NL)

Kevin Bundy
Vera P. Pardee
Brendan Cummings
Center for Biological Diversity
351 California Street, Suite 600
San Francisco, CA 94104
Phone: (415) 436-9682 ext. 313
kbundy@biologicaldiversity.org

Counsel for Center for Biological
Diversity

David Doniger
Meleah A. Geertsma
Natural Resources Defense Council
1152 15th Street NW, Suite 300
Washington, D.C. 20005
Phone: (202) 289-2403
ddoniger@nrdc.org
mgeertsma@nrdc.org

/s/ Nathaniel S.W. Lawrence

Nathaniel S.W. Lawrence
Natural Resources Defense Council
3723 Holiday Drive, SE
Olympia, WA 98501
Phone: (360) 534-9900
nlawrence@nrdc.org

Counsel for Natural Resources
Defense Council

CERTIFICATE REGARDING WORD LIMITATION

Counsel hereby certifies that, in accordance with Federal Rule of Appellate Procedure 32(a)(7)(C), the foregoing Opening Brief of Petitioners contains 13,576 words, as counted by counsel's word processing system.

DATED: March 15, 2012 SIGNED: /s/ Nathaniel S.W. Lawrence

CERTIFICATE OF SERVICE

I hereby certify that the foregoing **Opening Brief of Petitioners** was electronically filed with the Clerk of the Court using the CM/ECF system, which will send notification of said filing to the attorneys of record who have registered with the Court's CM/ECF system.

DATED: March 15, 2012 SIGNED: /s/ Nathaniel S.W. Lawrence
[printed name]

ORAL ARGUMENT NOT YET SCHEDULED

No. 11-1101 (Consolidated with 11-1285, 11-1328, and 11-1336)

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL DIVERSITY, et al.,
Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondents.

Petition for Review of Final Agency Action

**STATUTORY AND REGULATORY ADDENDUM TO
OPENING BRIEF OF PETITIONERS**

Ann Brewster Weeks
Helen D. Silver
Clean Air Task Force
18 Tremont Street, Suite 530
Boston, MA 02108
Phone: (617) 624-0234 ext. 156
Counsel for Conservation Law
Foundation and Natural Resources
Council of Maine

Frank Rambo
Morgan Butler
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
Phone: (434) 977-4090
Counsel for Coastal Conservation
League, Dogwood Alliance, Georgia
ForestWatch, and Wild Virginia

Kevin Bundy
Vera P. Pardee
Brendan Cummings
Center for Biological Diversity
351 California Street, Suite 600
San Francisco, CA 94104
Phone: (415) 436-9682 ext. 313
Counsel for Center for Biological
Diversity

David Doniger
Meleah A. Geertsma
Natural Resources Defense Council
1152 15th Street NW, Suite 300
Washington, D.C. 20005
Phone: (202) 289-2403

Nathaniel S.W. Lawrence
Natural Resources Defense Council
3723 Holiday Drive, SE
Olympia, WA 98501
Phone: (360) 534-9900
Counsel for Natural Resources Defense
Council

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DATED: March 14, 2012

Respectfully submitted,

/s/ Ann Brewster Weeks (NL)

Ann Brewster Weeks
Helen D. Silver
Clean Air Task Force
18 Tremont Street, Suite 530
Boston, MA 02108
Phone: (617) 624-0234 ext. 156
aweeks@catf.us

Counsel for Conservation Law
Foundation and Natural Resources
Council of Maine

/s/ Frank Rambo (NL)

Frank Rambo
Morgan Butler
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
Phone: (434) 977-4090
frambo@selcva.org

Counsel for Coastal Conservation
League, Dogwood Alliance, Georgia
ForestWatch, and Wild Virginia

/s/ Kevin Bundy (NL)

Kevin Bundy
Vera P. Pardee
Brendan Cummings
Center for Biological Diversity
351 California Street, Suite 600
San Francisco, CA 94104
Phone: (415) 436-9682 ext. 313
kbundy@biologicaldiversity.org

Counsel for Center for Biological
Diversity

David Doniger
Meleah A. Geertsma
Natural Resources Defense Council
1152 15th Street NW, Suite 300
Washington, D.C. 20005
Phone: (202) 289-2403
ddoniger@nrdc.org
mgeertsma@nrdc.org

/s/ Nathaniel S.W. Lawrence

Nathaniel S.W. Lawrence
Natural Resources Defense Council
3723 Holiday Drive, SE
Olympia, WA 98501
Phone: (360) 534-9900
nlawrence@nrdc.org

Counsel for Natural Resources
Defense Council

STATUTORY AND REGULATORY ADDENDUM*

STATUTES

Clean Air Act Sec. 111, 42 U.S.C.A. § 7411

§ 7411. Standards of performance for new stationary sources

(a) Definitions

For purposes of this section:

(3) The term “stationary source” means any building, structure, facility, or installation which emits or may emit any air pollutant. Nothing in subchapter II of this chapter relating to nonroad engines shall be construed to apply to stationary internal combustion engines.

(4) The term “modification” means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.

Clean Air Act Sec. 165, 42 U.S.C.A. § 7475

§ 7475. Preconstruction requirements

(a) Major emitting facilities on which construction is commenced

No major emitting facility on which construction is commenced after August 7, 1977, may be constructed in any area to which this part applies unless--

(1) a permit has been issued for such proposed facility in accordance with this part setting forth emission limitations for such facility which conform to the requirements of this part;

* Only relevant excerpts of statutory and regulatory provisions are provided

(2) the proposed permit has been subject to a review in accordance with this section, the required analysis has been conducted in accordance with regulations promulgated by the Administrator, and a public hearing has been held with opportunity for interested persons including representatives of the Administrator to appear and submit written or oral presentations on the air quality impact of such source, alternatives thereto, control technology requirements, and other appropriate considerations;

(3) the owner or operator of such facility demonstrates, as required pursuant to section 7410(j) of this title, that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any (A) maximum allowable increase or maximum allowable concentration for any pollutant in any area to which this part applies more than one time per year, (B) national ambient air quality standard in any air quality control region, or (C) any other applicable emission standard or standard of performance under this chapter;

(4) the proposed facility is subject to the best available control technology for each pollutant subject to regulation under this chapter emitted from, or which results from, such facility;

(5) the provisions of subsection (d) of this section with respect to protection of class I areas have been complied with for such facility;

(6) there has been an analysis of any air quality impacts projected for the area as a result of growth associated with such facility;

(7) the person who owns or operates, or proposes to own or operate, a major emitting facility for which a permit is required under this part agrees to conduct such monitoring as may be necessary to determine the effect which emissions from any such facility may have, or is having, on air quality in any area which may be affected by emissions from such source; and

(8) in the case of a source which proposes to construct in a class III area, emissions from which would cause or contribute to exceeding the maximum allowable increments applicable in a class II area and where no standard under [section 7411](#) of this title has been promulgated subsequent to August 7, 1977, for such source category, the Administrator has approved the determination of best available technology as set forth in the permit.

Clean Air Act Sec. 169, 42 U.S.C.A. § 7479

§ 7479. Definitions

For purposes of this part--

(1) The term “major emitting facility” means any of the following stationary sources of air pollutants which emit, or have the potential to emit, one hundred tons per year or more of any air pollutant from the following types of stationary sources: fossil-fuel fired steam electric plants of more than two hundred and fifty million British thermal units per hour heat input, coal cleaning plants (thermal dryers), kraft pulp mills, Portland Cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than fifty tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production facilities, chemical process plants, fossil-fuel boilers of more than two hundred and fifty million British thermal units per hour heat input, petroleum storage and transfer facilities with a capacity exceeding three hundred thousand barrels, taconite ore processing facilities, glass fiber processing plants, charcoal production facilities. Such term also includes any other source with the potential to emit two hundred and fifty tons per year or more of any air pollutant. This term shall not include new or modified facilities which are nonprofit health or education institutions which have been exempted by the State.

(2) ***

(C) The term “construction” when used in connection with any source or facility, includes the modification (as defined in [section 7411\(a\)](#) of this title) of any source or facility.

(3) The term “best available control technology” means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from

any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of “best available control technology” result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to [section 7411](#) or [7412](#) of this title. Emissions from any source utilizing clean fuels, or any other means, to comply with this paragraph shall not be allowed to increase above levels that would have been required under this paragraph as it existed prior to November 15, 1990.

Clean Air Act Sec. 173, 42 U.S.C.A. § 7503

§ 7503. Permit requirements

(a) In general

The permit program required by section 7502(b)(6) of this title shall provide that permits to construct and operate may be issued if—

(1) in accordance with regulations issued by the Administrator for the determination of baseline emissions in a manner consistent with the assumptions underlying the applicable implementation plan approved under section 7410 of this title and this part, the permitting agency determines that

—

(A) by the time the source is to commence operation, sufficient offsetting emissions reductions have been obtained, such that total allowable emissions from existing sources in the region, from new or modified sources which are not major emitting facilities, and from the proposed source will be sufficiently less than total emissions from existing sources (as determined in accordance with the regulations under this paragraph) prior to the application for such permit to construct or modify so as to represent (when considered together with the plan provisions required under section 7502 of this title) reasonable further progress (as defined in section 7501 of this title);

(c) Offsets

(1) The owner or operator of a new or modified major stationary source may comply with any offset requirement in effect under this part for increased emissions of any air pollutant only by obtaining emission reductions of such air pollutant from the same source or other sources in the same nonattainment area, except that the State may allow the owner or operator of a source to obtain such emission reductions in another nonattainment area if (A) the other area has an equal or higher nonattainment classification than the area in which the source is located and (B) emissions from such other area contribute to a violation of the national ambient air quality standard in the nonattainment area in which the source is located. Such emission reductions shall be, by the time a new or modified source commences operation, in effect and enforceable and shall assure that the total tonnage of increased emissions of the air pollutant from the new or modified source shall be offset by an equal or greater reduction, as applicable, in the actual emissions of such air pollutant from the same or other sources in the area.

(2) Emission reductions otherwise required by this chapter shall not be creditable as emissions reductions for purposes of any such offset requirement. Incidental emission reductions which are not otherwise required by this chapter shall be creditable as emission reductions for such purposes if such emission reductions meet the requirements of paragraph (1).

Clean Air Act Sec. 211, 42 U.S.C.A. § 7545

§ 7545. Regulation of fuels

(o) Renewable fuel program

(1) Definitions

In this section:

(B) Advanced biofuel

(i) In general

The term “advanced biofuel” means renewable fuel, other than ethanol derived from corn starch, that has lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, that are at least 50 percent less than baseline lifecycle greenhouse gas emissions.

(C) Baseline lifecycle greenhouse gas emissions

The term “baseline lifecycle greenhouse gas emissions” means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

(D) Biomass-based diesel

The term “biomass-based diesel” means renewable fuel that is biodiesel as defined in [section 13220\(f\)](#) of this title and that has lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, that are at least 50 percent less than the baseline lifecycle greenhouse gas emissions. Notwithstanding the preceding sentence, renewable fuel derived from co-processing biomass with a petroleum feedstock shall be advanced biofuel if it meets the requirements of subparagraph (B), but is not biomass-based diesel.

(E) Cellulosic biofuel

The term “cellulosic biofuel” means renewable fuel derived from any cellulose, hemicellulose, or lignin that is derived from renewable biomass and that has lifecycle greenhouse gas emissions, as determined by the Administrator, that are at least 60 percent less than the baseline lifecycle greenhouse gas emissions.

(F) Conventional biofuel

The term “conventional biofuel” means renewable fuel that is ethanol derived from corn starch.

(G) Greenhouse gas

The term “greenhouse gas” means carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorocarbons, sulfur hexafluoride. The Administrator may include any other anthropogenically-emitted gas that is determined by the Administrator, after notice and comment, to contribute to global warming.

(H) Lifecycle greenhouse gas emissions

The term “lifecycle greenhouse gas emissions” means the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), as determined by the Administrator, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.

Clean Air Act Sec. 302, 42 U.S.C.A. § 7602

§ 7602. Definitions

When used in this chapter--

(g) The term “air pollutant” means any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material)

substance or matter which is emitted into or otherwise enters the ambient air. Such term includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term “air pollutant” is used.

(j) Except as otherwise expressly provided, the terms “major stationary source” and “major emitting facility” mean any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant (including any major emitting facility or source of fugitive emissions of any such pollutant, as determined by rule by the Administrator).

Clean Air Act Sec. 307, 42 U.S.C.A. § 7607

§ 7607. Administrative proceedings and judicial review

(b) Judicial review

(1) A petition for review of action of the Administrator in promulgating any national primary or secondary ambient air quality standard, any emission standard or requirement under section 7412 of this title, any standard of performance or requirement under section 7411 of this title,, [FN2] any standard under section 7521 of this title (other than a standard required to be prescribed under section 7521(b)(1) of this title), any determination under section 7521(b)(5) of this title, any control or prohibition under section 7545 of this title, any standard under section 7571 of this title, any rule issued under section 7413, 7419, or under section 7420 of this title, or any other nationally applicable regulations promulgated, or final action taken, by the Administrator under this chapter may be filed only in the United States Court of Appeals for the District of Columbia. A petition for review of the Administrator's action in approving or promulgating any implementation plan under section 7410 of this title or section 7411(d) of this title, any order under section 7411(j) of this title, under section 7412 of this title,, [FN2] under section 7419 of this title, or under section 7420 of this title, or his action under section 1857c-10(c)(2)(A), (B), or (C) of this title (as in effect before August

7, 1977) or under regulations thereunder, or revising regulations for enhanced monitoring and compliance certification programs under section 7414(a)(3) of this title, or any other final action of the Administrator under this chapter (including any denial or disapproval by the Administrator under subchapter I of this chapter) which is locally or regionally applicable may be filed only in the United States Court of Appeals for the appropriate circuit. Notwithstanding the preceding sentence a petition for review of any action referred to in such sentence may be filed only in the United States Court of Appeals for the District of Columbia if such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination. Any petition for review under this subsection shall be filed within sixty days from the date notice of such promulgation, approval, or action appears in the Federal Register, except that if such petition is based solely on grounds arising after such sixtieth day, then any petition for review under this subsection shall be filed within sixty days after such grounds arise. The filing of a petition for reconsideration by the Administrator of any otherwise final rule or action shall not affect the finality of such rule or action for purposes of judicial review nor extend the time within which a petition for judicial review of such rule or action under this section may be filed, and shall not postpone the effectiveness of such rule or action.

(2) Action of the Administrator with respect to which review could have been obtained under paragraph (1) shall not be subject to judicial review in civil or criminal proceedings for enforcement. Where a final decision by the Administrator defers performance of any nondiscretionary statutory action to a later time, any person may challenge the deferral pursuant to paragraph (1).

(d) Rulemaking

(1) This subsection applies to--

(J) promulgation or revision of regulations under part C of subchapter I of this chapter (relating to prevention of significant deterioration of air quality and protection of visibility),

(V) such other actions as the Administrator may determine.

The provisions of section 553 through 557 and section 706 of Title 5 shall not, except as expressly provided in this subsection, apply to actions to which this subsection applies. This subsection shall not apply in the case of any rule or circumstance referred to in subparagraphs (A) or (B) of subsection 553(b) of Title 5.

(9) In the case of review of any action of the Administrator to which this subsection applies, the court may reverse any such action found to be--

(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;

(B) contrary to constitutional right, power, privilege, or immunity;

(C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right; or

(D) without observance of procedure required by law, if (i) such failure to observe such procedure is arbitrary or capricious, (ii) the requirement of paragraph (7)(B) has been met, and (iii) the condition of the last sentence of paragraph (8) is met.

Clean Air Act Sec. 501, 42 U.S.C.A. § 7661

§ 7661. Definitions

As used in this subchapter--

(2) Major source

The term “major source” means any stationary source (or any group of stationary sources located within a contiguous area and under common control) that is either of the following:

(A) A major source as defined in section 7412 of this title.

(B) A major stationary source as defined in section 7602 of this title or part D of subchapter I of this chapter.

Clean Air Act Sec. 502, 42 U.S.C.A. § 7661a

§ 7661a. Permit programs

(a) Violations

After the effective date of any permit program approved or promulgated under this subchapter, it shall be unlawful for any person to violate any requirement of a permit issued under this subchapter, or to operate an affected source (as provided in subchapter IV-A of this chapter), a major source, any other source (including an area source) subject to standards or regulations under section 7411 or 7412 of this title, any other source required to have a permit under parts C or D of subchapter I of this chapter, or any other stationary source in a category designated (in whole or in part) by regulations promulgated by the Administrator (after notice and public comment) which shall include a finding setting forth the basis for such designation, except in compliance with a permit issued by a permitting authority under this subchapter. (Nothing in this subsection shall be construed to alter the applicable requirements of this chapter that a permit be obtained before construction or modification.) The Administrator may, in the Administrator's discretion and consistent with the applicable provisions of this chapter, promulgate regulations to exempt one or more source categories (in whole or in part) from the requirements of this subsection if the Administrator finds that compliance with such requirements is impracticable, infeasible, or unnecessarily burdensome on such categories, except that the Administrator may not exempt any major source from such requirements.

CODE OF FEDERAL REGULATIONS

40 C.F.R. § 51.166

§ 51.166 Prevention of significant deterioration of air quality.

Effective: July 20, 2011

(a)

(7) Applicability. Each plan shall contain procedures that incorporate the requirements in paragraphs (a)(7)(i) through (vi) of this section.

(i) The requirements of this section apply to the construction of any new major stationary source (as defined in paragraph (b)(1) of this section) or any project at an existing major stationary source in an area designated as attainment or unclassifiable under sections 107(d)(1)(A)(ii) or (iii) of the Act.

(ii) The requirements of paragraphs (j) through (r) of this section apply to the construction of any new major stationary source or the major modification of any existing major stationary source, except as this section otherwise provides.

(iii) No new major stationary source or major modification to which the requirements of paragraphs (j) through (r)(5) of this section apply shall begin actual construction without a permit that states that the major stationary source or major modification will meet those requirements.

(iv) Each plan shall use the specific provisions of paragraphs (a)(7)(iv)(a) through (f) of this section. Deviations from these provisions will be approved only if the State specifically demonstrates that the submitted provisions are more stringent than or at least as stringent in all respects as the corresponding provisions in paragraphs (a)(7)(iv)(a) through (f) of this section.

(a) Except as otherwise provided in paragraphs (a)(7)(v) and (vi) of this section, and consistent with the definition of major modification contained in paragraph (b)(2) of this section, a project is a major modification for a regulated NSR pollutant if it causes two types of

emissions increases--a significant emissions increase (as defined in paragraph (b)(39) of this section), and a significant net emissions increase (as defined in paragraphs (b)(3) and (b)(23) of this section). The project is not a major modification if it does not cause a significant emissions increase. If the project causes a significant emissions increase, then the project is a major modification only if it also results in a significant net emissions increase.

(b) Definitions. All State plans shall use the following definitions for the purposes of this section. Deviations from the following wording will be approved only if the State specifically demonstrates that the submitted definition is more stringent, or at least as stringent, in all respects as the corresponding definitions below:

(1)(i) Major stationary source means:

(a) Any of the following stationary sources of air pollutants which emits, or has the potential to emit, 100 tons per year or more of any regulated NSR pollutant: Fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants (with thermal dryers), primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants (which does not include ethanol production facilities that produce ethanol by natural fermentation included in NAICS codes 325193 or 312140), fossil-fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants, and charcoal production plants;

(b) Notwithstanding the stationary source size specified in paragraph (b)(1)(i)(a) of this section, any stationary source which emits, or has

the potential to emit, 250 tons per year or more of a regulated NSR pollutant; or

(2)(i) Major modification means any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase (as defined in paragraph (b)(39) of this section) of a regulated NSR pollutant (as defined in paragraph (b)(49) of this section); and a significant net emissions increase of that pollutant from the major stationary source.

(ii) Any significant emissions increase (as defined at paragraph (b)(39) of this section) from any emissions units or net emissions increase (as defined in paragraph (b)(3) of this section) at a major stationary source that is significant for volatile organic compounds or NO_x shall be considered significant for ozone.

(3)(i) Net emissions increase means, with respect to any regulated NSR pollutant emitted by a major stationary source, the amount by which the sum of the following exceeds zero:

(a) The increase in emissions from a particular physical change or change in the method of operation at a stationary source as calculated pursuant to paragraph (a)(7)(iv) of this section; and

(b) Any other increases and decreases in actual emissions at the major stationary source that are contemporaneous with the particular change and are otherwise creditable. Baseline actual emissions for calculating increases and decreases under this paragraph (b)(3)(i)(b) shall be determined as provided in paragraph (b)(47), except that paragraphs (b)(47)(i)(c) and (b)(47)(ii)(d) of this section shall not apply.

(ii) An increase or decrease in actual emissions is contemporaneous with the increase from the particular change only if it occurs within a reasonable period (to be specified by the State) before the date that the increase from the particular change occurs.

(iii) An increase or decrease in actual emissions is creditable only if:

(a) It occurs within a reasonable period (to be specified by the reviewing authority); and

(b) The reviewing authority has not relied on it in issuing a permit for the source under regulations approved pursuant to this section, which permit is in effect when the increase in actual emissions from the particular change occurs; and

(iv) An increase or decrease in actual emissions of sulfur dioxide, particulate matter, or nitrogen oxides that occurs before the applicable minor source baseline date is creditable only if it is required to be considered in calculating the amount of maximum allowable increases remaining available.

(v) An increase in actual emissions is creditable only to the extent that the new level of actual emissions exceeds the old level.

(vi) A decrease in actual emissions is creditable only to the extent that:

(a) The old level of actual emissions or the old level of allowable emissions, whichever is lower, exceeds the new level of actual emissions;

(b) It is enforceable as a practical matter at and after the time that actual construction on the particular change begins;

(c) It has approximately the same qualitative significance for public health and welfare as that attributed to the increase from the particular change; and

(4) Potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of

operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.

(5) Stationary source means any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant.

(6) Building, structure, facility, or installation means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same Major Group (i.e., which have the same two-digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-0066 and 003-005-00176-0, respectively).

(7) Emissions unit means any part of a stationary source that emits or would have the potential to emit any regulated NSR pollutant and includes an electric utility steam generating unit as defined in paragraph (b)(30) of this section. For purposes of this section, there are two types of emissions units as described in paragraphs (b)(7)(i) and (ii) of this section.

(i) A new emissions unit is any emissions unit that is (or will be) newly constructed and that has existed for less than 2 years from the date such emissions unit first operated.

(ii) An existing emissions unit is any emissions unit that does not meet the requirements in paragraph (b)(7)(i) of this section. A replacement unit, as defined in paragraph (b)(32) of this section, is an existing emissions unit.

(8) Construction means any physical change or change in the method of operation (including fabrication, erection, installation, demolition, or modification of an emissions unit) that would result in a change in emissions.

(9) Commence as applied to construction of a major stationary source or major modification means that the owner or operator has all necessary preconstruction approvals or permits and either has:

(i) Begun, or caused to begin, a continuous program of actual on-site construction of the source, to be completed within a reasonable time; or

(ii) Entered into binding agreements or contractual obligations, which cannot be cancelled or modified without substantial loss to the owner or operator, to undertake a program of actual construction of the source to be completed within a reasonable time.

(10) Necessary preconstruction approvals or permits means those permits or approvals required under Federal air quality control laws and regulations and those air quality control laws and regulations which are part of the applicable State Implementation Plan.

(11) Begin actual construction means, in general, initiation of physical on-site construction activities on an emissions unit which are of a permanent nature. Such activities include, but are not limited to, installation of building supports and foundations, laying of underground pipework, and construction of permanent storage structures. With respect to a change in method of operation this term refers to those on-site activities, other than preparatory activities, which mark the initiation of the change.

(12) Best available control technology means an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each a regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combination techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the reviewing authority determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard

infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

(18) Secondary emissions means emissions which occur as a result of the construction or operation of a major stationary source or major modification, but do not come from the major stationary source or major modification itself. For the purposes of this section, secondary emissions must be specific, well defined, quantifiable, and impact the same general areas the stationary source modification which causes the secondary emissions. Secondary emissions include emissions from any offsite support facility which would not be constructed or increase its emissions except as a result of the construction or operation of the major stationary source or major modification. Secondary emissions do not include any emissions which come directly from a mobile source, such as emissions from the tailpipe of a motor vehicle, from a train, or from a vessel.

(23)(i) Significant means, in reference to a net emissions increase or the potential of a source to emit any of the following pollutants, a rate of emissions that would equal or exceed any of the following rates:

Pollutant and Emissions Rate

Carbon monoxide: 100 tons per year (tpy)

Nitrogen oxides: 40 tpy

Sulfur dioxide: 40 tpy

Particulate matter: 25 tpy of particulate matter emissions. 15 tpy of PM₁₀ emissions

PM_{2.5}: 10 tpy of direct PM_{2.5} emissions; 40 tpy of sulfur dioxide emissions; 40 tpy of nitrogen oxide emissions unless demonstrated not to be a PM_{2.5} precursor under paragraph (b)(49) of this section

Ozone: 40 tpy of volatile organic compounds or nitrogen oxides

Lead: 0.6 tpy

Fluorides: 3 tpy

Sulfuric acid mist: 7 tpy

Hydrogen sulfide (H₂S): 10 tpy

Total reduced sulfur (including H₂S): 10 tpy

Reduced sulfur compounds (including H₂S): 10 tpy

Municipal waste combustor organics (measured as total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans): 3.2×10^{-6} megagrams per year (3.5×10^{-6} tons per year)

Municipal waste combustor metals (measured as particulate matter): 14 megagrams per year (15 tons per year)

Municipal waste combustor acid gases (measured as sulfur dioxide and hydrogen chloride): 36 megagrams per year (40 tons per year)

Municipal solid waste landfill emissions (measured as nonmethane organic compounds): 45 megagrams per year (50 tons per year)

(39) Significant emissions increase means, for a regulated NSR pollutant, an increase in emissions that is significant (as defined in paragraph (b)(23) of this section) for that pollutant.

(48) Subject to regulation means, for any air pollutant, that the pollutant is subject to either a provision in the Clean Air Act, or a nationally-applicable regulation codified by the Administrator in subchapter C of this chapter, that requires actual control of the quantity of emissions of that pollutant, and that such a control requirement has taken effect and is operative to control, limit or restrict the quantity of emissions of that pollutant released from the regulated activity. Except that:

(i) Greenhouse gases (GHGs), the air pollutant defined in [§ 86.1818–12\(a\)](#) of this chapter as the aggregate group of six greenhouse gases: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, shall not be subject to regulation except as provided in paragraphs (b)(48)(iv) through (v) of this section.

(ii) For purposes of paragraphs (b)(48)(iii) through (v) of this section, the term tpy CO₂ equivalent emissions (CO₂e) shall represent an amount of GHGs emitted, and shall be computed as follows:

(a) Multiplying the mass amount of emissions (tpy), for each of the six greenhouse gases in the pollutant GHGs, by the gas's associated global warming potential published at Table A–1 to subpart A of part 98 of this chapter--Global Warming Potentials. For purposes of this paragraph (b)(48)(ii)(a), prior to July 21, 2014, the mass of the greenhouse gas carbon dioxide shall not include carbon dioxide emissions resulting from the combustion or decomposition of non-fossilized and biodegradable organic material originating from plants, animals, or micro-organisms (including products, by-products, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material).

(b) Sum the resultant value from paragraph (b)(48)(ii)(a) of this section for each gas to compute a tpy CO₂e.

(iii) The term emissions increase as used in paragraphs (b)(48)(iv) through (v) of this section shall mean that both a significant emissions increase (as calculated using the procedures in (a)(7)(iv) of this section) and a significant net emissions increase (as defined in paragraphs (b)(3) and (b)(23) of this

section) occur. For the pollutant GHGs, an emissions increase shall be based on tpy CO₂e, and shall be calculated assuming the pollutant GHGs is a regulated NSR pollutant, and “significant” is defined as 75,000 tpy CO₂e instead of applying the value in paragraph (b)(23)(ii) of this section.

(iv) Beginning January 2, 2011, the pollutant GHGs is subject to regulation if:

(a) The stationary source is a new major stationary source for a regulated NSR pollutant that is not GHGs, and also will emit or will have the potential to emit 75,000 tpy CO₂e or more; or

(b) The stationary source is an existing major stationary source for a regulated NSR pollutant that is not GHGs, and also will have an emissions increase of a regulated NSR pollutant, and an emissions increase of 75,000 tpy CO₂e or more; and,

(v) Beginning July 1, 2011, in addition to the provisions in paragraph (b)(48)(iv) of this section, the pollutant GHGs shall also be subject to regulation:

(a) At a new stationary source that will emit or have the potential to emit 100,000 tpy CO₂e; or

(b) At an existing stationary source that emits or has the potential to emit 100,000 tpy CO₂e, when such stationary source undertakes a physical change or change in the method of operation that will result in an emissions increase of 75,000 tpy CO₂e or more.

(49) Regulated NSR pollutant, for purposes of this section, means the following:

(i) Any pollutant for which a national ambient air quality standard has been promulgated and any pollutant identified under this paragraph (b)(49)(i) as a constituent or precursor to such pollutant. Precursors identified by the Administrator for purposes of NSR are the following:

(a) Volatile organic compounds and nitrogen oxides are precursors to ozone in all attainment and unclassifiable areas.

(b) Sulfur dioxide is a precursor to $PM_{2.5}$ in all attainment and unclassifiable areas.

(c) Nitrogen oxides are presumed to be precursors to $PM_{2.5}$ in all attainment and unclassifiable areas, unless the State demonstrates to the Administrator's satisfaction or EPA demonstrates that emissions of nitrogen oxides from sources in a specific area are not a significant contributor to that area's ambient $PM_{2.5}$ concentrations.

(d) Volatile organic compounds are presumed not to be precursors to $PM_{2.5}$ in any attainment or unclassifiable area, unless the State demonstrates to the Administrator's satisfaction or EPA demonstrates that emissions of volatile organic compounds from sources in a specific area are a significant contributor to that area's ambient $PM_{2.5}$ concentrations.

(ii) Any pollutant that is subject to any standard promulgated under section 111 of the Act;

(iii) Any Class I or II substance subject to a standard promulgated under or established by title VI of the Act;

(iv) Any pollutant that otherwise is subject to regulation under the Act as defined in paragraph (b)(48) of this section.

(v) Notwithstanding paragraphs (b)(49)(i) through (iv) of this section, the term regulated NSR pollutant shall not include any or all hazardous air pollutants either listed in section 112 of the Act, or added to the list pursuant to section 112(b)(2) of the Act, and which have not been delisted pursuant to section 112(b)(3) of the Act, unless the listed hazardous air pollutant is also regulated as a constituent or precursor of a general pollutant listed under section 108 of the Act.

(vi) Particulate matter (PM) emissions, $PM_{2.5}$ emissions, and PM_{10} emissions shall include gaseous emissions from a source or activity which condense to form particulate matter at ambient temperatures. On or after January 1, 2011 (or any earlier date established in the upcoming rulemaking codifying test methods), such condensable particulate matter shall be accounted for in applicability determinations and in establishing emissions limitations for PM, $PM_{2.5}$ and PM_{10} in PSD permits. Compliance with emissions limitations

for PM, PM_{2.5} and PM₁₀ issued prior to this date shall not be based on condensable particular matter unless required by the terms and conditions of the permit or the applicable implementation plan. Applicability determinations made prior to this date without accounting for condensable particular matter shall not be considered in violation of this section unless the applicable implementation plan required condensable particular matter to be included.

(50) Reviewing authority means the State air pollution control agency, local agency, other State agency, Indian tribe, or other agency authorized by the Administrator to carry out a permit program under [§ 51.165](#) and this section, or the Administrator in the case of EPA-implemented permit programs under [§ 52.21](#) of this chapter.

(51) Project means a physical change in, or change in method of operation of, an existing major stationary source.

40 C.F.R. § 52.21

§ 52.21 Prevention of significant deterioration of air quality.

Effective: July 20, 2011

(a)(1) Plan disapproval. The provisions of this section are applicable to any State implementation plan which has been disapproved with respect to prevention of significant deterioration of air quality in any portion of any State where the existing air quality is better than the national ambient air quality standards. Specific disapprovals are listed where applicable, in Subparts B through DDD of this part. The provisions of this section have been incorporated by reference into the applicable implementation plans for various States, as provided in Subparts B through DDD of this part. Where this section is so incorporated, the provisions shall also be applicable to all lands owned by the Federal Government and Indian Reservations located in such State. No disapproval with respect to a State's failure to prevent significant deterioration of air quality shall invalidate or otherwise affect the obligations of States, emission sources, or other persons with respect to all portions of plans approved or promulgated under this part.

(b) Definitions. For the purposes of this section:

(23)(i) Significant means, in reference to a net emissions increase or the potential of a source to emit any of the following pollutants, a rate of emissions that would equal or exceed any of the following rates:

Pollutant and Emissions Rate

Carbon monoxide: 100 tons per year (tpy)

Nitrogen oxides: 40 tpy

Sulfur dioxide: 40 tpy

Particulate matter: 25 tpy of particulate matter emissions

PM₁₀: 15 tpy

PM_{2.5}: 10 tpy of direct PM_{2.5} emissions; 40 tpy of sulfur dioxide emissions; 40 tpy of nitrogen oxide emissions unless demonstrated not to be a PM_{2.5} precursor under paragraph (b)(50) of this section

Ozone: 40 tpy of volatile organic compounds or nitrogen oxides

Lead: 0.6 tpy

Fluorides: 3 tpy

Sulfuric acid mist: 7 tpy

Hydrogen sulfide (H₂S): 10 tpy

Total reduced sulfur (including H₂S): 10 tpy

Reduced sulfur compounds (including H₂S): 10 tpy

Municipal waste combustor organics (measured as total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans): 3.2×10^{-6} megagrams per year (3.5×10^{-6} tons per year)

Municipal waste combustor metals (measured as particulate matter): 14 megagrams per year (15 tons per year)

Municipal waste combustor acid gases (measured as sulfur dioxide and hydrogen chloride): 36 megagrams per year (40 tons per year)

Municipal solid waste landfills emissions (measured as nonmethane organic compounds): 45 megagrams per year (50 tons per year)

(ii) Significant means, in reference to a net emissions increase or the potential of a source to emit a regulated NSR pollutant that paragraph (b)(23)(i) of this section, does not list, any emissions rate.

(iii) Notwithstanding paragraph (b)(23)(i) of this section, significant means any emissions rate or any net emissions increase associated with a major stationary source or major modification, which would construct within 10 kilometers of a Class I area, and have an impact on such area equal to or greater than $1 \mu\text{g}/\text{m}^3$, (24-hour average).

(j) Control Technology Review.

(1) A major stationary source or major modification shall meet each applicable emissions limitation under the State Implementation Plan and each applicable emissions standard and standard of performance under 40 CFR Parts 60 and 61.

(2) A new major stationary source shall apply best available control technology for each regulated NSR pollutant that it would have the potential to emit in significant amounts.

(3) A major modification shall apply best available control technology for each regulated NSR pollutant for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur

as a result of a physical change or change in the method of operation in the unit.

(4) For phased construction projects, the determination of best available control technology shall be reviewed and modified as appropriate at the latest reasonable time which occurs no later than 18 months prior to commencement of construction of each independent phase of the project. At such time, the owner or operator of the applicable stationary source may be required to demonstrate the adequacy of any previous determination of best available control technology for the source.

40 C.F.R. § 70.1

§ 70.1 Program overview.

Effective: January 11, 2006

(a) The regulations in this part provide for the establishment of comprehensive State air quality permitting systems consistent with the requirements of title V of the Clean Air Act (Act) ([42 U.S.C. 7401, et seq.](#)). These regulations define the minimum elements required by the Act for State operating permit programs and the corresponding standards and procedures by which the Administrator will approve, oversee, and withdraw approval of State operating permit programs.

(b) All sources subject to these regulations shall have a permit to operate that assures compliance by the source with all applicable requirements. While title V does not impose substantive new requirements, it does require that fees be imposed on sources and that certain procedural measures be adopted especially with respect to compliance.

40 C.F.R. § 71.1

§ 71.1 Program overview.

(a) This part sets forth the comprehensive Federal air quality operating permits permitting program consistent with the requirements of title V of the Act ([42 U.S.C. 7401 et seq.](#)) and defines the requirements and the corresponding standards and procedures by which the Administrator will issue operating permits. This permitting program is designed to promote timely and efficient implementation of goals and requirements of the Act.

(b) All sources subject to the operating permit requirements of title V and this part shall have a permit to operate that assures compliance by the source with all applicable requirements.

40 C.F.R. § 71.4

§ 71.4 Program implementation.

(a) Part 71 programs for States. The Administrator will administer and enforce a full or partial operating permits program for a State (excluding Indian country) in the following situations:

(1) A program for a State meeting the requirements of part 70 of this chapter has not been granted full approval under § 70.4 of this chapter by the Administrator by July 31, 1996, and the State's part 70 program has not been granted interim approval under § 70.4(d) of this chapter for a period extending beyond July 31, 1996. The effective date of such a part 71 program is July 31, 1996.

(2) An operating permits program for a State which was granted interim approval under § 70.4(d) of this chapter has not been granted full approval by the Administrator by the expiration of the interim approval period or July 31, 1996, whichever is later. Such a part 71 program shall be effective upon expiration of the interim approval or July 31, 1996 whichever is later.

(3) Any partial part 71 program will be effective only in those portions of a State that are not covered by a partial part 70 program that has been granted full or interim approval by the Administrator pursuant to § 70.4(c) of this chapter.

(b) Part 71 programs for Indian country. The Administrator will administer and enforce an operating permits program in Indian country, as defined in [§ 71.2](#), when an operating permits program which meets the requirements of part 70 of this chapter has not been explicitly granted full or interim approval by the Administrator for Indian country.

(1) [Reserved]

(2) The effective date of a part 71 program in Indian country shall be March 22, 1999.

(3) Notwithstanding paragraph (i)(2) of this section, within 2 years of the effective date of the part 71 program in Indian country, the Administrator shall take final action on permit applications from part 71 sources that are submitted within the first full year after the effective date of the part 71 program.

ORAL ARGUMENT NOT YET SCHEDULED

No. 11-1101 (Consolidated with Nos. 11-1285, 11-1328, and 11-1336)

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL DIVERSITY, et al.,
Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondents.

Petition for Review of Final Agency Action

**DECLARATION ADDENDUM TO
OPENING BRIEF OF PETITIONERS**

Ann Brewster Weeks
Helen D. Silver
Clean Air Task Force
18 Tremont Street, Suite 530
Boston, MA 02108
Phone: (617) 624-0234 ext. 156
Counsel for Conservation Law
Foundation and Natural Resources
Council of Maine

Frank Rambo
Morgan Butler
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
Phone: (434) 977-4090
Counsel for Coastal Conservation
League, Dogwood Alliance, Georgia
ForestWatch, and Wild Virginia

Kevin Bundy
Vera P. Pardee
Brendan Cummings
Center for Biological Diversity
351 California Street, Suite 600
San Francisco, CA 94104
Phone: (415) 436-9682 ext. 313
Counsel for Center for Biological
Diversity

David Doniger
Meleah A. Geertsma
Natural Resources Defense Council
1152 15th Street NW, Suite 300
Washington, D.C. 20005
Phone: (202) 289-2403

Nathaniel S.W. Lawrence
Natural Resources Defense Council
3723 Holiday Drive, SE
Olympia, WA 98501
Phone: (360) 534-9900
Counsel for Natural Resources Defense
Council

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DATED: March 14, 2012

Respectfully submitted,

/s/ Ann Brewster Weeks (NL)

Ann Brewster Weeks

Helen D. Silver

Clean Air Task Force

18 Tremont Street, Suite 530

Boston, MA 02108

Phone: (617) 624-0234 ext. 156

aweeks@catf.us

Counsel for Conservation Law
Foundation and Natural Resources
Council of Maine

/s/ Frank Rambo (NL)

Frank Rambo

Morgan Butler

Southern Environmental Law Center

201 West Main Street, Suite 14

Charlottesville, VA 22902

Phone: (434) 977-4090

frambo@selcva.org

Counsel for Coastal Conservation
League, Dogwood Alliance, Georgia
ForestWatch, and Wild Virginia

/s/ Kevin Bundy (NL)

Kevin Bundy

Vera P. Pardee

Brendan Cummings

Center for Biological Diversity

351 California Street, Suite 600

San Francisco, CA 94104

Phone: (415) 436-9682 ext. 313

kbundy@biologicaldiversity.org

Counsel for Center for Biological
Diversity

David Doniger

Meleah A. Geertsma

Natural Resources Defense Council

1152 15th Street NW, Suite 300

Washington, D.C. 20005

Phone: (202) 289-2403

ddoniger@nrdc.org

mgeertsma@nrdc.org

/s/ Nathaniel S.W. Lawrence

Nathaniel S.W. Lawrence

Natural Resources Defense Council

3723 Holiday Drive, SE

Olympia, WA 98501

Phone: (360) 534-9900

nlawrence@nrdc.org

Counsel for Natural Resources
Defense Council

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, *et al.*,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
(Consolidated with 11-1285,
11-1328, and 11-1336)

DECLARATION OF SAM BOOHER

I, Sam Booher, declare as follows:

1. This declaration is based on my personal knowledge, information and belief. I am over the age of eighteen (18) and suffer from no legal incapacity.
2. I am a member of Dogwood Alliance, Georgia ForestWatch, and Natural Resources Defense Council.
3. My address is 4387 Roswell Drive, Augusta, Georgia 30907.
4. North Star Jefferson, LLC (North Star) has proposed to build a power plant on Wadley Road in Wadley, Georgia that will burn woody biomass and tire-

derived fuel (TDF) to produce electricity. At least 80% of the fuel will be woody biomass; the rest will be TDF.

5. In February of 2012, the Georgia Department of Natural Resources' Environmental Protection Division (EPD) issued a draft air permit for the Wadley plant that contains emission limits for pollutants that will be emitted by the plant, such as particulate matter (PM), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and carbon monoxide (CO). EPD proposes to issue the plant a "minor new source review" permit, and recently held a public hearing in Wadley on the proposed permit. I attended that hearing along with approximately 230 local residents.

6. The proposed Wadley plant site is about 48 miles from my home. Several activities take me even closer to the proposed plant site. I have no plans to discontinue these activities.

7. I am retired now, but am very active in my local Sierra Club group, (While our membership is centered in Richmond and Columbia Counties, it does include members in Jefferson County, where Wadley is located.) In fact, I am co-chair of the group. In that position and as an active member, I go on outings to local nature spots, rivers like the Ogeechee River and the Savannah River, and local forests. Some of these outings go nearby Wadley. The Ogeechee River, for instance, flows about 3 miles east of Wadley. Also, in my local Sierra Club position, I investigate reports of local environmental violations. For example, I

have investigated kaolin spills in local waterways, like Reedy Creek, which is a branch of Brier Creek.

8. I am also very active in the “Adopt-a-Stream” program in Columbia County, my home county, and Richmond County, which borders Columbia County and Jefferson County, the location of the proposed plant site. The program is run by EPD and encourages individuals and communities to monitor and improve sections of streams, wetlands, lakes or estuaries to help ensure that Georgia’s water bodies are healthy. I have been an Adopt-a-Stream volunteer since 1990. At first, my primary activity was simply collecting water samples, doing chemical water testing (for instance, to see if the water is overly acidic), and taking part in macroinvertebrate counts. I subsequently became an EPD certified trainer. I have let my trainer certification lapse, but I still go on water collecting trips and macroinvertebrate counts. In addition, I travel around trying to encourage communities to start Adopt-a-Stream programs in their areas. In fact, I have been talking to Wadley residents about the importance of starting the program now for their nearby water bodies so that they can establish some baseline water quality data before the North Star biomass plant starts operating.

9. I am also an elected District Supervisor for the Columbia County Soil and Water Conservation District. Among other things, the CCSWD provides technical assistance and education on water, soil and related natural resources to

towns and cities, landowners and land users, and residents. CCSWD aims to facilitate conservation and proper land-use decision-making. One of my responsibilities as a District Supervisor is to inspect any instances of water quality problems, such as erosion, low water flow, pond siltation, or water contamination.

10. I am aware that the air pollutants emitted by the Wadley plant, including NO_x and PM, make the air unhealthy to breathe and are particularly detrimental to respiratory function. Some of these pollutants, such as PM and CO, have also been linked to heart conditions. This especially worries me since I had a heart attack two years ago and still must regularly see a cardiologist. Given my health problems and that I recreate in close proximity to this facility, I am concerned that its construction and operation will be harmful to my health. I am also concerned about the plant's impact on the health of the wider community, particularly because it would be two miles upwind of an elementary school.

11. I am also aware that biomass combustion can result in contamination of water resources. For example, water problems can occur due to runoff and leachate from fuel storage piles, storage of ash from combustion, and storage and disposal of water used to rinse parts of the plant and sometimes recycled through the process. For these reasons, I am concerned about soil and ground water contamination near Wadley because when I recreate on my local trips and activities that take me near Wadley I drink water that's drawn from local aquifers.

12. I am aware that the United States Environmental Protection Agency (EPA) has recently finalized a rule, sometimes called the Biomass Exemption Rule, that allows a new biomass-burning facility, including North Star's Wadley plant, to ignore the facility's carbon dioxide (CO₂) emissions that come from biomass for the purpose of determining whether the facility is a "major emitting facility" that must obtain a prevention of significant deterioration (PSD) permit. I am aware that, absent EPA's Biomass Exemption Rule, the Wadley plant would have been classified as a major emitting facility because of its CO₂ emissions, as Georgia EPD relied directly on the Biomass Exemption in deciding that PSD does not apply. Consequently, North Star is avoiding the requirements for a PSD permit, including going through the necessary public process and complying with the "best available control technology" (BACT) emission standard for each pollutant that it emits in significant amounts.

13. In this case, I am aware that BACT would have been required for the Wadley plant's emissions of PM, NO_x, and CO, as well as CO₂, because it has the potential to emit all of these pollutants above EPA's BACT thresholds. I am very concerned about the Biomass Exemption Rule allowing the Wadley plant to avoid PSD permitting because subjecting the plant to emission rate limits that meet the BACT standard, instead of the rates imposed under minor new source review permitting requirements, might well result in an air permit that would require the

plant to emit less PM, NO_x, and CO than the minor new source review permit proposed by EPD. Avoidance of BACT for CO₂ also means that I cannot seek limits on the plant that would ensure that its CO₂ emissions are controlled to the maximum degree feasible, such as a limit requiring it to burn only sustainably harvested fuels from sources other than the forests in which I recreate.

14. The BACT analysis requirement would not be the only thing different about the permitting process for the Wadley plant if there were no Biomass Exemption Rule. Unlike EPD's minor new source review permitting process, the PSD process gives the public the opportunity to raise arguments about the need for and alternatives to a plant, and requires a state permitting agency, like EPD, to consider those arguments in making its permit determination. Because the Wadley plant is classified as a minor source, it does not have to meet this requirement.

15. If it did, I would have the opportunity to raise the lack of need for the plant and the availability of cleaner alternatives to it. Such cleaner alternatives could consist of, among other things, managing and meeting electricity demand through greater end-use energy efficiency. These alternatives would reduce or eliminate air pollution from burning biomass at the plant, and also from the many trucks that would drive through the community to deliver fuel to the plant. As a related benefit, these cleaner alternatives would also reduce or eliminate the water pollution from the plant.

16. I am concerned that the Biomass Exemption Rule will result in significantly increased emissions of harmful air and water pollution from North Star's Wadley plant, thereby endangering my health. I thus support the efforts of Dogwood Alliance, Georgia ForestWatch, and Natural Resources Defense Council to convince a court to strike down the Biomass Exemption Rule.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: March 13, 2012

/s/ Sam Booher
Sam Booher

ORAL ARGUMENT NOT YET SCHEDULED

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

_____)	
CENTER FOR BIOLOGICAL)	
DIVERSITY, <i>et al.</i> ,)	
)	No. 11-1101
Petitioners,)	
)	(Consolidated with 11-1285,
v.)	11-1328, and 11-1336)
)	
UNITED STATES ENVIRONMENTAL)	
PROTECTION AGENCY,)	
)	
Respondent.)	
_____)	

Hampshire County)
)
Commonwealth of Massachusetts)

DECLARATION OF MARY STUART BOOTH

I, Mary Stuart Booth, hereby declare and state under penalty of perjury the following:

1. This declaration is based on my personal knowledge. I am over the age of 18 and suffer from no legal incapacity.

2. I am providing this declaration to support the standing of Coastal Conservation League, Center for Biological Diversity, Conservation Law

Foundation, Dogwood Alliance, Natural Resources Council of Maine, Natural Resources Defense Council, Georgia ForestWatch, and Wild Virginia in the above-captioned case.

PROFESSIONAL BACKGROUND

3. I am currently the Director of the Partnership for Policy Integrity (“PFPI”). My office is located at 54 Arnold Rd, Pelham, MA, 01002. I have a Ph.D. in Ecology from Utah State University, an MA in Plant Biology from the University of Massachusetts, and a BA in Anthropology from the University of Massachusetts. I have completed post-doctoral studies at the Earth Institute at Columbia University and at the Ecosystems Center at the Woods Hole Marine Biological Laboratory. My *curriculum vitae* is attached as Exhibit A.

4. I have worked since 2008 as a consulting scientist for a variety of client organizations, researching and analyzing many aspects of biomass-fueled energy production. As a result of my background and this work, I have developed expertise related to the air emissions from this industry, including emissions of carbon dioxide (“CO₂”) and other greenhouse gases (“GHG(s)”), and criteria air pollutants (nitrogen oxides, sulfur dioxide, carbon monoxide, and particulate

matter), and also about the impacts of increased reliance on certain biomass fuels (whole trees and forestry residues, in particular) on forest resources.

5. As part of my work as a consulting scientist, I have reviewed and analyzed air permits and other record materials underlying and related to proposed construction of new biomass-fueled energy facilities and modifications of existing facilities to enable biomass combustion. Over the last three years, I have analyzed and prepared comments on permits and supporting record documentation for the following facilities, all of which proposed to use wood and wood residues as fuel. These facilities are all standalone biomass power facilities proposed primarily for the purpose of delivering electricity to the grid.

- A. Russell Biomass, MA (50 MW – net output)
- B. Pioneer Renewable Energy, MA (47 MW – net output)
- C. Palmer Renewable Energy, MA (35 MW – net output)
- D. Hu Honua facility, HI (21.5 MW – net output)
- E. We Energies/Domtar facility, WI (50 MW – net output)
- F. Southern Renewable Energy Allendale facility, SC (17.5 MW – net output)
- G. Buena Vista facility, CA (18.5 MW – net output)

- H. Green Energy Partners DeKalb County facility, GA (10 MW – net output)
- I. Wiregrass facility, GA (45 MW – net output)
- J. Adage Mason Country facility, WA (60 MW – net output)
- K. Gainesville Renewable Energy facility, FL (100 MW – net output)
- L. Beaver Wood Energy, VT (34 MW gross output).

6. As part of my consulting work and my study of the environmental impacts of the biomass power industry, I have also created a biomass permit database containing information on facility size, biomass fuel type, boiler type, pollution control technology, permitted emissions rates for criteria pollutants, total expected emissions per year for criteria pollutants and hazardous air pollutants, potential total emissions of CO₂, and other information from 68 biomass-burning facilities that have applied for or received state air or other pre-construction permits over the last four years.

7. As part of my consulting work, I also have provided expert advice and analysis of the air, climate, and other environmental impacts of the biomass power industry. Significant projects I have undertaken for clients include an analysis of GHG emissions from biomass power under a federal renewable electricity

standard, an analysis of the Manomet Biomass Sustainability and Carbon Policy Study, an analysis of a Southeastern biomass availability study, and an analysis of current and future trends in CO₂ emissions from the biomass industry.

8. I also have provided expert support for development of comments by the Clean Air Task Force, the Conservation Law Foundation, the Natural Resources Council of Maine, the Natural Resources Defense Council, the Sierra Club, and the Southern Environmental Law Center on EPA's Call for Information regarding GHG emissions associated with burning wood and other biogenic fuel sources for power generation. My declaration is based on studies cited in the record for that proceeding and/or in the record for the Biomass CO₂ Exemption Rule that is the subject of this case.¹

9. My work on these matters has included assessments of the existing biomass industry and the number of new biomass fueled energy production facilities proposed in recent years, as well as an analysis of emerging biomass fuel demand compared to estimates of biomass fuel availability, and potential adverse impacts on forest resources.

¹ Docket ID Nos. EPA-HQ-OAR-2011-0083 (Biomass CO₂ Exemption Rule), and EPA-HQ-OAR-2010-0560 (Call for Information).

10. It is my observation, based on my review of recent and proposed permits for biomass power plants, that these plants are major sources for their GHG emissions (emitting more than 100,000 tons per year on a CO₂ equivalent and mass basis) if they are between 7-8 MW in size or greater, and then solely because of their CO₂ emissions. That is, they typically do not emit other GHGs at levels anywhere near the major source thresholds. Also, I observe that even for the “best performers” the emissions rates for conventional air pollutants such as particulate matter (“PM”), nitrogen oxides (“NO_x”) and carbon monoxide (“CO”) from these plants are similar to or exceed those from a coal fired plant of similar size.²

CLEAN AIR ACT PERMITTING

11. I am aware because of my work experience that, under the Clean Air Act’s Prevention of Significant Deterioration (“PSD”) program, new and modified facilities that have the potential to emit regulated air pollutants in amounts above certain thresholds (so-called “major emitting facilities”) must obtain permits before commencing construction, and after undertaking a variety of air quality and environmental assessments. I am also aware that the major source threshold for most biomass power facilities is 250 tons per year for pollutants other than GHGs.

² See Presentation by Dr. Mary Booth and Richard Wiles to EPA, May 26, 2011, Docket No. EPA-HQ-OAR-2011-0083-0357 at slides 41-44.

More specifically, under the PSD program, major new or modified sources must evaluate and achieve emissions limits developed through an assessment of the Best Available Control Technology (“BACT”) for each regulated air pollutant emitted in significant amounts. In a BACT analysis, the applicant and state must consider, among other things, clean fuels and environmental impacts of the source. I am also aware that permit issuing authorities must consider “alternatives” to the proposed project in addition to a proposed project’s air quality and other environmental impacts. As part of the PSD process, the public has an opportunity to provide comments on all of these aspects of the proposed facility, which must be considered by the permit-issuing authority.

12. Because of my consulting work, I am aware that, in June 2010, the Environmental Protection Agency (“EPA”) issued regulations governing major sources of GHGs under the PSD construction permit program and Title V operating permit program. Specifically, I am familiar with these regulations because I provided citizens’ groups with technical analysis and comments on their environmental implications, including those related to biogenic CO₂ emissions from energy production, during the comment period in 2010. These regulations, commonly known as the “Tailoring Rule,” established GHG emission thresholds above which “major” sources of GHGs must comply with the PSD and Title V

programs and, accordingly, must comply with BACT and PSD procedural requirements. The Rule defines a “major source” as including both new facilities that emit GHGs at a level of 100,000 tons per year on a mass- and CO₂-equivalent basis, and modifications to existing facilities that increase GHG emissions by at least 75,000 tons per year on a mass- and CO₂-equivalent basis. I understand that these regulations are being implemented in phases, and that Phase I began January 2, 2011 and ended July 1, 2011, and that Phase II began on July 1, 2011, and is currently in place. Under Phase I, stationary sources that were already required to obtain a PSD permit and comply with BACT for non-GHG pollutants were also required to comply with BACT requirements for GHG emissions. Under Phase II, stationary sources that emit GHGs at or above the Tailoring Rule’s thresholds are pulled into the PSD program solely on the basis of their GHG emissions. They are required to obtain PSD permits and comply with BACT requirements both for GHGs and for the other regulated air pollutants they emit in amounts above regulatory significance levels, even if those other air pollutants are emitted in amounts below the statutory major source threshold levels.

13. I am also aware that following the Tailoring Rule, EPA proposed and finalized the Biomass CO₂ Exemption Rule, which is challenged in this case. The Rule exempts the CO₂ emissions produced from burning any kind of biomass or

other biogenic fuels from counting toward the “major source” thresholds, and therefore allows an otherwise major source of CO₂ to avoid having to satisfy the requirements of the PSD permitting program. This exemption will apply for three years. While CO₂ emissions from biogenic sources were exempted by the rule, emissions of other GHGs were not.³ I provided technical analysis and comments on the proposed Biomass CO₂ Exemption Rule,⁴ for the Center for Biological Diversity and other citizens’ groups. As a result, I am aware that the final Biomass CO₂ Exemption Rule, published on July 20, 2011, will have the effect of exempting “major” sources of biogenic CO₂ – including most biomass power facilities – from the PSD requirements described above.

14. I have reviewed the comments submitted on the Biomass CO₂ Exemption Rule by various stakeholders, in particular with respect to the following issues:

- A. Expected effect of the Biomass CO₂ Exemption Rule on the development of the biomass industry, in particular the effect of

³ 76 Fed. Reg. 43,490 *et seq.* (July 20, 2011).

⁴ 76 Fed. Reg. 15,249 *et seq.* (March 21, 2011). I also filed comments for PFPI on the Biomass CO₂ Exemption Rule. These comments are found at Docket ID. No. EPA-HQ-OAR-2011-0083-0138.

exempting biogenic CO₂ emissions from the permitting requirements of the PSD program.

- B. Statements from industry representatives, including statements about the incentives to additional development of biomass power facilities that are provided by exempting such facilities from PSD permit and associated control requirements.
- C. Expected effect of the Biomass CO₂ Exemption Rule on the use of biomass feedstocks at existing and future biomass facilities, with a particular focus on potential impacts on forestry resources.
- D. Expected effect of the Biomass CO₂ Exemption Rule on CO₂ emissions.

SUMMARY OF OPINIONS

15. In my professional judgment, as explained below, implementation of the Biomass CO₂ Exemption Rule will result in greater GHG emissions than if the sources went through the PSD permitting program process, and will cause the following additional impacts:

- A. The Biomass CO₂ Exemption Rule will contribute to other environmental degradation including harm to existing forests, by

expanding existing and creating new incentives for increased harvesting of trees for fuel.

- B. The Biomass CO₂ Exemption Rule allows facilities to avoid PSD permitting and BACT controls assessments and emissions limits, as well as the assessment of cleaner alternatives raised by the permitting agency and/or public commenters. This avoids the requirement to consider other environmental impacts of these facilities (including climate and forest impacts) by the permitting authorities and the public, including people living near these facilities.

I. The Biomass CO₂ Exemption Rule Causes Harm to Forests.

16. In my professional judgment, the Biomass CO₂ Exemption Rule will harm forests because a significant amount of biomass fuel currently is, and in the future will be, derived not from mill wastes or forestry residues, but from harvesting of whole trees that are then chipped and burned for energy. The Biomass CO₂ Exemption Rule creates additional demand for biomass fuel, and creates incentives for increased biomass harvesting, including harvesting of whole trees from existing forests.

17. Biomass harvesting, which collects the tops and limbs of trees harvested for commercial timber, and often as well whole trees, represents a threat

to forest health and sustainability. This threat arises due to the removal of material containing nutrients and carbon necessary for future soil fertility, removal of material that protects against soil erosion, and removal of material considered necessary for wildlife habitat.⁵ The more intense harvesting that occurs when biomass is collected for fuel can readily lead to greater removal of trees, even clearcutting.⁶

18. My professional judgment about forest harms due to the Biomass CO₂ Exemption Rule is based in part on statements by industry spokespeople, indicating that whole tree harvesting is the current and most likely future source of biomass fuels at many facilities. For example:

- A. The 50 MW McNeil biomass facility in Burlington VT is an example of an existing facility that burns whole trees. Documentation at the facility's website⁷ states that "[s]eventy percent of the wood chips that fuel the McNeil Station are called whole-tree chips and come from

⁵ Michael Ryan, *et al.*, *A Synthesis of the Science on Forests and Carbon for U.S. Forests*, Ecological Society of America: Issues in Ecology, Report No. 13 (Spring 2010) at 7 (*cited in* Comments of CBD, Docket ID No. EPA-HQ-OAR-2010-0560-0157 at 5 n.7 & Exh. 2).

⁶ Presentation by Dr. Mary Booth and Richard Wiles to EPA, May 26, 2011, at slides 20-21, Docket No. EPA-HQ-OAR-2011-0083-0357; *see also* Mary S. Booth & Richard Wiles, *Clear Cut Disaster: Carbon Loophole Threatens U.S. Forests* (EWG 2010) at 26 Fig. 6 (Docket ID No. EPA-HQ-OAR-2010-0560-0157, Exh. 26).

⁷ <https://www.burlingtonelectric.com/page.php?pid=75&name=mcneil> (last visited March 6, 2012).

low quality trees and harvest residues . . . To run McNeil at full load, approximately 76 tons of whole-tree chips are consumed per hour. That amounts to about 30 cords per hour (there are about 2.5 tons of chips per cord of green wood).”

- B. The proposed 75 MW Laidlaw biomass facility in Berlin NH intends to burn whole trees. The company’s website⁸ states the facility will burn “whole tree wood chips and other low-grade wood, often referred to as ‘biomass materials’, which are the byproducts of the local forest products industry and land management practices. Generally, whole tree chips are produced from trees unsuitable for use in lumber or paper mills, or from the tops and branches of trees harvested for lumber.” The Laidlaw plant’s air permit states the plant will burn about 113 tons of “whole logs” per hour, or almost a million tons a year. According to Forest Service data, the average standing biomass of New Hampshire forests is around 100 green tons per acre.⁹ The total wood used by the Laidlaw facility will therefore be

⁸ http://www.laidlawenergy.com/NH_Project (last visited March 6, 2012).

⁹ Smith, W.B., *et al.* Forest Resources of the United States, 2007. United States Forest Service, Gen.Tech Report WO-78. December, 2008 (*cited in* Comments of CBD, *et al.*, Docket ID No. EPA-HQ-OAR-2011-0083-0350.1, Exh. 10).

approximately equivalent to the biomass obtained by cutting 9,000 to 10,000 acres of standing trees per year.

19. Without the Biomass CO₂ Exemption Rule, PSD permitting for larger biomass power facilities would be required, which would in turn require consideration of these environmental impacts, both as part of the consideration of cleaner alternatives and in conjunction with the BACT analysis for CO₂ and other air pollutants.

A. Analysis of environmental impacts would include, among other things, consideration of the potential environmental harm to forests from the extent of harvesting required to provide the proposed biomass fuel, and the associated effects on soil erosion, soil carbon stocks, and wildlife habitat.

B. Biomass power facilities also increase demand for local water resources. A typical 50 MW water-cooled biomass power plant requires 800,000 to 900,000 gallons of cooling water per day. This water is obtained from rivers or other surface waters, or from pumped groundwater. Without the Biomass CO₂ Exemption Rule,

consideration of environmental impacts in the PSD review would include evaluating biomass power impacts on water resources.

II. All Biomass Is Not “Carbon Neutral” When Burned as Fuel.

20. It is my professional judgment that in the absence of the Biomass CO₂ Exemption Rule, most new biomass power facilities would be required to go through PSD permitting, including evaluation of and requirements to meet BACT emissions limits for the CO₂ and other regulated air pollutants they emit, and as a result, the environmental impact from these facilities would be reduced, including reduced critical near term emissions of CO₂, but also emissions of other air pollutants. The concept that all biomass fuel is “carbon neutral” is fundamentally wrong, as I will describe below.

A. As EPA has recognized, there is every reason to believe that without significant reductions of GHGs, including CO₂, in the near-term (that is, within the next few decades), there will be ever greater rates of climate change.¹⁰

B. Burning biomass emits more CO₂ at the stack than combustion of other fuels, per unit of energy produced. This CO₂ is functionally

¹⁰ U.S. EPA, Endangerment Finding, 74 Fed. Reg. 66,496, 66,518 & 66,498 n.2 (Dec. 15, 2009).

identical to CO₂ from fossil fuels in that emissions of biogenic CO₂ have the same heat-trapping effect, and thus equivalent climate change impacts, as CO₂ emissions from burning fossil fuels.

- C. Combustion of biomass increases net atmospheric CO₂ levels for a period of time known as the “carbon debt” period; the carbon debt period can vary significantly by feedstock. Carbon debt periods can range from a few years to several decades or more depending on the feedstock, and the net carbon emissions over time can be significant even relative to combustion from the energy-equivalent in fossil fuels.

21. There are two main arguments most often made for the position that burning biomass is “carbon neutral”: (A) the “waste” argument – that only waste biomass will be burned, and it would otherwise decompose and release the carbon anyway; and (B) the “resequestration” argument – that the released CO₂ is re-sequestered in growing plants. In my professional opinion, both of these arguments are wrong for the following reasons:

- A. The waste argument is wrong, as it ignores data and statements from the biomass industry including statements in the record for the Biomass CO₂ Exemption Rule, indicating that industry uses and

intends to use whole trees for fuel, not just “wastes” or forest residues.

In addition, waste material takes much longer (decades) to release its carbon through decomposition than to release its carbon on combustion (which is instantaneous).

- B. The resequestration argument does not establish carbon neutrality on a timeframe relevant to combating climate change because it fails to acknowledge that harvesting forests for fuel reduces net carbon sequestration (or put differently, increases near term carbon emissions) for a period of years, or decades, and that this situation can and will persist for up to a century or longer if whole trees are harvested.

22. My analysis of publicly available data from the U.S. Energy Information Administration indicates that biomass power facilities emit more CO₂ than a coal or gas plant of the same size, per unit of energy output, whether measured at the stack or on a lifecycle basis. This is because wood is a lower energy fuel, per unit mass than is coal. The heating value for bone-dry wood is at or around 8,600 British thermal units per pound of fuel (“Btu/lb”), which compares negatively with the average heating value, on an “as received” basis, for the coal burned to generate electricity in the United States, which is at or around 9,806

Btu/lb.¹¹ And, the woody biomass fuel burned at a biomass power plant is never really bone dry, but has a typical moisture content of 45%.¹² This typically high moisture content of wood, particularly newly harvested wood, translates to a higher heating value of approximately 4,730 Btu/lb, which further decreases the efficiency of burning biomass, relative to burning coal to generate power.¹³

¹¹ U.S. Energy Information Administration. Monthly Energy Review, September 2011. Table A5. Approximate heat content of coal and coal coke. Washington, DC. http://www.eia.gov/totalenergy/data/monthly/pdf/sec13_5.pdf (last visited March 6, 2012).

¹² L. Wright, *et al.*, Oak Ridge National Laboratory. Biomass Energy Data Book, Edition 2. Oak Ridge, TN (2010)(*cited in* Comments of Wild Virginia, Georgia ForestWatch, and Southern Environmental Law Center, Docket ID No. EPA-HQ-OAR-2010-0560-0455 at 7 n.9).

¹³ U.S. Energy Information Administration. 2010. Carbon dioxide uncontrolled emission factors. Electric Power Annual, 2009. DOE/EIA-0348(2009). Revised April, 2011. Washington, DC. <http://www.eia.gov/electricity/annual/archive/03482009.pdf> (last visited March 6, 2012).

23. As shown in Table 1, facilities burning biomass emit significantly more carbon dioxide per unit of useful energy than fossil fuel facilities.

	Fuel CO2 per unit energy (lb/mmbtu)	Facility efficiency	Fuel mmbtu required to generate 1 MWh	Lb CO2/MWh
Gas combined cycle	117.1	0.45	7.54	883
Gas steam turbine	117.1	0.33	10.40	1,218
Coal steam turbine	205.6	0.34	10.15	2,086
Biomass steam turbine	213	0.24	14.22	3,029

Table 1. Biomass-fueled versus fossil-fueled power generation technologies and their CO₂ emissions per megawatt-hour (MWh). The typical fuel is assumed to be wood. Data on CO₂ emissions per mmbtu for coal and gas from EIA;¹⁴ data on CO₂ emissions from biomass calculated from heat content data¹⁵ for wood that is 50% carbon by weight.

24. Based on the information in Table 1, a biomass steam turbine of slightly under 8 MW has the potential to emit 100,000 tons per year (on a mass basis) of CO₂. That calculation can be done by dividing 200,000,000 lbs. (100,000 tons) by 3,029 lbs. CO₂/ MW-hr, and dividing that again by 8760 hours per year.

25. Harvesting and burning biomass fuel in such facilities results in the immediate conversion of stored terrestrial carbon into atmospheric CO₂. Biomass combustion thus results in increased net atmospheric CO₂ concentrations over a period of time, depending on how fast the fuel feedstock can be regrown and other

¹⁴ *Id.*

¹⁵ L. Wright, *et al.*, *supra* n.11.

factors. These factors vary according to the characteristics of the biomass feedstock, and the area from which it is sourced. This period of time is known as the “carbon debt” period associated with the feedstock.

26. For biomass that was dead or dying when removed from the forest ecosystem, the “carbon debt” continues over the amount of time it would have taken for the combusted material to otherwise decompose naturally and emit its carbon to the atmosphere, a process that data from decomposition studies shows can take decades. Had the waste material been left in place, some proportion of carbon from residues would have been incorporated into soil carbon,¹⁶ but burning the waste material emits this carbon instantaneously.

27. EPA asserts in the Biomass CO₂ Exemption Rule that “mill residues” are a fuel that “would have decomposed under natural circumstances in a relatively short period of time (e.g., 10–15 years).” EPA further suggests its view that burning mill residues has the same net carbon release over 10 – 15 years as decomposition of those wastes would have had, and that accelerating carbon release over a 10 – 15 year period has a “negligible” impact on the carbon cycle, and therefore on climate warming. In my professional judgment, this is not an accurate statement, because burning mill residues releases the carbon immediately,

¹⁶ Michael Ryan, *et al.*, *supra* n. 5.

while allowing them to decompose would result in gradual releases over a longer time period (EPA asserts 10-15 years). The difference is not trivial or inconsequential.

28. Additionally, mill wastes simply will not be used in the majority of situations. Of the 68 biomass power facilities I have reviewed, only five are clearly located at paper mills and other industrial facilities that are likely to generate burnable “mill residues”, including pulping liquors. The others intend to use forest wood or waste wood.

29. In my professional judgment, EPA’s assertions about the wide availability of mill wastes are not supported. My analysis of the availability of various biomass feedstocks indicates that it is unlikely that sufficient mill residues are available to serve as a fuel source for the number of biomass power facilities that have been recently proposed and/or permitted, even before the Biomass CO₂ Exemption Rule. According to Forest Service data for 2007, of the 86,783,000 dry tons of mill residues generated in the United States, approximately 42% is already used as fuel, and about 1.5% remains unutilized and is therefore available as fuel

for new biomass power facilities.¹⁷ This amount, which is equivalent to approximately 2.4 million “green” tons annually, is enough fuel to generate only about 192 MW of power per year.¹⁸

30. A second argument put forth to allegedly support carbon neutrality of burning biomass is the “resequestration argument”: that the same amount of CO₂ released by harvesting and burning plants, including trees, is “resequestered” as new plants grow. But studies of forest growth rates show that it takes years to several decades to resequester the equivalent amount of carbon on a forest plot as was released immediately through the harvesting and then burning of trees as fuel. Models of forest growth rates demonstrate that if the trees are not cut for fuel, they continue to grow and sequester carbon.¹⁹ Due to the pressing need to reduce

¹⁷ Smith, W.B., *et al.* 2007, *supra* n.9 at Table 42: Weight of bark and wood residue from primary wood-using mills by type of material, species group, region, subregion, and type of use, 2006.

¹⁸ *See supra* Table 1. This calculation assumes that facilities have an average efficiency of 24% (typical for utility-scale biomass power plants) and that facilities operate 95% of the hours in a year (*i.e.*, that the facility is not operating for 18.25 days per year).

¹⁹ Comments of CBD, *et al.*, EPA-HQ-OAR-2011-0083-0350.1 at 16 nn. 25 (*citing* Manomet Center for Conservation Sciences. Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy Resources. June, 2010) & 28 (*citing* McKechnie, J. *et al.*, Forest Bioenergy or Forest Carbon? Assessing Trade-Offs in GHG Mitigation with Wood-Based Fuels, 45 Environmental Science and Technology 789–795 (2011)).

GHGs over the next three decades, the resulting gap between CO₂ release and eventual offset is of great concern.

31. In my capacity as a consulting scientist, I reviewed the Manomet Study, which was commissioned by the Commonwealth of Massachusetts to determine the carbon emissions impacts of relying on biomass fuels for energy production in Massachusetts. The Manomet Study concluded that biomass power facilities fueled by whole-tree harvesting have greater net CO₂ emissions than fossil-fuel-fired facilities for a period of about 40 to more than 90 years. The Manomet Study recognized several important facts: (1) forests currently perform an important role in sequestering carbon, (2) harvesting trees for fuel degrades this carbon sequestration function for a number of years; and (3) burning biomass emits more CO₂ per unit of energy produced than burning fossil fuels. Its conclusions are consistent with work I have performed to analyze and model the carbon emissions from bioenergy.²⁰ In my professional opinion therefore, burning trees to generate energy will increase atmospheric CO₂ concentrations over a period of several years to several decades, relative to what those emissions would have been had fossil fuels been burned instead to generate the same amount of energy.

²⁰ <https://www.burlingtonelectric.com/page.php?pid=75&name=mcneil> (last visited March 6, 2012).

32. Even where the energy from biomass combustion displaces fossil fuels, the long life of the carbon debt associated with combustion of trees means that the net CO₂ emissions can be higher for a period of at least several decades.²¹ Because of its poorer thermal efficiency, biomass starts off emitting more CO₂ per unit of energy than fossil fuels. That situation changes only at the point in time when the avoided decomposition (for already dead wood), or the net sequestration in the wake of biomass harvest (for growing wood, compared to no harvest) equals – and thus offsets – the initial additional amount of CO₂ released. For this second scenario, at that point, biomass is still not “carbon neutral,” it is just no longer a worse contributor of GHGs to the atmosphere as compared with burning fossil fuel.

33. CO₂ emitted by burning biomass is functionally identical in the atmosphere to CO₂ emitted from burning fossil fuels, and as stated in EPA’s 2009 Endangerment Finding, all CO₂ has an average residence time in the atmosphere of more than 100 years. Even in the Biomass CO₂ Exemption Rule proposal, EPA stated that “once CO₂ is emitted to the atmosphere, it is not possible to distinguish between the radiative forcing associated with a molecule of CO₂ originating from a

²¹ Comments of CBD, *et al.*, EPA-HQ-OAR-2011-0083-0350.1 at 16 & n. 28 (*citing, inter alia*, McKechnie, J. *et al.*, *Forest Bioenergy or Forest Carbon? Assessing Trade-Offs in GHG Mitigation with Wood-Based Fuels*, 45 *Environmental Science and Technology* 789–795 (2011)).

biogenic source and one originating from the combustion of fossil fuel.”²² A molecule of CO₂ from a biomass facility thus has the same climate change forcing greenhouse effects as does a molecule of CO₂ emitted by a coal facility. And, as shown above, more CO₂ molecules are emitted per unit of energy produced by burning biomass than by burning fossil fuels.

CONCLUSION

34. My analysis of recent permitting activity shows that new biomass power facilities that would meet or exceed the Tailoring Rule threshold of 100,000 tons on a mass and CO₂e basis are between 7 MW and 8 MW, and CO₂ makes up the vast majority of the GHGs emitted by biomass power facilities. Of the 68 facilities in the permit database, 59 are larger than 8 MW. It is therefore reasonable to assume that most facilities built in the next three years will also be greater than 8 MW, and would trigger PSD permitting if the Biomass CO₂ Exemption Rule were not in place.

35. It is also my professional judgment that the Biomass CO₂ Exemption Rule is likely to lead to the development of more biomass power facilities during the period it is in place, relative to the situation that would exist were all biomass CO₂ emissions required to be counted towards, and be subject to PSD program requirements. Rather than decreasing CO₂ emissions to the atmosphere, the

²²76 Fed. Reg. 15,249, 15,254 (March 21, 2011).

Biomass CO₂ Exemption Rule therefore will increase the amount of biomass that is burned in energy facilities nationally, and thus the rate at which biomass carbon is converted into atmospheric CO₂ in the next decades.

36. Additionally, because most biomass power facilities built during the period of the Biomass CO₂ Exemption Rule will not need to go through the rigorous permitting and other reviews under PSD program, they will not need to consider GHG reductions at the critical early design stage (even through more efficient designs that can reduce air emissions including emissions of CO₂ and other air pollutants. They will continue to be grandfathered even if the Biomass CO₂ Exemption Rule is eliminated after 3 years. And, even if they undertake major modification in the future, under EPA's regulations only the portion of the facility involved in or affected by that major modification must comply with PSD requirements. This means that the CO₂ emissions from facilities built during the three year Biomass CO₂ Exemption period will remain largely unregulated over their operational lifetimes.

37. Based on both my professional experience and my analysis as described above, it is my opinion that implementation of the Biomass CO₂ Exemption Rule will have the following impacts:

A. Short- and long-term harm to forests will occur.

- B. A decrease in forestry carbon sinks (carbon uptake through tree growth), will occur, created by the increased demand created for whole tree burning due to increased development of uncontrolled biomass power facilities, as whole trees and other forest materials are used to meet the fuel demands of this industry.
- C. An increase in atmospheric CO₂ emissions will occur.
- D. An increase in uncontrolled emissions of other air pollution emitted by facilities that burn wood as fuel will occur, as many of those facilities escape all PSD program requirements under the Biomass CO₂ Exemption Rule.

I declare under the penalty of perjury that the foregoing is true and correct.

Executed on March 7, 2012.



Mary Stuart Booth, Ph.D.

Exhibit A.

MARY STUART BOOTH

54 Arnold Rd. Pelham, MA 01002
mobile: (917) 885-2573
mary.stuart.booth@gmail.com

PROFESSIONAL PROFILE

Background and field experience

- Ecosystem-level research at scales from soil microbial nutrient cycling to landscape-level pattern and process
- On-the-ground experience in ecosystems of the arid West, the Pacific Northwest, Alaska, and the Northeast, with focus on climate change and other human effects on ecosystems.

Skills and experience

- Mapping and modeling using GIS; large dataset management and analysis
- Competence in statistical analysis including regression and non-linear models
- Ecosystem carbon accounting, power sector carbon emissions modeling, and energy analysis
- Analysis of energy sector emissions, evaluation of pollution controls, and familiarity with legislation governing air quality

EDUCATION

Ph.D., Ecology. Utah State University, Logan, Utah.

M.A., Plant Biology, University of Massachusetts, Amherst, Massachusetts

B.A., Anthropology, *Cum Laude*, University of Massachusetts, Amherst, Massachusetts

HISTORY

Co-founder and Analyst, Partnership for Policy Integrity, 2010, 2011.

Co-founder and Analyst, Massachusetts Environmental Energy Alliance, 2009.

Executive Director, Water Supply Citizens Advisory Committee to the Massachusetts Water Resources Authority 2008, 2009.

Research Associate, Town of Amherst Conservation Department, 2008.

Research Associate, Strategic Counsel, Leverett, MA 2007.

Terrestrial ecologist, GS-11. National Park Service, Arctic Network, Fairbanks, Alaska, 2006, 2007.

Senior Scientist, Environmental Working Group, Washington DC, 2005, 2006.

Postdoctoral Fellow in Sustainability Studies, The Earth Institute, Columbia University, 2003–2005.

Postdoctoral Fellow, Ecosystems Center, Woods Hole Marine Biological Laboratory, 2001–2003.

ENERGY AND ENVIRONMENTAL RESEARCH

- Biomass lifecycle carbon emissions analysis. Developed a model to estimate carbon emissions and time to carbon resequestration for biomass power fueled by whole tree harvesting.
- Forest and carbon impacts of biomass build-out in the United States. With Environmental Working Group, analyzed data from the Energy Information Administration on biomass build-out under a federal renewable energy standard to determine forest impacts and carbon emissions at the national scale. Lead author, "Clearcut Disaster".
- Streamflow analysis. Used USGS data to analyze changes in streamflow and frequency of low-flow events on the Westfield River in Massachusetts, integrating the analysis into formal comments on a water withdrawal permit. The permit was withdrawn by the state and the modeling revised in response to these comments.
- Watershed pollution modeling: Used GIS to integrate multiple databases, creating a spatial model that identifies hotspots of agricultural nitrogen pollution in the Mississippi River Basin with respect to patterns of federal agricultural subsidy spending.
- Meta-analysis of controls on nitrogen cycling: Conducted a synthetic review summarizing data from 100 published papers to characterize controls on soil nitrogen cycling rates across ecosystems.
- Multi-scalar research on invasive species effects on ecosystem function: Conducted a field and laboratory study on invasive annual grass effects on soil nitrogen cycling and hydrologic balance in Northern Utah ecosystems, assessing soil microbial processes, controls on plant community composition, and landscape-level changes in the Intermountain West.

PEER-REVIEWED PUBLICATIONS

- Booth, M.S., and C. Campbell. 2007. Spring nitrate flux in the Mississippi River Basin: a landscape model with conservation applications. *Environmental Science and Technology* 41:5410-5418.
- Booth, M.S., J.M. Stark, and S. Hart. 2006. Soil mixing effects on inorganic production and consumption in forest soils. *Plant and Soil* 289:5-15.
- Booth, M. S., J. M. Stark, and E. Rastetter. 2005. Controls on gross nitrogen cycling rates in terrestrial ecosystems: a synthetic analysis of literature data. *Ecological Monographs* 75: 139-157.
- Booth, M. S., J. M. Stark, and M. M. Caldwell. 2003. Inorganic N turnover and availability in annual- and perennial-dominated soils in a northern Utah shrub-steppe ecosystem. *Biogeochemistry* 66:311-330.
- Booth, M. S., M. M. Caldwell, and J. M. Stark. 2003. Overlapping resource use in three Great Basin species: implications for community invasibility and vegetation dynamics. *Journal of Ecology* 91:36-48.
- Townsend, A. R., R. W. Howarth, M. S. Booth, C. C. Cleveland, S. K. Collinge, A. P. Dobson, P. R. Epstein, E. A. Holland, D. R. Keeney, M. A. Mallin, and A. Wolfe. 2003. Human health effects of a changing global nitrogen cycle. *Frontiers in Ecology and the Environment* 1:240-245.

REPORTS

- Morris, J., with Suh, S., Matthews, H.S., Jacobson, M.Z., Brown, S., and Booth, M.S. 2011. Review and critique of SEI life cycle analysis of alternative uses for logging slash. March, 2011.
- Booth, M.S. Biomass power in Pennsylvania: impacts on forests, carbon emissions, and air quality. Partnership for Policy Integrity, Jan. 2011.
- Booth, M.S. Review of "The near-term market and greenhouse gas implications of forest biomass utilization in the Southeastern United States". Southern Environmental Law Center. Sept., 2010.
- Booth, M.S. Review of the Manomet Biomass Sustainability and Carbon Policy Study. Clean Air Task Force. July, 2010.
- Booth, M.S. and Wiles, R. Clearcut Disaster: Carbon Loophole Threatens U.S. Forests. Environmental Working Group, June 2010.

OTHER PUBLISHED WORK

- Booth, M. and R. Wiles. Destroying forests for no gain. Op-ed, Boston Globe, 1-30-2011.
- Booth, M. Review of the Manomet Biomass Sustainability and Carbon Policy Study. For the Clean Air Task Force, Boston, MA. July, 2010.
- Booth, M. and R. Wiles. Clearcut disaster: carbon loophole threatens U.S. forests. Environmental Working Group, Washington, D.C. April, 2010.
- Booth, M. and A. Dawson. Studying the numbers on biomass. Op-ed, Daily Hamp. Gazette, 5-1-2009.
- Booth, M. A red flag on green energy plan. Op-ed, Boston Globe, 5-25-2009.

ANALYSES FOR VARIOUS ENVIRONMENTAL GROUPS

- Natural Resources Defense Council. Provided technical analysis for comments on EPA deferral of regulation for biogenic carbon.
- Atty. Dave Bricklin, Esq. Provided review and input for comments on air permit for 65 MW Adage biomass facility in Shelton, WA.
- Atty. Mick Harrison, Esq. Served as expert witness for citizen group challenge to air permit for the proposed 116 MW Gainesville Renewable Energy Center, LLC biomass plant, before the Florida Department of Environmental Protection.
- Center for Biological Diversity. Provided analysis of carbon emissions from proposed Buena Vista biomass plant, California.
- Southern Environmental Law Center. Commissioned to conduct critical review of "The near-term market and greenhouse gas implications of forest biomass utilization in the Southeastern United States" for inclusion with SELC comments on EPA's inclusion of biogenic emissions under the Tailoring Rule
- Clean Air Task Force. Compiled information on biomass industry and projected carbon emissions for inclusion in CATF's comments on EPA's inclusion of biogenic emissions under the Tailoring Rule
- Clean Air Task Force. Compiled information on biomass pollutant emissions for inclusion in CATF's comments on EPA's proposed "boiler" and "waste" rules.
- Clean Air Task Force. Commissioned to conduct review of the Manomet Center's "Biomass Sustainability and Carbon Policy Study".

POLICY COMMENTS AND IMPACT ANALYSES

Comments, with Center for Biological Diversity, Clean Air Task Force, et al., on “Deferral for CO₂ emissions from bioenergy and other biogenic sources under the Prevention of Significant Deterioration (PSD) and Title V programs”. 76 Fed. Reg. 15,249 (March 21, 2011).

Comment (with Dr. Bill Moomaw) on NEPA review of Nippon Paper Industries Cogeneration project in Port Angeles, WA. April 18, 2011.

Comment on role of biomass in a “Clean Energy Standard” as proposed by Sens. Bingaman and Murkowski. April 11, 2011.

Comment letter on air permit for Palmer Renewable Energy plant in Springfield, MA. April 5, 2011.

Comment letter (with Biomass Accountability Project) on air permit for 23 MW Hu Honua biomass plant proposed for Pepe’ekeo, Hawaii. March 21, 2011.

Comment letter (with Biomass Accountability Project) on air permit for 55 MW We Energies/Domtar plant proposed for Rothschild, WI. March 4, 2011.

Letter (with Dr. Bill Moomaw) to Senator Bernie Sanders on biomass and wood-pellet build-out in Vermont, and implications for forest cutting. February 15, 2011.

Letter on role of bioenergy in New York State Climate Action Plan, and implications for net carbon emissions from the energy sector. February 7, 2011.

Letter (with Bill Moomaw, Tim Searchinger, and Mark Harmon) to Washington State Legislature on inadequacies of biogenic carbon accounting approach advocated by WA State DNR. February 2, 2011.

Letter on carbon implications of draft sustainability standard for biomass harvesting under Regional Greenhouse Gas Initiative mandate (to New York Department of Environmental Conservation).

Review of inadequacy of plans for sorting and contamination testing of construction and demolition waste as fuel for the 28 MW Palmer Renewable Energy facility in Springfield, MA. (to Massachusetts Executive Office of Energy and Environmental Affairs)

Review of impacts from proposed 47 MW Pioneer Renewable Energy biomass plant in Greenfield, MA (to Massachusetts Executive Office of Energy and Environmental Affairs)

Review of air permit for proposed 50 MW Russell Biomass plant, identifying flaws in emissions estimates (to Massachusetts Executive Office of Energy and Environmental Affairs).

Review of Russell Biomass water withdrawal permit, identifying flaw in low-flow estimates and linking changes in flow regimes to climate (to Massachusetts Executive Office of Energy and Environmental Affairs).

GRANTS AND AWARDS

Heinz Endowments Grant for research on biomass energy nationally, 2011.

Heinz Endowments Grant, to research and report on biomass in Pennsylvania, 2010.

AAAS/NSF Women’s International Science Collaboration travel award, 2003.

Earth Institute Postdoctoral Fellowship, Columbia University, 2003-2004.

Mellon Postdoctoral Fellowship, Ecosystems Center, Woods Hole Marine Biological Lab., 2001-2002.

NASA Earth System Science Graduate Fellowship, 1996-1999.

Utah State University Women and Gender Research Institute research award, 1996.

Vice President’s Fellowship, Utah State University, 1994-1995.

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, *et al.*,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
(Consolidated with 11-1285,
11-1328, and 11-1336)

DECLARATION OF PETER COLACINO

I, Peter Colacino, hereby declare as follows under penalty of perjury:

1. I am currently a member of the Natural Resources Defense Council (“NRDC”) and have been since 2002.

2. I support NRDC's efforts to reduce emissions of greenhouse gases and other air pollutants. I am familiar with the science of climate change, and believe that global warming poses a significant threat to the well-being of humans,

wildlife, and the natural environment. Furthermore, I am aware that the harmful health effects of exposure to air pollutants such as particulate matter and nitrogen oxides include serious lung and heart illnesses, and am very concerned about air pollution in my community. I also support NRDC's efforts to preserve natural ecosystems, including protecting forest and wildlife health. I believe we have a responsibility to protect human health and the environment to the best of our ability.

3. My wife and I currently live at 9440 Pat Drive in Klamath Falls, Oregon. We have made our home here since 2008, when we moved from San Diego to get away from the big city and the smog and to be closer to nature.

4. Our property is approximately 0.9 mile from the proposed site of the Klamath Falls Bioenergy power plant at 8000 Highway 66 in Klamath Falls. I understand that this proposed plant obtained a state-issued air permit as a "minor source" in December 2010. I am aware that the plant did not begun construction under its minor source permit prior to July 2011 and is still in the state siting process before the Energy Facility Siting Council of the State of Oregon.

5. My wife and I appreciate the natural beauty of the Winema National Forest near Klamath Falls and hike in it as often as we can. We also visit the numerous wildlife refuges that are located nearby, including Klamath State Wildlife Area at Miller Island (which is directly across the river from the proposed

biomass plant site) and Bear Valley National Wildlife Refuge, and walk our dogs daily down to the mailbox and back, a round trip of 2 miles. Klamath Falls also is known for its huge migratory bird population, and my wife and I enjoy watching these birds and care about their safe migration. For the reasons discussed below, we believe and fear that these outdoor activities will be diminished by the Klamath Falls Bioenergy plant, and that they will no longer be safe and healthy activities if the biomass-burning plant is sited here without stringent controls.

6. I am aware that the Klamath Falls area already has significant air pollution problems, specifically for particulate matter. Local levels of particulate matter at times exceed national air quality standards, meaning that the air is unhealthy to breathe. My wife is prone to asthma, so is especially affected by air pollution, and both of us are concerned about how air pollution affects our long-term health. Thus, I strongly believe that new sources of air pollution should not be permitted in this area, or should be allowed only if equipped with the most effective state-of-the-art pollution control measures to meet the most stringent emission limits.

7. I am concerned about the effects that additional air pollution from the Klamath Falls Bioenergy plant will have on my health and my wife's health, and that of my community. I am aware that the Klamath Falls Bioenergy plant will emit both coarse and fine particulate matter and that this additional pollution will

make the air even more unhealthy to breathe for me and my wife. In addition, there are mostly retired and elderly people living within two miles of the proposed plant, some of whom are friends, whose health and quality of life will be adversely affected by this additional source of air pollution, and I am disturbed by this harm to my neighbors and fellow community members.

8. I also am concerned that the Klamath Falls Bioenergy Plant will harm the forests and wildlife areas that my wife and I use and enjoy. The company's siting application from May 2011 states that the plant will burn "forest thinning from the surrounding area." It is my understanding that "forest thinning" includes the harvest, chipping, and burning of whole trees, and that nothing in the facility's minor source permit prohibits the plant from burning fuels derived from whole trees. I am also aware that the president of Klamath Falls Bioenergy, Bob Jones, has written a guest piece in the Herald and News, our local paper, discussing fuel sources for the plant. In his letter, he cites the 2 million acres of state and federal land in Klamath County, and states that the company "want[s] to work with public land managers...to develop biomass fuel programs."¹ Thus, I am very concerned that the plant will use fuel derived from whole trees cut from the forests] that my wife and I use and enjoy, including Winema National Forest. I believe that cutting

¹ http://www.heraldandnews.com/viewpoints/article_edaf101c-be37-11df-b918-001cc4c002e0.html

these trees to use for fuel could degrade the forest and thus limit my use and enjoyment of the forest for recreational and wildlife-viewing purposes.

9. I am also concerned that the increased air pollution and forest impacts from the plant will negatively impact the migratory birds that I and my wife value. It is my understanding that air pollution and increased noise and industrial activity can disrupt the routes of migratory birds. The site for the proposed biomass plant is right smack in the middle of the Pacific flyway which is used by these thousands of migratory birds, and so I am concerned that it will disturb their passage.

10. It is my understanding that under the federal Prevention of Significant Deterioration (“PSD”) program, major sources of air pollution must comply with best available control technology (“BACT”), which includes consideration of environmental impacts in addition to air impacts. Also under PSD, the public has the opportunity to raise the need for and alternatives to the plant, and the state permitting agency can consider need and alternatives as well. As the proposed Klamath Falls Bioenergy plant was classified as a minor source, it did not have to meet either of these requirements.

11. I understand that the Clean Air Act requires major sources of greenhouse gases to obtain PSD permits, and that, in the action challenged in this lawsuit, EPA recently exempted biogenic carbon dioxide from this requirement. It is my understanding that if the Klamath Falls Bioenergy plant went through

construction permitting absent EPA's exemption, the plant's carbon dioxide emissions would make it a major source that must obtain a PSD air permit. That permitting process would, at a minimum, result in requiring the plant to employ best available control technology for all pollutants that it emits in significant amounts, including its emissions of particulate matter and nitrogen oxides. As a result, there would be less health-threatening pollution in my community.

12. In addition, the plant would have to comply with best available control technology for carbon dioxide. Such a process could result in less harm to the forests that my wife and I use and enjoy. It is my understanding that lifecycle carbon emissions can be considered under BACT, and so concerns with using whole trees could result in a requirement to burn only more sustainably grown fuel from sources other than the forests that I and my wife use and enjoy.

13. Further, as explained above, in the PSD permitting process I would have the opportunity to raise the lack of need for the plant and the availability of cleaner alternatives to it. Such cleaner alternatives could consist of, among other things, managing and meeting electricity demand through greater end-use energy efficiency. These alternatives would reduce air pollution from burning biomass at the plant, and also from the many trucks that would drive through the community to deliver fuel to the plant. They would also prevent significant carbon emissions from burning whole trees.

14. For these reasons, I believe that major source construction permitting of biomass plants will reduce air pollution and harms to forest health, in particular from the Klamath Falls Bioenergy plant. Thus, reversing EPA's exemption will protect my health and enjoyment of the natural beauty and wildlife that Oregon has to offer.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief.

Executed in Klamath Falls, Oregon, on March 6, 2012

/s/ Peter Colacino

Peter Colacino

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, et al.,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
(Consolidated with 11-1285,
11-1328, and 11-1336)

DECLARATION OF HAMILTON DAVIS

I, Hamilton Davis, declare as follows:

1. This declaration is based on my personal knowledge, information and belief. I am over the age of eighteen (18) and suffer from no legal incapacity. I submit this declaration in support of the above-referenced lawsuit brought by the Center for Biological Diversity, Coastal Conservation League, Conservation Law Foundation, Dogwood Alliance, Natural Resources Council of Maine, Natural Resources Defense Council, Georgia ForestWatch, and Wild Virginia (“Center for Biological Diversity, et al.”) challenging the decision by the Environmental

Protection Agency's ("EPA") to defer for three years carbon dioxide ("CO₂") emissions from bioenergy and other biogenic sources from the Prevention of Significant Deterioration ("PSD") and Title V program requirements under the Tailoring Rule. EPA's rule is sometimes referred to as the Biomass Exemption Rule.

2. I am the Energy and Climate Director for Coastal Conservation League ("CCL"). I work in CCL's principal place of business in Charleston, South Carolina. As the Director of CCL's Energy and Climate Program, I am responsible for developing, implementing, and managing the organization's programs and activities concerning energy production and global climate change in furtherance of the goals of CCL. My work requires that I be familiar with the purpose and activities of CCL, as well as the related interests and concerns of our members.

3. CCL is a membership-supported organization incorporated under the laws of South Carolina. It is recognized as a not-for-profit corporation under Section 501(c)(3) of the United States Internal Revenue Code.

4. In my capacity as Energy and Climate Director for CCL, I am familiar with its mission, which is to protect the natural environment of the South Carolina coastal plain and to enhance the quality of life in our communities by working with individuals, businesses and government to ensure balanced solutions. To support this mission, in the energy arena, CCL promotes a comprehensive

approach to meeting future energy needs in a way that protects the health of South Carolina's citizens, economy, and natural resources. For energy produced from burning biomass, pursuing this general approach means that we seek to promote the development of small-scale, highly-efficient, truly sustainable biomass facilities for electricity generation as a means to invigorate our state's working rural landscapes and to reduce our dependence on imported energy resources. However, CCL also recognizes the environmental challenges and risks associated with developing biomass facilities, and supports a responsible permitting process that, among other things, reduces conventional air pollutants that cause health problems in surrounding communities, safeguards the ecology of local forests, and requires meaningful CO₂ restrictions.

5. In my capacity at CCL, I am aware that CCL has engaged on bioenergy issues on numerous fronts. For instance, we are currently engaging a broad array of stakeholders across the state in an effort to craft appropriate guidelines for the sustainable sourcing of biomass. We are also partially funding a statewide renewable energy analysis and report via the Public Utility Review Committee's Energy Advisory Council that entails a significant biomass component.

6. By virtue of my history, experience and position at CCL, I am aware that CCL has more than 4,000 members. My responsibilities at CCL include

communicating with members and the public about how regulations and policies governing biomass power plants affect South Carolina's environment and citizens. I have personal knowledge that members of CCL joined the organization precisely because of their recognition of the many important decisions that must be made about how we get our energy and their recognition that those decisions will have consequences for public health, the health of our forests, and the threat of global climate change. The public health consequences of biomass-burning facilities stem in part from the fact that those sources emit harmful pollutants such as particulate matter, nitrogen oxides and carbon monoxide.

7. As a result of my role with CCL, I am aware of the determination of EPA that elevated concentrations of six greenhouse gases constitute air pollution that endangers public health and welfare in the United States by contributing to climate change. I understand that EPA subsequently published a rule – commonly called the Tailoring Rule – designed to establish a permitting process for GHGs from large stationary sources under the PSD and Title V permitting programs under the Clean Air Act (CAA). I understand that the first phase of the Tailoring Rule regulations began in January 2011 and that the second phase began in July 2011. I am aware that under the first phase stationary sources that were already required to obtain a permit for other pollutants were subjected to regulation of their CO₂ emissions as well. I also understand that for Phase 2 EPA initially decided to

subject all stationary sources that emit CO₂ at the statutory threshold to the CAA's permitting requirements. However, I also understand that, in response to a Petition for Reconsideration, EPA later decided to defer for three years emissions from facilities that use biomass from the CAA permitting requirements that apply to other stationary sources that emit CO₂ and other GHGs at the same statutory threshold. I understand that EPA has stated that this final exemption for biomass and other bioenergy sources became effective on July 20, 2011.

8. Based on my professional experience, I firmly believe that allowing the exemption to remain in effect and failing to regulate pollutants from biomass facilities will contribute to air emissions that harm public health, to degradation of forest ecosystems, and to climate change. These consequences run directly counter to the purpose of CCL, impair its mission, and harm the interest of its members. To avoid these results, facilities that use biomass resources to produce energy should be subject to regulations for CO₂ and other pollutants immediately.

I declare under the penalty of perjury that the foregoing is true and correct.

Dated: March 13, 2012

/s/ Hamilton Davis
Hamilton Davis

**UNITED STATES COURT OF APPEALS
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V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
Consolidated with 11-1285,
11-1328, and 11-1336

DECLARATION OF DAVID GOVUS

I, David Govus, declare as follows:

1. This declaration is based on my personal knowledge, information and belief. I am over the age of eighteen (18) and suffer from no legal incapacity.
2. I submit this declaration as a member and member of the board of Georgia ForestWatch (GFW) in support of the above-referenced lawsuit brought by the Center for Biological Diversity, Conservation Law Foundation, Natural Resources Council of Maine, Natural Resources Defense Council, GFW, and Wild Virginia (“Center for Biological Diversity, et al.”) challenging the decision of the United States Environmental Protection Agency (“EPA”) to defer for three years

carbon dioxide (“CO₂”) emissions from bioenergy and other biogenic sources from the Prevention of Significant Deterioration (“PSD”) and Title V program requirements under the Greenhouse Gas Tailoring Rule. This rule is commonly known as the Biomass Exemption Rule.

3. I am retired from the construction business and now actively manage my farm. I live at 3709 Big Creek Road, Ellijay, Georgia, 30536 in Gilmer County, Georgia. I have lived in Gilmer County since 1975. I was raised in Georgia, and have lived, worked, recreated, and owned real property in and around Georgia’s national forests for over forty years.

4. I have been a member of GFW since 2000 and a board member since 2004. As a member and board member, I follow forest issues, especially issues, like biomass, that directly affect national forests in Georgia – the Oconee and the Chattahoochee, near where I live in Gilmer County.

5. My forty years of enjoying and using the national forests in my state include hunting, fishing, and camping trips too numerous to count. I fish for trout on the Conasauga River. I hunt for Ruffed Grouse in the mountains of the Chattahoochee. I go backpacking on the Jack and Conasauga Rivers with friends and family, especially my two sons. I have no plans to discontinue these activities.

6. I am aware of and support the mission of GFW to restore, protect, and appreciate the national forests in the state of Georgia and the watersheds, native

plants, and wildlife that exist therein. I believe that GFW carries out this important mission, in part, by working to establish policies, laws, and regulations that reduce the harms that are caused by burning biomass for energy.

7. I am aware that biomass combustion results in the emission of pollutants that endanger public health, such as particulate matter (PM) and nitrogen oxides (NOx), and pollutants that can cause environmental damage, such sulfur dioxide (SO₂), which can cause acid rain, and NOx, which contributes to the formation of ozone, which can affect ecosystem components such as soils, water, wildlife, and habitat.

8. I believe that biomass-combusting facilities result in an increased demand for forest products that can lead to forest degradation. It is my belief that burning biomass in any meaningful quantity almost always leads to using woody biomass, that is, materials like waste from pulp and paper mills, woody debris like tree tops and limbs left on tracts of lands being logged, and whole trees. And because there's only so much mill waste to go around, fueling facilities like biomass-combusting power plants creates demand for cutting down more standing trees and creates pressure to strip logged sites of the tree tops and limbs that perform important ecological functions, like soil retention and wildlife habitat.

9. I firmly believe that harvesting biomass and burning it to generate energy releases CO₂ and that net CO₂ emissions from power plants and other

facilities that combust biomass can exceed CO₂ pollution from plants and facilities that burn fossil fuels. When one properly accounts for all the energy expended in the harvest, transport and burning of biomass, I believe it is clear that utilizing biomass can cause a net increase in CO₂ emissions, further exacerbating climate change.

10. Based on my understanding of climate change projections for Georgia and the Southeast region, I am very concerned about what could happen to the national forests if GHGs are not fully regulated and climate change continues to grow more severe as a result. I understand and believe this would result in heightened temperatures, volatile weather occurrences, differing precipitation patterns, and altered soil and water compositions. I believe that these impacts could further strain the ability of native species to remain in Georgia's national forests. While new species may move in, I fear the loss of the unique ecosystem that I have experienced for the last forty years. I fear that my two sons who camp and fish with me will not have the same opportunity to enjoy the Chattahoochee National Forest that I have had.

11. Over the past forty years of hunting, fishing, and camping in Georgia's national forests, I have observed what appears to me to be, changing weather patterns which have altered the region's temperature and the amount of precipitation we receive.

12. I have been fishing for trout on the Conasauga River for over forty years. During this time I have noticed that trout have continued to move upstream and can no longer be found in areas where I used to fish for them. The trout have moved at least three miles up stream and have been replaced by bass in the warmer down-stream locations. I have checked stream temperatures regularly and stream temperatures have increased. I believe the increased water temperatures are related to increased air temperatures, which may be a direct result from climate change.

13. I began hunting for Ruffed Grouse in this region in 1968. I have always known that the mountains of north Georgia were the very southern end of this bird's range. When I began hunting over forty years ago, however, I would encounter a 100 or more of these woodland birds each season. Now, I am lucky to see six or seven each season. I believe that Ruffed Grouse populations are shifting northward as the temperature increases. I believe that this northward shift is a result of climate change and has been noted by many scientists

14. While I have noticed the altered patterns of native species in and around the Georgia national forests, I have also noticed the presence of invasive species. Armadillos have been sighted in Gilmer County. Previously such a species was foreign to this region, but now I believe that heightened temperatures and increased dryness make this region more conducive to them.

15. Through my personal observations I have also witnessed changes in stream flows. The Jacks and Conasauga Rivers in the 1960s and 1970s presented a challenge to ford when backpacking. One can easily cross them now and barely get one's feet wet.

16. The danger to Georgia's national forests and people, like me, who enjoy them, posed by biomass combustion is real. In 2010, an 18 megawatt woody biomass-fueled power plant began operating near Rabun Gap, Georgia, which is surrounded by the Chattahoochee National Forest. There are at least three other proposed plants, totaling around 105 megawatts in generating capacity, that would be located within 50 miles of the Chattahoochee National Forest and thus are likely to source fuel from this forest and others nearby. It is my belief that at least one of them, the Plant Carl facility near Carnesville, Georgia, obtained a "minor new source review" permit prior to July 1, 2011. I understand that if plant construction did not begin by that date, then Plant Carl will have to go through the permitting process again before it can legally be built, and that if it does go through the permitting process again, then the Biomass Exemption Rule would allow it to skirt PSD requirements.

17. I am aware that EPA has finalized the Biomass Exemption Rule, which allows the proponent of a new biomass-burning facility to ignore the facility's CO₂ emissions for the purpose of determining whether the facility is a

“major emitting facility” that must obtain a PSD permit. I understand that this proceeding is a challenge to the Biomass Exemption Rule. I support the challenge out of my concern that the rule increases the threat of air pollution that endangers the public’s health and the environment, increases demand to cut down whole trees and overharvest logging residues, and exacerbates climate change.

18. I believe that the Biomass Exemption Rule will result in an increase in the emissions of pollutants that are harmful to health of people like me who regularly recreate in the national forests and that are damaging to the forests themselves, and will result in an increase in harmful sourcing of fuel from whole trees. I understand that for the air permitting process for new biomass burning plants, the EPA’s Biomass Exemption Rule has had and could have the effect of exempting facilities from having to get PSD permits, which would require a facility to meet emission rate limits set according to the stringent “best available control technology” (“BACT”) standard. I also understand that avoiding the PSD permitting process also means that in making its permit determination a state permitting agency is not required to consider the public’s arguments about whether the plant is needed in the first place or, assuming it is needed, whether that need could be met by cleaner, less-polluting alternatives. I am concerned that the loss of these opportunities in the permitting process for proposed facilities that rely on the Biomass Exemption to avoid PSD to obtain stringent controls on air pollution

and to seek greater protection of forests would increase the likelihood that my recreation in the Chattahoochee National Forest will be compromised.

19. Based on my understanding of economics and market forces, I am also generally concerned that the Biomass Exemption Rule will incentivize logging in and around the national forests that I use and enjoy and the creation of plantation-style tree farms in place of naturally growing forests. I believe such a result will hamper GFW's efforts to protect and expand the national forests and wilderness areas, especially in the Chattahoochee National Forest near the new and proposed plants. Further, I believe an increased harvest in and around the Chattahoochee could result in loss of habitat for native species and degradation of water quality in the region.

20. I believe that my concerns about the local impacts in terms of air pollution and forest harms that the Biomass Exemption can cause are not just theoretical. This area, like the Southeast in general, is seen as a good place to locate a biomass plant because it is relatively heavily forested. The fact that there are one existing and three proposed biomass-combusting plants in the vicinity of the Chattahoochee tells me that that perception is widely held, and therefore that more plants will come in soon, especially to take advantage of the regulatory incentives provided by the Biomass Exemption Rule.

21. I believe that the rule will undercut effective regulation of CO₂ emissions by actually resulting in an increase of CO₂ emissions, further exacerbating climate change. Under the rule, it is my understanding that there would be no chance to assess key factors that are necessary to determine whether increasing biomass combustion adds to global climate change. For woody biomass, these factors include the conditions under which the wood is harvested and the conditions that ensure re-growth of trees to re-capture the emitted CO₂ and the timeframe for this re-growth. But because the Biomass Exemption Rule precludes EPA and state permitting agencies from requiring new and modified biomass facilities to meet the BACT emission rate standard for controlling greenhouse gases, no such assessment would be required.

22. I support GFW challenging the Biomass Exemption Rule because I believe that it will contribute to air pollution, forest degradation, and climate change and adversely impact my hunting, fishing, and other interests pertaining to Georgia's national forests.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: March 13, 2012

/s/ David Govus
David Govus

FOR THE DISTRICT OF COLUMBIA CIRCUIT

DECLARATION OF TIMOTHY HARWOOD

I, Timothy Harwood, hereby declare and state as follows:

1. This declaration is based on my personal knowledge. I am over the age of eighteen years and suffer from no legal incapacity. I submit this declaration

in my capacity as Vice President for Development of Conservation Law Foundation (“CLF”) in support of the above-referenced lawsuit brought by the Center for Biological Diversity, Conservation Law Foundation, Natural Resources Council of Maine, Georgia ForestWatch, and Wild Virginia (“Center for Biological Diversity, *et al.*”) challenging EPA’s decision to defer for three years carbon dioxide (“CO₂”) emissions from bioenergy and other biogenic sources from the Prevention of Significant Deterioration and Title V program requirements under the Greenhouse Gas Tailoring Rule.

2. I am the Vice President for Development of CLF, a nonprofit, member-supported corporation organized and existing under the laws of the Commonwealth of Massachusetts. In that capacity, I am familiar with CLF’s mission, which is to work to solve the most significant environmental challenges facing New England. CLF’s staff relies on sound science and use the law to create and advocate for innovative strategies to conserve natural resources, protect public health, and promote vital communities in our region. Working to promote effective climate change policies, as well as enhanced local air quality, including reduced levels of ground-level ozone pollution in Massachusetts and other New England states, is a core element of CLF’s mission.

3. I have been Vice President for Development for five years. As Vice President for Development, I am actively involved in CLF’s membership efforts

and am ultimately responsible for collecting and updating data on CLF's members. My duties in this role include oversight and management of fund-raising efforts and membership outreach including communication with members about CLF's mission and work through electronic mail and traditional publications. For this reason, I am directly aware of CLF's projects and initiatives.

4. Founded in 1966, CLF is the oldest regional environmental advocacy organization in the nation. CLF has offices in Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. CLF's membership consists of approximately 3,248 individuals, residing in twenty-five states, and the District of Columbia. While members of CLF reside throughout the United States, the largest numbers of members reside in Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

5. I understand that at least 854 of CLF's members have indicated to us that they are over sixty-five years of age. In addition, CLF has approximately 2,213 members in New England that live in thirty counties that are in nonattainment of the primary and secondary national ambient air quality standards for ground-level ozone pollution established by the U.S. Environmental Protection Agency ("EPA").

6. I understand, based on my background and experience at CLF, that the scientific evidence shows that anthropogenic emissions of methane, CO₂, and

other greenhouse gases (“GHGs”) cause heat trapping effects in the earth’s atmosphere and elevated surface temperatures and other changes to the earth’s climate. I further understand that the scientific evidence shows adverse public health effects are associated with this climate change, including increased risk of morbidity and mortality, particularly among elderly citizens or those whose health is compromised, as a result of increased temperatures and extreme heat events.

7. I understand, based on my background and experience at CLF, that the GHG methane is a direct precursor of ground-level ozone, and that continued exposure to ozone levels above the national standard for that pollutant increases the risk of respiratory illnesses in children and the elderly, and even can lead to increased incidence of premature deaths. Certain Massachusetts and New England counties, including those where CLF’s members reside, already have air quality violating the national standard for ground-level ozone. CLF members who are elderly and who live in areas with already elevated levels of ground-level ozone air pollution are thus particularly vulnerable to the direct public health impacts of GHG pollution. CLF and its members thus have vital interests in ensuring that effective policies are promptly put into place that lead to regulation of GHG emissions, in order to lessen the risks to public health and welfare associated with these emissions.

8. I understand, based on my background and experience at CLF, that, on behalf of our members, and in order to address the public health and environmental risks air pollution poses, CLF works to reduce particulate matter, and other harmful air pollutants from the power sector. In particular, CLF regularly participates in regulatory proceedings regarding power plants and other emission sources to advocate for effective air pollution controls.

9. I understand, based on my background and experience at CLF, that using biomass resources to produce energy can create air pollution, such as particulate matter and GHGs. I am increasingly aware that a biomass power plant's particulate matter and GHG emissions can, in fact, exceed emissions from fossil fuel-fired power plants. As a result, CLF actively promotes strong standards for biomass facilities in regulatory proceedings and other venues to minimize these harmful pollutants. I further understand that one utility-scale biomass power generation facility is in operation in Massachusetts and several new utility-scale biomass power generation facilities have been proposed. Many other biomass plants exist in New England, particularly in Maine and New Hampshire. Because of the risk of exposure to harmful emissions from biomass facilities and CLF's work to minimize these emissions, CLF and its members are strongly interested in ensuring that federal regulations for harmful pollutants apply to biomass power facilities.

10. CLF's staff advocates continue to work to promote state, regional, and national policies to correctly account for GHGs and other emissions associated with biomass energy, and to ensure that forest ecosystems are protected from the risks of overharvesting associated with the demand for biomass fuels. I am aware that CLF staff have been extensively involved in revisions to Massachusetts regulations that would set strict GHG emissions performance standards for biomass facilities seeking eligibility pursuant to the Massachusetts Renewable Energy Portfolio Standard. CLF staff continue to advocate for enactment of that legislation or, if necessary, for state regulatory reforms to achieve the same objectives. In addition, CLF is working to address GHG accounting and forest sustainability standards for biomass under the Regional Greenhouse Gas Initiative, a multi-state program to reduce GHG emissions from the electric power generation sector in the Northeast.

11. I understand, based on my background and experience at CLF, that CLF's desire to protect forests and reduce GHG pollution guides CLF's position with regard to the use of biomass to produce energy. I am aware that the scientific understanding of the impacts of using biomass to produce energy affects forest health and overall "lifecycle" GHG emissions continues to develop, particularly in recent years. In addition, I understand that scientific evidence demonstrates that biomass as a fuel source is not inherently "carbon neutral" (i.e., that it produces no

net increases in GHG emissions) and that net GHG emissions from power plants and industrial facilities that use biomass can exceed GHG emissions from facilities that use coal and, especially, natural gas.

12. Based on my background and experience at CLF, I am also aware of recent studies about using biomass to produce energy. This evidence shows that using certain types of biomass to produce energy can create more GHG pollution than is produced by using coal. The research shows the increase in GHG pollution can be even greater when compared to natural gas. This is especially true when biomass resources are obtained through clear-cutting forests. Clearing a forest and burning the trees for energy creates a surge of GHG emissions and reduces the capacity of forests to absorb and store GHG emissions on an ongoing basis. To avoid such increases in GHG emissions and protect healthy forest ecosystems, CLF advocates for sustainable forest management practices for harvesting biomass resources from forests.

13. My responsibilities at CLF include participating in the various ways in which CLF communicates with and educates its members about climate change and the public health effects of GHG emissions. In particular, CLF communicates with its members and Boards through email contacts, online and traditional publishing of reports, special events, and direct mailings. I therefore can say that CLF's members are aware of the threats to public health and welfare posed by

climate change and about CLF's work to promote effective governmental climate change policies. In particular, CLF's members are aware that EPA currently is taking steps towards the regulation of GHG emissions from motor vehicles and large stationary sources of these air pollutants.

14. CLF members live and recreate in areas all over New England that are now, and will be in the future, adversely impacted by climate change, and so are at risk for the adverse public health effects due to climate change. CLF's members also include persons owning property and recreating in coastal areas that have already experienced sea level rise, and the accompanying erosion, direct loss of coastal property, and compromised wetland areas. As noted in paragraph 5 above, CLF's members also include elderly persons, and others living in areas where there already are high concentrations of ground-level ozone, and who therefore are now directly impacted by increased ozone levels resulting from unregulated emissions of the GHG methane.

15. CLF and its members therefore understand, and have a vital interest in ensuring, that EPA exercises its regulatory authority under the Clean Air Act to combat climate change, including regulating emissions of CO₂ from biomass powered facilities without delay, and that it is essential for the EPA to have, and exercise, the authority to adopt sustainable biomass policies which ensure that the use of biomass reduces rather than increases greenhouse gas emissions.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on February 16, 2012.

/s/ Timothy Harwood

Timothy Harwood
Vice President for Development
Conservation Law Foundation, Inc.
62 Summer Street
Boston, MA 02110-1016
Telephone: (617) 850-1738

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, *et al.*,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
Consolidated with 11-1285,
11-1328, and 11-1336

DECLARATION OF ROBIN HITNER

I, Robin Hitner, declare as follows:

1. This declaration is based on my personal knowledge, information and belief. I am over the age of eighteen (18) and suffer from no legal incapacity.
2. I submit this declaration in support of the above-referenced lawsuit brought by the Center for Biological Diversity, Coastal Conservation League, Conservation Law Foundation, Dogwood Alliance, Natural Resources Defense Council, Natural Resources Council of Maine, Georgia ForestWatch, and Wild Virginia (“Center for Biological Diversity, et al.”) challenging the decision by the Environmental Protection Agency’s (“EPA”) to defer for three years carbon

dioxide (“CO₂”) emissions from bioenergy and other biogenic sources from the Prevention of Significant Deterioration (“PSD”) and Title V program requirements under the Greenhouse Gas Tailoring Rule. EPA’s decision is sometimes referred to as the Biomass Exemption Rule.

3. I am currently the interim Executive Director of GFW. I work in GFW’s principal place of business in Ellijay, Georgia. As the Executive Director of GFW, I am responsible for developing, implementing, and managing the organization’s programs and activities in furtherance of the goals of GFW. I have been interim Executive Director since November 2011, when our previous Executive Director resigned, and expect that I myself will resign when our new Executive Director starts in May 2012. When I filled the position on an interim basis I resigned my position as board president. I expect to resume the board presidency when I leave the Executive Director slot. As Executive Director and as board president, my work requires that I be familiar with the purpose and activities of GFW, as well as the related interests and concerns of our members.

4. GFW is a membership-supported organization incorporated under the laws of Georgia. It is recognized as a not-for-profit corporation under Section 501(c)(3) of the United States Internal Revenue Code.

5. In my capacity as Executive Director of GFW, I am familiar with the mission of GFW, which is to restore, protect and increase appreciation of the

national forests in the state of Georgia and the watersheds, native plants and wildlife that exist within those forests.

6. Further, in my capacity as Executive Director of GFW, I am familiar with the efforts of the organization in pursuit of those goals, including: (i) monitoring compliance with all laws and rules guiding the management of the Chattahoochee and Oconee National Forests, (ii) engaging the public in this monitoring through outreach, outings, and volunteering opportunities, (iii) promoting scientific research on national forests, (iv) educating the public about the unique natural values and cultural heritage existing in the Georgia forestlands and watersheds, (iv) promoting ecological diversity and growth in the forestlands by allowing natural ecological processes to proceed unimpeded, (vi) increasing national forest acreage under protection from human encroachment, especially wilderness, scenic and roadless areas, and old-growth stands, and (vii) protecting soil fertility and water quality.

7. In my capacity as Executive Director, I am aware that GFW has engaged on the issues raised by biomass combustion. For instance, our organization has developed as educational summary of the potential negative implications of biomass utilization for energy production which we have marketed through our website and outreach communication initiatives. In furtherance of our concerns regarding biomass we have also developed a biomass position paper to

offer a deeper, more scientific, look at our statements of concern identified in our public biomass campaign publications. We have consistently voiced our concerns about soil fertility depletion resulting from whole tree harvesting and the increase of carbon emissions via biomass extraction and combustion from Georgia's National Forests. Examples include the 2010 East Nottely Forest Health project which proposed over 500 acres for bioenergy utilization, as well as the Eastside Forest Health project which proposed to greater than 6,000 acres of young pine plantations. The Eastside project is of particular concern to our organization due to it's close proximity (less than 40 miles) from the Multi-Trade biomass facility at Rabun Gap, Georgia.

8. By virtue of my history, experience and current position as Executive Director of GFW, and based on my own personal knowledge, I am aware that GFW has more than 608 members. I am also aware that our members include Georgia residents who live, work, recreate and own real property in and around Georgia's national forests.

9. I have personal knowledge that members of GFW joined the organization precisely because of their recognition of the many important ecological roles the national forests play in the region, and because of their desire to help conserve and protect these important resources.

10. My responsibilities at GFW include communicating with members and the public about the effects that biomass-burning plants are having on Georgia's forest environments. I can therefore attest that GFW members are aware and supportive of the work GFW is doing to strengthen regulatory responses to the threats that biomass plants pose to the interests of GFW and its members.

11. Based upon my professional experience with GFW, I am aware of GFW's concerns about the impact of conventional (non-GHG) pollution on the national forests of Georgia. This pollution includes emissions from biomass facilities, such as particulate matter (PM) and nitrogen oxides (NOx), which contributes to ozone formation. I am aware that scientific articles have chronicled ozone impacts on the forests in the Great Smoky Mountains. The Great Smoky Mountains are close to the Chattahoochee National Forest. One study concluded that ambient ozone concentrations caused a slowdown in seasonal growth patterns, leading to losses in stem growth of 30-50% for most species during high ozone years. The study also found that high ozone years depleted soil moisture and reduced late-season stream flows.

12. Based on my professional experience at GFW, I am familiar with and have worked on GFW's efforts to oppose extraction of timber from national forests in Georgia for the purpose of producing biomass energy. I believe that the Biomass Exemption Rule would create great economic incentives that would

scuttle GFW's efforts to expand national forest acreage generally, and wilderness areas, which disallow any logging or land management activity, in particular. I am familiar with GFW's July 31, 2008, public comments on the draft permit for the Multitrade Rabun Gap biomass electric generation facility in Rabun County, Georgia. I am aware that those comments raised concerns regarding the impact of repeated harvesting on national forest lands and the general availability of sufficient biomass to feed the facility. GFW and I fear the process of "whole tree" removal will deprive the soil of much needed nutrients, increase erosion on the steep slopes of the Chattahoochee National Forest, and impair water quality. Despite our comments, no requirements were placed on the facility with regards to sustainable harvesting of its fuel supply. Moreover, I am familiar with the U.S. Forest Service's June 30, 2010, scoping notice for the East Nottely Forest Health and Restoration Project. This notice and subsequent Environmental Assessment proposed to harvest 587 acres for bioenergy purposes. I believe that the East Nottely area is within the sourcing region of the Rabun Gap biomass facility in Rabun County, Georgia, and believe that this "thinning" may provide the fuel input for that electrical generation facility. As a result of GFW's work on this issue, the Forest Service on this particular ranger district will attempt to retain as much slash (tops and limbs) as possible to address our concerns about soil nutrient export and the associated risks of decreasing soil fertility. While this specific project

addressed some of our concerns about biomass utilization, I remain concerned that the wise and equitable use of our forest resources will require chronic public education, advocacy, and evaluation as time passes, new market forces and incentive arise, and new forest management proposals and initiatives are implemented by the Forest Service.

13. I understand that overwhelming scientific evidence demonstrates that anthropogenic emissions of carbon dioxide and other greenhouse gases (GHG) cause heat trapping effects in the earth's atmosphere which, in turn, elevate air and water temperatures and cause other changes to the earth's climate. According to this evidence, these changing air and water temperatures shift wind patterns and ocean currents that drive the world's climate system, fundamentally altering geographic temperatures and weather patterns resulting in global climate change.

14. Observed climate change phenomena associated with GHGs in Georgia and the rest of the Southeastern U.S. include higher temperatures and increasing frequency of moderate to severe droughts in the spring and summer. I am aware that these impacts are projected to get more severe. And the future frequency, duration, and intensity of droughts are also likely to rise. Any increase in groundwater pumping would add stress to or deplete aquifers, which could in turn strain surface water resources more than they already are.

15. Based on my professional experience at GFW, I understand that these changes will lead to other effects. EPA has concluded that projected temperature increases may affect ecosystems in the Southeast, including by increasing water temperatures, which reduces dissolved oxygen in stream, lakes, and shallow water habitats, potentially negatively impacting the region's fisheries.

16. These observed and projected changes are negatively impacting, and would cause further damage to, the balanced ecosystems existing in Georgia's national forests that have developed over thousands of years. I fear that these and other effects of climate change pose serious threats to Georgia's national forests and associated watersheds and wildlife therein. I believe that such an outcome, if driven by climate change, impedes the natural developmental processes of our forests, processes which GFW was founded to protect. These national forests and surrounding areas are where members of GFW live, work and recreate.

17. Based on my professional experience at GFW, I am aware of the determination of EPA that elevated concentrations of six greenhouse gases constitute air pollution that endangers public health and welfare in the United States by contributing to climate change. I understand that in a follow-up rule – the Tailoring Rule – EPA established a permitting process for GHGs from large stationary sources under the PSD and Title V permitting programs under the Clean Air Act (CAA). I understand that Phase 1 of the Tailoring Rule began in January

2011 and Phase 2 began in July 2011. I am also aware that under the first phase stationary sources that were already required to obtain a PSD permit for other pollutants were subjected to regulation of their CO₂ emissions as well. I understand that for the second phase initially EPA decided to subject all stationary sources that emit CO₂ at the statutory threshold to the CAA's permitting requirements. However, I also understand that EPA subsequently decided, in the Biomass Exemption Rule, to defer for three years emissions from facilities that use biomass from the CAA permitting requirements that apply to other stationary sources that emit CO₂ and other GHGs at the same statutory threshold. I understand that EPA has stated that this final exemption for biomass and other bioenergy sources became effective on July 20, 2011.

18. Based on my professional background and my current professional experience at GFW, I believe that the Biomass Exemption Rule will adversely impact the goals and interests of GFW and its members in at least three ways. Each of these three effects could injure Georgia's national forests, which GFW and I work to protect.

19. First, because the Biomass Exemption Rule can have the effect of exempting biomass-burning facilities from the PSD program altogether, those facilities will not have to apply best available control technology to their emissions of pollutants, like PM, NO_x, and carbon monoxide that directly threaten the health

of GFW's members and the health of the national forests in Georgia. Moreover, the exemption of these sources from the PSD program means that GFW and its members won't have the opportunity to question the need for a source nor question whether, assuming there is a need, it could be met with an alternative that results in less pollution. Also, by additionally allowing power plants and industrial facilities to not count GHG emissions for purposes of determining CAA permitting requirements, the Biomass Exemption Rule would give those pollution sources more motivation to combust biomass as opposed to fossil fuels, like coal and natural gas, which would not enjoy the same designation. This incentive, as well as the incentive created by the chance to avoid PSD permitting altogether would mean more new plants and facilities that burn biomass and more conversion of existing coal- and gas-fired plants and facilities to burn only biomass or to co-fire biomass and a fossil fuel. Because conventional air pollution from facilities that combust certain types of biomass to produce energy can actually exceed the amount of air pollution emitted by facilities that use coal and natural gas, this could in turn lead to an increase in NO_x emissions and the ozone levels that cause forest ecosystem degradation. There are already five proposed biomass facilities that would be located near or immediately upwind from Georgia's national forests. There are also a large number of existing coal- and gas-fired power plants in Georgia, Alabama, South Carolina, and Tennessee whose emissions affect the

state's national forests located near or immediately upwind from Georgia's national forests. These circumstances create an immediate concern for GFW about the conventional air pollution attributable to the biomass combustion that would be promoted by the Biomass Exemption Rule.

20. Second, giving companies an extra incentive to combust biomass would lead to a surge in its demand and add to the existing pressure to burn whole trees to satisfy that demand. I believe that such a rule will incentivize plantation farming of trees, reducing diversity of plants and animals. I further believe that these economic incentives would spur timber harvesting in and around the national forests, reducing tree cover. I believe that this increased logging activity and reduced ground cover could impair soil and water quality, to the detriment of the forest ecosystem. With all of the proposed and existing biomass facilities and the existing power plants that could convert some of their boilers to burn biomass located in the vicinity of Georgia's national forests, I am concerned that the pressure to meet the demand for biomass under a carbon neutral policy could be so great that biomass harvesting would be done on the national forests.

21. Third, I believe that the Biomass Exemption Rule would result in more GHG emissions, exacerbating climate change and the associated impacts of shifting weather patterns, intense rain events, and droughts. I believe in particular that the utilization of "whole tree" removal to feed biomass facilities would

undermine the ability of that biomass to be, in fact, carbon neutral. The removal of the whole tree differs from traditional logging practices in the national forest, in which the leafy treetops and tree branches remain on the ground to replenish the soil and forestall erosion. I believe the removal of the whole tree will yield future generations of smaller, undernourished trees and less-dense forests.

22. With one existing and five proposed plants in the vicinity of the national forests in the state, I am concerned that this creates the impression that these are relatively heavily forested areas that are open for the business of burning wood for energy and that the available forest resources in and near the forests will attract more plants soon, especially to take advantage of the regulatory incentives provided by the Biomass Exemption Rule.

23. I believe that EPA's Biomass Exemption Rule will exacerbate the magnitude of anthropogenic climate change and thereby hasten the severity of any climate change associated impact in Georgia's national forests and will add to the motivation for more biomass combustion and biomass harvesting in and around Georgia's national forests. GFW and its members therefore have a direct interest in, and their injuries can be redressed by, ensuring that the Biomass Exemption Rule is overturned.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: March 13, 2012

/s/ Robin Hitner
Robin Hitner

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, *et al.*,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
(Consolidated with 11-1285,
11-1328, and 11-1336)

Franklin County

State of Maine

DECLARATION OF WILLIAM HOUSTON

I, William Houston, Jr., hereby declare and state the following:

1. This declaration is based on my personal knowledge, understanding, and belief. I am over eighteen years of age, and suffer from no legal incapacity. I submit this declaration as a member and former President of the Board of the Natural Resources Council of Maine (“NRCM”) in support of the above-referenced lawsuit brought by the Center for Biological Diversity, Coastal

Conservation League, Conservation Law Foundation, Dogwood Alliance, Georgia ForestWatch, Natural Resources Council of Maine, and Wild Virginia (“Center for Biological Diversity, *et al.*”) challenging the decision of the United States Environmental Protection Agency (“EPA”) to defer for three years carbon dioxide (“CO₂”) emissions from bioenergy and other biogenic sources from the Prevention of Significant Deterioration and Title V program requirements under the Greenhouse Gas Tailoring Rule. This rule is commonly known as the Biomass Exemption Rule.

2. I am 54 years old. I was born in Bangor, Maine, and I have lived in Maine for almost all of my life. I currently reside, along with my wife and two children, at 58 Mystery Road, Kingfield, Maine 04947 in Franklin County. I have lived at this address since 1989.

3. I have two daughters that are 15 and 18. My daughters are very active outdoors in all seasons. They enjoy Nordic and downhill skiing as well as snowboarding in the winter, and they play soccer and run in the summer months. Our family are all avid hikers, canoeists, and bikers, and so we are active in the outdoors much of the year. This is why we live in and love Maine so much.

4. I have been an outdoor leadership instructor for more than 15 years and a wilderness and river guide for over 25 years. I am a registered Maine Guide,

a member and instructor of the American Canoe Association, and am a life-long member of the Maine Wilderness Guides. I am currently an Instructor of Outdoor Resources at the Somerset Career and Technical Center in Skowhegan, Maine.

5. I have been active with NRCM since 1985, and a member of the organization for more than 20 years. Since 2005, I have been a member of NRCM's Board of Directors and was President of NRCM's Board from the Fall of 2009 to October 2011.

6. NRCM has more than 9,000 members. In my capacity as a long-term member of NRCM, and as a member of its Board and its former President, I can confirm that NRCM's mission and purpose is to protect, restore, and conserve Maine's environment, now and for future generations – in short, to protect the nature of Maine. I can also say that reducing all harmful air pollution, including CO₂ and other greenhouse gases (“GHGs”), from power plants, including biomass plants, and other sources is a central part of NRCM's mission. Protection of Maine's forestry resources is also central to NRCM's mission.

7. Based on my expertise as a wilderness guide and an educator, and my experience as a member of NRCM and its Board, I am familiar with the environmental issues that threaten the nature of Maine. As a result of my professional expertise, recreational activities, and involvement with NRCM, I

understand that utilization of biomass in for the production of power and other industrial sectors has the potential to detrimentally impact Maine's forestry resources. I can also say with certainty that human-induced climate change and other air pollutants, including nitrogen dioxides, volatile organic compounds, and particulate matter, produced by electricity generating units, pose one of the largest threats to the natural environment.

8. I am aware that EPA recently finalized a rule deferring for three years CO₂ emissions from power plants and other facilities that use biomass from complying with permitting requirements under the Clean Air Act and related rules promulgated by EPA (commonly known as the "Biomass Exemption Rule"). I understand that EPA has stated that the Biomass Exemption Rule took effect on July 20, 2011, the date it was published in the Federal Register. I have two major concerns with respect to this rule: 1) detrimental impacts to my professional and recreational use of Maine's forestry resources and 2) increased emissions of CO₂ that can result in further climate change impacts, such as increases in ground-level ozone.

9. I am similarly concerned that failing to promptly regulate GHG emissions from sources that burn biomass will create incentives for over-harvesting Maine's forests. I greatly value and appreciate Maine's forests, and I

am concerned that EPA's failure to regulate biomass sources will increase the demand for whole trees and other forest resources in Maine. Not only could this create an incentive to over-harvest Maine's forests, it could also increase the demand for the lowest use of trees and forest product. To produce trees for high-end uses such as making furniture and other valuable products, trees must be allowed to grow for a longer period of time. EPA's decision to exemption from regulation CO₂ emissions from biomass sources could increase the short-term pressure to cut down trees for low-end and inefficient uses. Burning trees for energy, as the science shows, not only has the potential to emit more GHGs into the atmosphere than does burning fossil fuels, but it also could incentivize over-harvesting of Maine's forests that I, my friends and my family, and Maine's tourists treasure. My students and I depend upon a robust forest ecosystem, and I am worried that this rule could pose a risk to Maine's forestry resources.

10. Because of my work with NRCM, I understand that human activity has resulted in elevated atmospheric concentrations of GHG pollution, including CO₂, methane, and nitrous oxide, as well as others. I understand that these GHGs are responsible for trapping heat in the earth's atmosphere and that this has the effect of causing rising temperatures which have significant negative consequences

both for global climate systems and Maine's environment. I also understand that increased ozone concentrations are associated with warmer summers and with increased methane emissions, a potent GHG that contributes to ozone formation.

11. I have already seen climate change impacts occurring in Maine in my lifetime, including much warmer winters with less snow, and the emergence of invasive insect species. I understand that lower snowpack in winter, increased annual temperatures, and less predictable rainfall patterns can threaten Maine's forest resources due to the increased risk of wildfire. Incidences of Lyme disease are becoming more widespread in Maine and Maine governmental entities have attributed this at least in part to climate related factors. Information on Lyme disease in Maine can be found at the following websites:

<http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/lyme/documents/2009lyme-surveillance-report.pdf>;

<http://www.une.edu/ccph/upload/ClimateProceedingsFinal.pdf>;

<http://www.une.edu/ccph/upload/MillsClimate-Change-PPT-04-10.pdf> . The increase in Lyme disease in Maine affects me personally in several ways. I have had a friend die from Lyme disease. Also, I am concerned by the possibility of myself or my family contracting Lyme disease when we are active in the out-of-doors.

12. Climate change effects also damage the economy of the community where I live. Maine is experiencing increased temperatures and these increased temperatures are affecting the precipitation, including snowfall patterns, as well the onset of seasons, such as an earlier spring. Kingfield, where we live, is 15 miles from Sugarloaf Ski Resort, which is the largest ski area in the East. My family has a season pass at Sugarloaf and has been skiing there for many years. The shorter winters have an impact on our enjoyment and recreation in the winter, and have a damaging effect on the local economy. The local economy here is very dependent on skiing and winter sports of all kinds, including snowmobiling. My friends who make their living at jobs and in businesses related to these winter sports are struggling.

13. As a canoeist and a river guide, I see that rising water temperatures in Maine's streams are threatening Maine's wild and native brook trout population. Increased temperatures year round, as well as in the summer months, have this effect. Increased forest harvest opens up the tree canopy over covered streams and that adds to the warmer water temperatures. I enjoy fishing and have friends who are fly fishing guides. I understand that brook trout are likely to become stressed in temperatures above 70 degrees Fahrenheit. Part of Maine's attraction to tourists, who are a major part of our economy, is fly fishing in these streams. Threats to Maine's wild and native brook trout therefore threaten the economy where I live.

14. I greatly enjoy visiting National Parks, particularly Acadia since it is the National Park nearest to where I live. I enjoy visiting other National Parks as well and visited Yellowstone National Park this past August. As a guide, I recognize the economic engine that National Parks provide and the benefits they offer the local economy. I am concerned about the effects of climate change on National Parks, including the impacts to habitat for species such as brook trout, mountain goats, and bears, as well as the impacts to my and my family's enjoyment of the National Parks, and impacts to the local economies.

15. I have recently been diagnosed as having adult onset asthma. I understand that this is associated with being active in the outdoors in areas where ozone levels are elevated in the summer months. I understand that being active outdoors when ozone levels are high increases my risk of asthma attacks, symptoms of which include shortness of breath, tightening in my chest, and other negative physical effects. And I understand that warmer summers and increased GHG emissions are associated with higher background ozone levels, including in Maine. Most people think of Maine as a place with very clean air. Maine, however, has one of the highest rates of asthma in the country, and the state of Maine has identified high levels of summertime ozone as a contributing factor to

these high levels of asthma.¹ I also understand that other air pollutants emitted by biomass facilities present a risk to my respiratory health.

16. Based on my experience as a member of NRCM's Board, I know that energy production from fossil fuels is one of the most significant sources of GHGs including CO₂ that cause climate effects over long periods of time and also of air pollutants that are detrimental to human health and welfare, such nitrogen dioxide, particulate matter, and volatile organic compounds. I also understand that the majority of the CO₂ produced at energy production facilities will remain in the atmosphere and cause harm for over 100 years. I am aware that there are arguments being made that using wood or other biomass resources (waste wood, timber harvest residue) is less harmful for the climate than burning coal or oil to generate energy for industry or for consumer use. I have real concerns about creating incentives for over-harvesting, or switching to biomass fuels without a full understanding of all the impacts. However, I do understand that from a climate and a human health and welfare perspective that each molecule of CO₂ emitted has the same immediate effect on atmospheric concentrations, whether emitted from biomass or from fossil fuels. I am also concerned about the health and welfare effects of other types of air pollutants emitted from these biomass power facilities.

¹ <http://www.maine.gov/dhhs/mecdc/population-health/mat/asthma-information/asthma-in-maine.htm>

17. I understand as a result of my active participation with NRCM that, as a result of this growing concern about the climate change impacts of bioenergy facilities, the Massachusetts Department of Energy Resources suspended consideration of new biomass power plants for eligibility under the Massachusetts Renewable Energy Portfolio Standard and commissioned a team led by the Manomet Center for Conservation Sciences to assess the GHG consequences of transitioning from energy production based on fossil fuel resources to forest-based biomass resources (“Manomet Study”). The Manomet Study Report was released in June 2010. It is my understanding the Manomet Study Report shows biomass-based energy production can result in a net increase in GHG pollution compared to fossil fuel-fired energy resources. This net increase is said to result from a surge in GHGs emitted to the atmosphere when certain practices are used to harvest biomass resources from forests and whole trees are used as a feedstock for bioenergy facilities, thereby releasing the carbon that otherwise would have been stored in the trees. I also understand that the Administration of Governor Deval Patrick has proposed a revision to the Massachusetts’ policies related to biomass and renewable energy to reflect this understanding of GHG emissions from these facilities. Based on this and other current science, failing to regulate any CO₂ emissions from biomass and other bioenergy sources will contribute significantly to climate change.

18. I am also aware as a result of my active participation with NRCM that burning biomass resources to produce energy creates dangerous air pollution of other kinds, including the pollution responsible for ground-level ozone that exacerbates my asthma. Air pollution from power plants and other facilities that use some kinds of biomass to produce energy can actually exceed the amount of air pollution that result from facilities that use coal and, especially, natural gas.

19. My home is located approximately 30 miles from one bioenergy facility, the Boralex Stratton electric generating station (“Boralex Stratton Station”), located on Route 27 in Stratton, Maine.

20. In 2009, the Boralex Stratton station in 2009 emitted 546,651 tons of CO₂ from biomass combustion and only 705 tons from nonbiomass sources. *See*, Greenhouse Gas Emissions – 2009 – By Facility (Tammy L. Gould, Maine Department of Environmental Protection) (2009), *available at* http://www.nrcm.org/documents/2009MEGHGInventory_2011_04_07.pdf. The Boralex Stratton Station is a major emitting facility that is regulated pursuant to the Clean Air Act Prevention of Significant Deterioration Program because it produces large amounts of air pollutants including sulfur dioxide, nitrogen oxides, and particulate matter. I understand that these air pollutants contribute directly to

respiratory illnesses and are responsible for the formation of ground-level ozone and haze. Sulfur dioxide is also associated with acid rain.

21. I also work within 10 miles of the Sappi (S.D. Warren) biomass facility in Skowhegan, Maine. As a result of my work, I spend approximately 180 days a year near this facility. This bioenergy facility also emits high levels of air pollutants, is regulated for certain air pollutants pursuant to the Clean Air Act Prevention of Significant Deterioration program, and thus presents a risk to my wellbeing.

22. Given my own struggles with asthma, I am concerned about the air pollutants emitted by biomass facilities. In addition, if biomass facilities choose to make a major modification, I am concerned that they would be permitted to emit increased air pollutants, such as nitrogen oxide and particulate matter, if CO₂ emission regulation from biomass combustion is not in place.

23. Based on my role at NRCM, my knowledge of the broad geographic distribution of our members in Maine and the information from Maine Department of Environmental Protection, *see* , Greenhouse Gas Emissions – 2009 – By Facility (Tammy L. Gould, Maine Department of Environmental Protection) (2009), *available at* http://www.nrcm.org/documents/2009MEGHGInventory_2011_04_07.pdf, I

believe it is also likely that the majority of NRCM's 12,000 members and supporters in Maine reside in close proximity to biomass facilities or are otherwise exposed to biomass facilities' harmful emissions.

24. I am also aware of the scientific understanding about the GHG consequences of using biomass to produce energy. I am also aware that it is NRCM's position that the use of biomass should be governed by standards to ensure that the use of biomass does not negatively affect forest ecosystems or contribute to climate change.

25. I am concerned that, if EPA's Biomass Exemption Rule is allowed to remain in effect, biomass and other bio-energy facilities exempted from permitting requirements will produce substantial, unregulated emissions of CO₂ over the next three years that will contribute to climate change effects in Maine and throughout the world. I am further concerned that the Biomass Exemption Rule allows GHG emissions from facilities using biomass to produce energy to be continue to be unregulated by the federal government for the duration of the exemption. Particularly because CO₂ emitted today could remain in the atmosphere for a century, prompt regulation is essential. Furthermore, without prompt regulation of GHGs, including regulation of emissions from burning biomass, incentives would be created to expand existing and develop additional new biomass-energy

facilities. That would undermine other state, regional, and federal efforts to control GHG pollution, address climate change, and avoid increases in local ground-level ozone. If the United States fails to promptly implement effective regulation of GHGs, including GHGs produced by biomass energy facilities, this will lead only to additional, unnecessary, and preventable risks to public health and the environment.

26. I am similarly concerned that, if EPA's exemption continues, exempted facilities could produce substantial emissions of other pollutants that will increase risks to public health and the environment, particularly for those who, like me, live and work near biomass facilities, and struggle with a respiratory condition.

27. I strongly support NRCM's participation in the lawsuit brought by the Center for Biological Diversity, *et al.* challenging EPA's decision to exempt regulation of CO₂ emissions from biomass facilities. I want to protect NRCM's interest in making sure that biomass-energy facilities, including the emissions of CO₂ that contribute to climate change and emissions of other pollutants that exacerbate my asthma, are properly regulated. I find that failing to immediately regulate CO₂ emissions from biomass facilities, and consequently exempting from

regulation other air pollutants from such facilities is unacceptable.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 2, 2012.

A handwritten signature in blue ink, appearing to read "W. B. Houston, Jr.", with a stylized flourish at the end.

William Houston, Jr.
58 Mystery Road
Kingfield, ME 04947

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, *et al.*,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
(Consolidated with 11-1285,
11-1328, and 11-1336)

DECLARATION OF DANIEL M. JOHNSON

I, Daniel M. Johnson, declare as follows:

1. This declaration is based on my personal knowledge, information and belief. I am over the age of eighteen (18) and suffer from no legal incapacity.
2. I am a member of the Coastal Conservation League (CCL).
3. My address is 245 Confederate Highway, Allendale, South Carolina 29810.

4. Southeast Renewable Energy Allendale, LLC (SRE) has proposed to build a power plant on Airport Loop Road in Allendale that will burn woody biomass to produce electricity. The proposed plant site is approximately 1.5 miles from my home.

5. On August 15, 2011, the Bureau of Air Quality at South Carolina's Department of Health and Environmental Control (DHEC) issued a final air permit for the Allendale plant that contains limits for pollutants that will be emitted by the plant, such as particulate matter (PM), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and carbon monoxide (CO). DHEC issued the permit under its "minor new source review" permitting program.

6. Based upon research, I am aware that the pollutants emitted by the Allendale plant, including NO_x and PM, are particularly detrimental to respiratory function. This is especially concerning to me because I am 59 years old and the American Lung Association warns that emissions from burning biomass could have severe effects on the health of older adults and also because I am currently receiving medical treatment for chronic sinusitis, which is aggravated by pollutants in the air I breathe.

7. Given my age, medical condition, and home location, I am very concerned that construction of this facility without more effective air pollution control devices will harm my health.

8. Based upon my research, it appears that there are cleaner alternatives to wood-burning biomass plants. I believe that cleaner alternatives could consist of, among other things, managing and meeting electricity demand through greater end-use energy efficiency. These alternatives would reduce air pollution from burning biomass at the plant and from the many trucks that would drive through the community and by my home to deliver fuel to the plant.

9. Based on my research and involvement in the DHEC air permitting process for the Allendale plant, I understand that the United States Environmental Protection Agency has issued a final rule, sometimes called the Biomass Exemption Rule, that allows a new biomass-burning facility, including the Allendale plant, to ignore the facility's carbon dioxide (CO₂) emissions for the purpose of determining whether the facility must obtain a prevention of significant deterioration (PSD) air permit.

10. Based on my research and involvement in the DHEC air permitting process for the Allendale plant, I also understand that if the Allendale plant had gone through PSD permitting, I would have benefited from the plant being subject to the stringent emission rates required to meet the best available control technology standard, and I would have had the opportunity to raise the lack of need for the plant and the availability of cleaner alternatives to it.

11. I am concerned that the Biomass Exemption Rule will result in significantly increased emissions of harmful air pollution from SRE's Allendale plant, thereby endangering my health. I thus support CCL's efforts to convince a court to strike down the Biomass Exemption Rule.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: March 9, 2012

/s/ Daniel M. Johnson
Daniel M. Johnson

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

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DECLARATION OF REBECCA LAFFITTE

I, Rebecca Laffitte, declare as follows:

1. This declaration is based on my personal knowledge, information and belief. I am over the age of eighteen (18) and suffer from no legal incapacity.
2. I am a member of the Coastal Conservation League (CCL).
3. I live in Columbia, South Carolina. With other members of my family, I own property in Allendale County, South Carolina. The address is 245 Confederate Highway, Allendale, South Carolina 29810. My Mother and sister reside in my family home next door.

4. The property was originally owned by my maternal grandparents as my grandfather was a farmer. Because Columbia is an easy 1.75 hour drive from Allendale and because I still have family living on the property and nearby, I visit there regularly. I have no plans to discontinue my regular visits to the property and I plan to retire there.

5. When I am there, I enjoy walking around the property, sitting on the porch, nature watching, working in the yard, and breathing clean air.

6. Southeast Renewable Energy Allendale, LLC (SRE) has proposed to build a power plant on Airport Loop Road in Allendale that will burn woody biomass to produce electricity. The approximately 60 acre site of the proposed plant borders property owned by me and other family members (approximately 1.50 miles from my house).

7. On August 15, 2011, the Bureau of Air Quality at South Carolina's Department of Health and Environmental Control (DHEC) issued a final air permit for the Allendale plant that contains limits for pollutants that will be emitted by the plant, like particulate matter (PM), nitrogen oxides (NOx), sulfur dioxide (SO₂), and carbon monoxide (CO). DHEC issued the permit under its "minor new source review" permitting program. I am aware that a "crush and run" gravel road has been constructed at the proposed site. It appears to resemble the type of road that

is often built in preparation for beginning construction of a facility like the Allendale plant.

8. Based upon research, I am aware that the pollutants emitted by the Allendale plant, including NO_x and PM, are particularly detrimental to respiratory function. Given that my property is immediately adjacent to this facility (within 1.50 miles), I am extraordinarily concerned that construction of this facility without more effective air pollution control devices will be harmful to my health and the health of citizens in surrounding counties.

9. Based upon my research, it appears that cleaner alternatives exist other than wood-burning biomass plants. It is my belief that cleaner alternatives could consist of, among other things, managing and meeting electricity demand through greater end-use energy efficiency. These alternatives would reduce air pollution from burning biomass at the plant, as well as from the many trucks that would drive through the community to deliver fuel to the plant.

10. Based on my research and involvement in the DHEC air permitting process for the Allendale plant, I understand that the United States Environmental Protection Agency has finalized a rule, sometimes called the Biomass Exemption Rule, that allows the proponent of a new biomass-burning facility, including SRE's Allendale plant, to ignore the facility's carbon dioxide (CO₂) emissions for the

purpose of determining whether the facility must obtain a prevention of significant deterioration (PSD) permit.

11. Based on my research and involvement in the DHEC air permitting process for the Allendale plant, I also understand that if the Allendale plant had gone through PSD permitting, I would have benefited from the plant being subject to the stringent emission rates required to meet the best available control technology standard, and I would have had the opportunity to raise the lack of need for the plant and the availability of cleaner alternatives to it.

12. I am concerned that the Biomass Exemption Rule will result in significantly increased emissions of harmful air pollution from SRE's Allendale plant, thereby endangering my health. I thus support CCL's efforts to convince a court to strike down the Biomass Exemption Rule.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: March 8, 2012

/s/ Rebecca Laffitte
Rebecca Laffitte

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
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DECLARATION OF SYDNOR ROSALIE LAFFITTE

I, Sydnor Rosalie Laffitte, declare as follows:

1. This declaration is based on my personal knowledge, information and belief. I am over the age of eighteen (18) and suffer from no legal incapacity.
2. I am a member of the Coastal Conservation League (CCL).
3. With other members of my family, I own property in Allendale County, South Carolina, on Highway 641 in Allendale and Highway 125 in Appleton. My husband and I live at 245 Confederate Highway in a home owned

equally by my sister and me. My mother and another sister live next door. The property has been in my mother's family for several generations.

4. When not at work, I garden, hike around the woods on the property, bird watch and spend summer evenings dining and sitting on the porch looking for fireflies and watching the stars. My husband likes to canoe and fish the local streams and rivers. Each day, I appreciate the clear, clean air that I breathe.

5. Southeast Renewable Energy Allendale, LLC (SRE) has proposed to build a power plant on Airport Loop Road in Allendale that will burn woody biomass to produce electricity. The proposed plant site is approximately 1.5 miles from my home, and adjacent to farm land owned (currently, in estate) by me and other family members.

6. On August 15, 2011, the Bureau of Air Quality at South Carolina's Department of Health and Environmental Control (DHEC) issued a final air permit for the Allendale plant that contains limits for pollutants that will be emitted by the plant, such as particulate matter (PM), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and carbon monoxide (CO). DHEC issued the permit under its "minor new source review" permitting program.

7. I have been informed that the United States Environmental Protection Agency has finalized a rule that some refer to as the Biomass Exemption Rule that allows the proponent of a new biomass-burning facility such as the proposed SRE

Allendale plant to be exempt from controls of Greenhouse Gas emissions.

Previously, new plants built after June 30, 2011, would have fallen under the Greenhouse Gas Tailoring rule and would have been subject to the PSD program.

8. I am concerned the Biomass Exemption Rule will result in significantly decreased controls of emissions of other pollutants. Nitrogen oxides, sulfur dioxides, and particulate matter-10 and -2.5 are detrimental particularly for children and the elderly suffering with cardiopulmonary diseases. The proposed location of the SRE Allendale plant is near the local high school, the local middle school, and the Salkehatchie West Campus of the University of South Carolina in Allendale.

9. I live in Allendale County and know that continued exposure to the pollutants emitting from the proposed biomass facility, SRE Allendale, will affect, eventually, my health and the health of all of those breathing the polluted air. I support Coastal Conservation League's efforts to convince a court to strike down the Biomass Exemption Rule and require all new sources of biomass to be subject to the PSD program as originally planned.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: March 9, 2012

/s/ Sydnor Rosalie Laffitte
Sydnor Rosalie Laffitte

DECLARATION OF LINDA LOPEZ

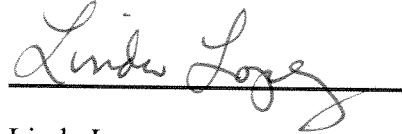
I, Linda Lopez, declare as follows:

1. I am the director of membership and public education at the Natural Resources Defense Council, Inc. ("NRDC"). I have been the director of membership and public education for 23 years.
2. My duties include supervising the preparation of materials that NRDC distributes to members and prospective members. Those materials describe NRDC and identify its mission.
3. NRDC is a membership organization incorporated under the laws of the State of New York. It is recognized as a not-for-profit corporation under Section 501(c)(3) of the United States Internal Revenue Code.
4. NRDC's mission statement declares that "The Natural Resources Defense Council's purpose is to safeguard the Earth: its people, its plants and animals, and the natural systems on which all life depends." The mission statement goes on to declare that NRDC works "to restore the integrity of the elements that sustain life air, land, and water - and to defend endangered natural places." NRDC's mission includes the prevention and mitigation of global warming in order to protect and maintain NRDC's members' use and enjoyment of natural resources threatened by global warming.
5. Through its Climate Center, NRDC pursues federal and state policies to curb the pollution that is causing global warming, including emissions of carbon dioxide and other greenhouse gases from U.S. stationary sources, which are a major contributor to global warming pollution. In addition, through its Renewable Energy Policy Project, NRDC advocates rapid deployment of renewables needed to help stop global warming, sited and operated in the most broadly sustainable way possible to maximize other environmental benefits and minimize unintended consequences. For bioenergy, this means promoting the use of truly low-carbon biomass and opposing the use and policy support for biomass that has a high carbon or other type of ecological footprint. NRDC also advocates for healthy forests through its Forestry Project.
6. When an individual becomes a member of NRDC, his or her current residential address is recorded in NRDC's membership database. When a member renews his or her membership or otherwise makes a contribution to NRDC, the database entry reflecting the member's residential address is verified or updated.
7. NRDC currently has 357,000 members nationwide. There are NRDC members residing in each of the fifty United States and in the District of Columbia.
8. Our database allows us to search on members by zip code and obtain their addresses. To identify members impacted by biomass power plants that will not have to count their biogenic carbon dioxide emissions, and so avoid permitting and/or control of air pollution

under the Prevention of Significant Deterioration program, NRDC staff identified the locations of proposed and permitted biomass plants by zip code and address. A list of these plants is included in the declaration of Ranajit Sahu submitted in this case. Staff then compiled a list of members living close to the proposed plants. Based on this search, NRDC has at least 30 members who live less than 3 miles from the proposed plants, and at least 15 members living less than a mile from the proposed plants.

I declare under penalty of perjury that the foregoing is true and correct.

Dated March 8, 2012, New York, NY.

A handwritten signature in cursive script, reading "Linda Lopez", is written over a solid horizontal line.

Linda Lopez

3. My address is 6 Ridge Road, Concord in Merrimack County, New Hampshire (03301). I have lived at this residence for 18 years. I am 59 years of age.

4. I am very concerned about the impacts of a rule recently issued by the United States Environmental Protection Agency (“EPA”), sometimes called the Biomass Exemption Rule, on the regulation of air pollutant emissions from newly constructed biomass plants or biomass plants that will undertake a major modification. I am aware that biomass facilities emit a number of harmful air pollutants, including nitrogen dioxide (“NO_x”), particulate matter (“PM”), and volatile organic compounds (“VOC(s)”), which are particularly detrimental to respiratory function and to persons with heart disease.

5. I suffer from asthma. My husband uses an inhaler while exercising due to reactive lung tissue. As described below, my husband and I live approximately 2 miles from a recently permitted biomass plant, and I am concerned that construction of this facility without the appropriate air pollution control mechanisms will be harmful to my and my husband’s health.

6. My daughter also suffers from asthma. She is 31 and lives at 109 Page Road, Bow, New Hampshire. Her residence is approximately 5 miles from the Concord Plant.

7. On August 12, 2011, the state of New Hampshire reissued a permit to Concord Power and Steam, LLC authorizing the construction of a wood-fired power plant at 291 South Maine Street in Concord New Hampshire (the “Concord Plant”). As noted above, my residence is located approximately 2 miles from this location and my daughter’s is approximately 5 miles.

8. The primary source of air pollutant emissions at this plant will be a wood-fired boiler. The only source of fuel for the boiler is virgin wood chips and non-contaminated wood products, such as wood chips or unfinished wood product chips.

9. The permit for the Concord Plant established limits of emissions of particulate matter (“PM”), sulfur dioxide, carbon monoxide (“CO”), nitrogen oxides (“NO_x”), and volatile organic compounds (“VOCs”). I understand that the permit for the Concord Plant allows for emissions PM and CO above the “best available control technology,” or “BACT,” significance levels established by EPA in its Clean Air Act regulations. I further understand that the plant, however, was not required to comply with the PSD permitting requirements - including the requirement to apply BACT to PM and CO.

10. I am familiar with air pollution issues because I and other members of my family have engaged in endurance sporting activities for 30 years or more. On some days during the summer months, the air quality in Concord is too low to

allow me, my husband, or my daughter to engage in vigorous physical activity. All of us have experienced coughing episodes and shortness of breath when we have tried to engage in vigorous physical activities during these periods when the air quality is bad.

11. Emissions of PM from the Concord Plant are of concern to me. I understand that PM emissions are linked to a number of deleterious health conditions, including increased respiratory problems, including decreased lung function, aggravated asthma, development of chronic bronchitis, irregular heartbeat, nonfatal heart attacks, and premature death in people with heart or lung disease and have learned that even healthy adults can experience temporary systems from exposure to elevated particulate matter levels. My family and I engage in competitive cycling, mountain biking, and skiing outdoors. As noted above, we all suffer from impaired respiratory function that I fear will be exacerbated by additional air pollution from this plant.

12. Emissions of CO from the Concord Plant also concern me. I understand that exposure to CO can reduce blood's oxygen-carrying capacity and that people with heart disease, because of their already reduced capacity for sending oxygenated blood to the heart, are particularly vulnerable to even short term exposure to CO. While I and my family do not currently suffer from heart disease, the dangers of increased CO in proximity of my residence and recreational

activities are of concern given that I am 59 years of age and my husband is 64 years old.

13. I am aware, because I am active with CLF, that the Biomass Exemption Rule allows the proponent of a new biomass-burning facility, including the Concord Plant, to ignore the facility's CO₂ emissions from biomass combustion for the purpose of determining whether the facility is a "major emitting facility" that must obtain a PSD permit. I also know that absent EPA's Biomass Exemption Rule, the Concord Plant would have been classified as a "major emitting facility" because of its CO₂ emissions and would have had to meet all requirements for a PSD permit, including installation of BACT for each regulated pollutant that it emits in significant amounts. My understanding of this requirement is that BACT would have been required for the plant's emissions of PM and CO.

14. I am also aware, based on the expert declaration submitted by Ron Sahu in this litigation, that if the plant had been subject to PSD permitting requirements, instead of minor new source review permitting requirements, the plant's air permit would likely allow the plant to emit less PM and CO than the minor new source review permit issued by the state of New Hampshire on August 12, 2011.

15. The conclusion I reach from this is that as a result of the Biomass Exemption Rule, the Concord Plant is not required to apply BACT to emissions of these 2 air pollutants.

16. Because I live approximately 2 miles from this facility, and my husband and I suffer from respiratory problems, I am concerned that the Biomass Exemption Rule will result in significantly increased emissions of harmful air pollution from the Concord Plant, thereby endangering our health. In addition, I am concerned for my daughter's health, as she suffers from asthma and also lives in close proximity to this source of air pollution.

17. Finally, I understand that when a source is required to obtain a PSD preconstruction permit, the public may raise the existence of alternatives to the project, which may be better for air quality and more protective of other environmental resources, such as forests and water quality. I also understand that a permitting agency can deny a PSD permit on the basis of more environmentally sound alternatives. Because of the Biomass Exemption Rule, the Concord Plant was not subject to the PSD permitting process, and members of the public like myself did not have an opportunity to advocate for alternatives to the Concord Plant that could result in less air pollution and potentially lessened impacts to forests and other environmental resources.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: February 27, 2012

/s/ Leslie Ludtke

Leslie Ludtke
NH-6 Ridge Road
Concord, New Hampshire 03301

ORAL ARGUMENT NOT YET SCHEDULED

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

CENTER FOR BIOLOGICAL
DIVERSITY, et al.

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY, et al.

Respondents.

No. 11-1101
and consolidated cases¹

DECLARATION OF BRIAN NOWICKI

I, Brian Nowicki, declare as follows:

1. I reside in Sacramento, California, where I am employed by the Center for Biological Diversity. In my current position as California Climate Policy Director I advocate on behalf of the Center for Biological Diversity for public policies intended to reduce the threats of global warming and to protect natural ecosystems and wildlife. A primary focus of my work has been to advocate for public policy to protect our nation's forests as carbon sinks and as important

¹ See Order, Document No. 1326811 (Aug.30, 2011) (consolidating No. 11-1101 with No. 11-1285); Order, Document No. 1331091 (Sept. 22, 2011) (consolidating Nos. 11-1101 and 11-1285 with Nos. 11-1328 and 11-1336).

ecosystems and wildlife habitat.

2. I am a member of the Center for Biological Diversity. I joined the Center because of our common interest in the protection of forests and other natural ecosystems, imperiled wildlife and their habitat. I rely on the organization to advocate on behalf of my interests, including reducing the threat and impacts of global warming, and the protection of imperiled wildlife and their habitat. Besides the Center for Biological Diversity, I am a member of other organizations committed to the protection of forests and wildlife, including the Sierra Club and Ebbetts Pass Forest Watch.

3. I have been involved in environmental protection throughout my adult life. My education and professional background are founded on my interest in environmental protection and, in particular, forest conservation. I earned a Master of Science in Forestry from Northern Arizona University School of Forestry. I previously held the position of Forest Policy Advocate with the Center for Biological Diversity, working to conserve forests and protect wildlife on public lands. Prior to that, I was employed as Conservation Biologist for the Southwest Forest Alliance, an environmental organization that advocated for the protection of public forest lands in the southwestern United States.

4. I care deeply about the conservation of native species and their habitats, with particular interest in forest ecosystems and the species that depend

on them. In my position with the Center for Biological Diversity, I advocate for the protection of native species and their habitats, and the conservation of forest ecosystems and wildlife. In my free time, I read and learn about the ecology of native species and forest ecosystems. For recreation, I have travelled long distances specifically to visit unique forest areas and other habitats, and to search for and view native species in their natural habitats. Most recently, I spent the weekend hiking, camping, and wildlife watching with my family in the forests of Calaveras Big Trees State Park. Earlier this year, I spent several days with my family hiking and watching wildlife in Yosemite National Park. A month before that, I spent several days hiking and watching wildlife with my family in forest areas in Monterey County. I have spent hundreds of days hiking in forests and watching forest wildlife, including numerous trips this year, and I have several trips planned this year to locations in the Sierra Nevada and coastal areas of California to observe species such as giant sequoia, California redwood, incense cedar, pileated woodpecker, Pacific fisher, mountain yellow-legged frog, sea otter, and the marbled murrelet. Observing wildlife in its natural habitat, and knowing that wildlife populations are healthy and secure, are extremely important to my happiness and peace of mind.

5. I intend to continue to spend a great deal of time recreating in forests throughout my life, including many more trips this year.

6. In my various professional capacities, I have travelled extensively throughout the western United States to study forest ecosystems and the impacts of forest management. I have visited hundreds of forest sites in California, Arizona, New Mexico, Colorado, Utah, Nevada, Oregon, and Washington. This has included areas for which the harvesting of materials for biomass energy production had been proposed. I have toured the area of a proposed biomass energy plant in Amador County, and the site of forest projects in El Dorado and Amador County proposed to generate feedstock for biomass energy plants.

7. In my position with the Center for Biological Diversity, I have extensively researched the literature related to timber harvesting, forest management, and biomass energy generation, and the impacts to forests ecosystems, wildlife habitat, and climate change. I have read hundreds of documents published by state and federal governments, research scientists, the timber and energy industries, and conservation organizations. These have included administrative reviews of the environmental impacts of forest management projects and peer-reviewed scientific publications. I have reviewed and submitted comments on dozens of forest projects and forest management plans.

8. I have an interest in the protection of public lands, and the conservation of forest ecosystems on public lands. I have travelled extensively throughout the United States to visit public lands, including national forests and

national parks, wilderness areas, and lands managed by the BLM, state parks, and state forest lands. A large portion of the time I spend recreating, hiking, and watching wildlife occurs on public lands. Most recently, I visited Calaveras Big Trees State Park, Yosemite National Park, and Tahoe National Forest. I have plans to visit forests in Tahoe National Forest, Stanislaus National Forest, Eldorado National Forest, Lassen National Park, and Yosemite National Park in the next few months.

9. I care deeply about the conservation of species threatened by the impacts of climate change. For recreation, I have travelled long distances specifically to observe species threatened by climate change. I have traveled as far as Hawaii and Central America to observe corals and birds threatened by climate change. Last summer, I spent three days looking for American pikas in Lassen National Park, as I did the summer before that. American pikas are severely threatened by climate change, due to their sensitivity to increasing temperatures. I also wish to visit the Arctic with my family within the next few years to observe polar bears, which are severely threatened by climate change.

10. The EPA has proposed a three-year delay in regulating wood-fired power plants and other biomass incinerators under Clean Air Act provisions aimed at reducing greenhouse gases, despite extensive scientific information showing that the large-scale burning of trees and other wood products can increase global

warming pollution and worsen climate change.

11. The EPA biomass deferral rule affects my interest in forest ecosystems and the wildlife that depend on them because the EPA biomass deferral rule will have direct and indirect effects on the management of forests that I work to protect and conserve, and that I personally cherish and enjoy. Based on my knowledge and professional experience, I understand that the EPA biomass deferral rule would increase the demand for forest biomass feedstock, regardless of the sustainability of supply, including in areas where an increase in the intensity or location of forest harvesting would result in adverse impacts to forest ecosystems and the wildlife that depend on them.

12. By exempting biomass energy developers from Clean Air Act permitting requirements for greenhouse gas emissions, the biomass deferral rule would facilitate the construction and operation of biomass energy generation stations and would exempt biomass energy generation stations from having to account for the emissions associated with the combustion of biomass fuels. My understanding, based on my knowledge and professional experience, is that both of these factors would increase the profitability of biomass energy generation and would provide biomass energy generation an artificial advantage over other energy sources, and over other forest management scenarios.

13. An increase in biomass energy generation would result in an increase

in the demand for forest biomass feedstock, thereby increasing the profitability of intensive timber harvesting to produce forest biomass for fuel. This provides an incentive to increase intensity of timber harvesting, regardless of sustainability of the supply of forest biomass, and to harvest timber in forest areas that would otherwise not be profitable to harvest. The increased profitability of timber harvesting would also undermine the incentive for forest landowners to maintain or place into conservation easements forest areas that are valued for their ecosystem services and wildlife habitat.

14. An increase in the demand for forest biomass as fuel would lead to more intensive and damaging forest harvesting practices. Because forest biomass would have an increased economic value, timber operations would have increased incentive to extract available forest biomass. This includes the collection and removal of forest components—understory and non-merchantable trees, ground vegetation, litter, and dead wood—that would not otherwise be removed from the forest. Biomass harvesting can lead to the removal of forest components important to wildlife habitat, nutrient depletion and disruption of the forest carbon cycle, and increased soil disturbance and erosion.

15. An increased incentive to remove forest biomass would also encourage more intensive forest harvest methods, including forest clearcutting, over less damaging harvest methods. Forest clearcutting results in the greatest

amount of harvest debris, and facilitates the removal of biomass from the forest floor. Forest clearcutting and other even-age management methods cause damage to forest ecosystems, and degrade and fragment wildlife habitat, affecting wildlife distribution and numbers.

16. Logging can have impacts on wildlife populations far beyond the boundaries of the harvest activities. Thus, an increase in the intensity and expanse of forest harvest practices, including forest clearcutting, and the depletion of forest structure and nutrients due to the collection of biomass fuels, would impact wildlife throughout the forest. This would impede efforts to protect and conserve wildlife populations, efforts I support and advocate for. This would also impair my ability to observe and enjoy wildlife species. Similarly, increased logging on private forest lands would affect wildlife populations on adjacent public lands where I recreate and watch wildlife.

17. An increase in high-intensity logging would greatly impair my ability to use and enjoy forest areas that I rely on for recreation, wildlife watching, and opportunities to observe intact forest ecosystems. High-intensity logging decreases the ecological value of a forest, removing the forest structure and associated wildlife that I cherish and enjoy. Hiking and watching wildlife in forest clearcuts is neither enjoyable nor rewarding. Furthermore, hiking and watching wildlife near forest areas that have been clearcut can be significantly impaired, as the

impacts to wildlife populations decrease opportunities for viewing and enjoying wildlife throughout the forest.

18. I am aware that a new biomass facility recently began operations in Amador County. Given the incentives created by EPA's exemption from the Clean Air Act for biomass facilities, I am concerned that additional, similar facilities will be built in the same general area, all of which will create an increased demand for biomass fuel and additional high-intensity logging in the Central Sierra Nevada. An increase in high-intensity logging in the forests of California to fuel biomass energy generation will reduce opportunities for me to enjoy intact forest areas and the associated wildlife. An increase in the harvest of biomass fuel in the public and private forest lands of Amador, Calaveras, and El Dorado counties in the Sierra Nevada of California would impede my ability to enjoy intact forest and wildlife watching in the Eldorado National Forest, and particularly on hiking trails along the Mokelumne River, where I regularly visit to observe intact forest and wildlife species such as pileated woodpeckers and chickadees, red squirrels and long-tail weasels. An increase in the harvest of biomass fuels from lands on the Tahoe and Stanislaus National Forests would similarly impede my ability to enjoy intact forest and wildlife watching in those areas.

19. The biomass deferral rule would affect my interest in native species and their habitats. By not requiring biomass energy generation to account for the

greenhouse gas emissions associated with the harvest or combustion of the fuel, the biomass deferral rule would encourage increased greenhouse gas emissions from these sources. The resulting emissions will contribute to global climate change, and the associated impacts to native ecosystems, native wildlife and their habitats, and human health and well-being.

20. I have spent much time reviewing timber harvest plans and reports of their environmental impacts, and providing comments regarding the impacts of logging on wildlife, habitat, forest ecosystems, and the climate. This is a significant portion of my work on a regular basis, and will continue to be an important component of my work for the foreseeable future. The biomass deferral rule would be cited as justification for timber companies not to disclose the environmental impacts of timber projects. Environmental reviews of timber projects have previously cited statements in the EPA's U.S. Greenhouse Gas Inventory Report as justification for failing to disclose or fully analyze the greenhouse gas emissions of logging operations. Similarly, logging projects may refer to the biomass deferral rule as an excuse not to disclose the greenhouse gas impacts related to the harvest, collection, decomposition, combustion, and transport of woody biomass related to a biomass energy generation facility. This would impair my ability to understand the impacts of the project and to advocate effectively for the mitigation of those impacts.

21. By exempting biomass energy generation from the controls of the Clean Air Act, this would impair both my ability to review these projects and to advocate for the mitigation of their environmental impacts, and would harm my interest in reducing threats to ecosystems and species imperiled by climate change.

22. In sum, based on my education, knowledge, and professional experience, I believe that revising the EPA biomass deferral rule would have significant and adverse affects on the forest ecosystems, and on the wildlife and habitat that I care deeply about. This would injure my professional and recreational interests in protecting, conserving, and enjoying forest ecosystems, forest species, imperiled wildlife, and the natural environment.

I declare under penalty of perjury that the foregoing is true and correct and was executed on March 12, 2012, at Sacramento, California.

/s/ Brian Nowicki

Brian Nowicki

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, *et al.*,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
(Consolidated with 11-1285,
11-1328, and 11-1336)

DECLARATION OF ANDREW JOHN PLANTINGA

I, Andrew John Plantinga, declare as follows:

1. I earned a Ph.D degree in Agricultural and Resource Economics from the University of California-Berkeley in 1995 and an M.S. degree in forestry from the University of Wisconsin-Madison in 1988. I am a professor of Agricultural and Resource Economics at Oregon State University, a position I have held since 2001. Prior to that time (1995-2000), I was a professor of Resource Economics and Policy at the University of Maine. I have also held

positions with the U.S. Forest Service and Resources for the Future. I serve on the board of directors for the Association of Environmental and Resource Economists and on the editorial council of the *Journal of Environmental Economics and Management*, the leading journal in environmental economics.

2. I have authored or co-authored 50 peer-reviewed journal articles and many other research reports. My research is on the economics of land, with emphasis on forestry, climate change, biodiversity, and other topics. I have published scholarly articles on the economics of forest management, policies designed to offset CO₂ emissions, and regulation of wood products industries.
3. In preparing this declaration, I reviewed fact sheets from energy companies on existing biomass facilities in the eastern U.S. in addition to documents pertaining to planned future facilities. I also read a report by Wiedenbeck et al. (2011) on biomass energy production in the northeastern U.S.
4. In the 13 northeastern states, there are 323 woody biomass conversion facilities currently in operation (Wiedenbeck et al. 2011). At capacity, these facilities consume 40.6 million tons of wood per year. Currently, wood

chips produced from whole trees are one of the sources for biomass used in these facilities. The Suez Energy Company, for example, operates four power stations in the New England that use whole-tree chips.

5. In the 13 northeastern states, another 24 woody biomass conversion facilities are planned (Wiedenbeck et al. 2011) that would increase the total amount of wood consumption, at capacity, to 53.6 million tons. It is highly likely that future consumption of whole-tree chips will increase as additional biomass facilities are put into operation. Energy companies in New Hampshire and Ohio have stated that they plan to use whole-tree chips as the primary fuel source in new facilities.

6. Woody biomass conversion facilities are a source of CO₂ emissions. Regulation of these emissions will increase the cost of operating such facilities. This is an implication of the Le Chatelier Principle in economics. It follows that if operating costs are higher, some of the existing and planned biomass facilities may be uneconomical to operate. Thus, exemption of biomass facilities from emissions regulations increases the likelihood that these facilities will continue to operate and that new facilities will be built in the future.

7. If current demand for whole trees is unchanged in the future, the construction of new biomass facilities would put upward pressure on prices for whole trees. If there are non-zero regeneration costs, the economically optimal rotation length for a forest stand depends on the price level for timber. Discrete increases in the timber price, which could occur as each new facility is put into operation, shorten the optimal rotation length. In this case, the construction of new biomass facilities would result in trees being harvested sooner than would otherwise be the case. Price increases could also result in harvesting of trees that otherwise would not have been harvested.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and professional expertise.

Executed in Corvallis, Oregon, on March 14, 2012

/s/ Andrew John Plantinga

Andrew John Plantinga, Ph.D

Citations

Wiedenbeck, J., Ray, C.D., and L. Ma. 2011. "A Synopsis of the Wood-Based Energy and Heating Industries in the Northeastern United States with

Consideration of Potential Impacts on Future Demand for Roundwood.” U.S. Department of Agriculture, Forest Service, GTR-NRS-P-78.

ANDREW J. PLANTINGA

Department of Agricultural and Resource Economics
Oregon State University
Corvallis, OR 97331
(541) 737-1423 (o)
(541) 737-1441 (f)
E-mail: plantinga@oregonstate.edu

APPOINTMENTS:

Professor, Department of Agricultural and Resource Economics, Oregon State University (2008-present), Associate Professor (2004-2008), Assistant Professor (2001-2004). Research in the field of environmental and resource economics, with an emphasis on land use, forestry, climate change, and nonmarket valuation. Undergraduate and graduate courses in natural resource and environmental economics.

Visiting Researcher, l'Institut Nationale de la Recherche Agronomique, Dijon, France (2008-2009)

Assistant Professor, Department of Resource Economics and Policy, University of Maine (1995-2000).

Graduate Student Instructor, University of California-Berkeley (1993-1995).

Consultant, U.S.D.A. Forest Service, Northeast Forest Experiment Station, Radnor, PA (1991-1993).

Research Assistant, Resources for the Future, Energy and Natural Resources Division, Washington, DC (1990).

Forester, U.S.D.A. Forest Service, Forest Products Laboratory, Madison, WI (1988-1989).

Research Assistant, University of Wisconsin-Madison (1987-1988).

EDUCATION:

University of California-Berkeley.

PhD in Agricultural and Resource Economics (June 1995).

Fields: Natural Resource Economics (major), Game Theory and Industrial Organization (minor).

Dissertation Topic: The Allocation of Land to Forestry and Agriculture.

University of Wisconsin-Madison.

Masters of Science in Forestry (August 1988).

Grinnell College, Grinnell, Iowa.

Bachelor of Arts in English (May 1986).

HONORS:

Outstanding Research Publication in Agricultural Economics, Western Agricultural Economics Association, 2003.

Research Fellow, Rural Development Research Consortium, University of California-Berkeley, appointed 2003.

S.G. Hall Fellowship in Forest Economics, University of California-Berkeley (1992-

1995).

University Fellowship, University of Wisconsin-Madison (1987-1988).

Rosenfield Scholarship, Grinnell College (1985-1986).

PUBLICATIONS:

Journal Articles

Radeloff, V. C., Nelson, E., Plantinga, A.J., Lewis, D.J., Helmers, D., Lawler, J.J., Withey, J.C., Beaudry, F., Martinuzzi, S., Butsic, V., Lonsdorf, E., White, D., and S. Polasky. 2011. Economic-based Projections of Future Land Use under Alternative Economic Policy Scenarios in the Conterminous U.S. *Ecological Applications*, forthcoming.

Jaeger, W.K., Plantinga, A.J., and C. Grout. 2011. How has Oregon's Land Use Planning System Affected Property Values? *Land Use Policy* 29:62-72.

Cross, R., Plantinga, A.J., and R.N. Stavins. 2011. The Value of Terroir: Hedonic Estimation of Vineyard Sale Prices. *Journal of Wine Economics* 6(1):1-14.

Haim, D., Alig, R.J., Plantinga, A.J., and B. Sohngen. 2011. Climate Change and Future Land Use in the United States: An Economic Approach. *Climate Change Economics* 2(1): 27-51.

Cross, R., Plantinga, A.J., and R.N. Stavins. 2011. What is the Value of Terroir? *American Economic Review Papers and Proceedings* 101(3): 152-56.

Grout, C.A., Jaeger, W.K., and A.J. Plantinga. 2011. Land-Use Regulations and Property Values in Portland, Oregon: A Regression Discontinuity Design Approach. *Regional Science and Urban Economics* 41:98-107.

Lewis, D.J., Plantinga, A.J., Nelson, E., and S. Polasky. 2011. The Efficiency of Voluntary Incentive Policies for Preventing Biodiversity Loss. *Resource and Energy Economics* 33(1):192-211.

Eichman, H., Hunt, G.L., Kerkvliet, J., and A.J. Plantinga. 2010. Local Employment Growth, Migration, and Public Land Policy: Evidence from the Northwest Forest Plan. *Journal of Agricultural and Resource Economics* 35(2):316-333.

McGough, B., Plantinga, A.J., and C. Costello. 2009. Optimally Managing a Stochastic Renewable Resource under General Economic Conditions. *The B.E. Journal of Economic Analysis and Policy*, Vol. 9, Iss. 1 (Contributions), Article 56.

Lewis, D.J., Plantinga, A.J., and J. Wu. 2009. Targeting Incentives to Reduce Habitat Fragmentation. *American Journal of Agricultural Economics* 91(4):1080-1096.

Lubowski, R.N., Plantinga, A.J., and R.N. Stavins. 2008. What Drives Land-Use Changes in the United States? A National Analysis of Landowner Decisions. *Land Economics* 84(4):529-550.

Nelson, E., Polasky, S., Lewis, D.J., Plantinga, A.J., Lonsdorf, E., White, D., Bael, D., and J.J. Lawler. 2008. Efficiency of Incentives to Jointly Increase Carbon Sequestration and Species Conservation on a Landscape. *Proceedings of the National Academy of Sciences* 105(28):9471-6.

Plantinga, A.J., and S. Bernell. 2007. The Association Between Urban Sprawl and

Obesity: Is it a Two-Way Street? *Journal of Regional Science* 47(5):857-879.

- Lewis, D.J., and A.J. Plantinga. 2007. Policies for Habitat Fragmentation: Combining Econometrics with GIS-Based Landscape Simulations. *Land Economics* 83(2):109-127.
- Lubowski, R.N., Plantinga, A.J., and R.N. Stavins. 2006. Land-Use Change and Carbon Sinks: Econometric Estimation of the Carbon Sequestration Supply Function. *Journal of Environmental Economics and Management* 51(2):135-52.
- Plantinga, A.J., and S. Bernell. 2005. A Spatial Economic Analysis of Urban Land Use and Obesity. *Journal of Regional Science* 45(3):473-492.
- van 't Veld, K., and A. Plantinga. 2005. Carbon Sequestration or Abatement? The Effect of Rising Carbon Prices on the Optimal Portfolio of Greenhouse-Gas Mitigation Strategies. *Journal of Environmental Economics and Management* 50(1):59-81.
- Alig, R.J., and A.J. Plantinga. 2004. Future Forestland Area: Impacts from Population Growth and Other Factors that Affect Land Values. *Journal of Forestry* 102(8):19-24.
- Scrogin, D., Boyle, K., Parsons, G., and A.J. Plantinga. 2004. Effects of Regulations on Expected Catch, Expected Harvest, and Site Choice of Recreational Anglers. *American Journal of Agricultural Economics* 86(4):963-974.
- McGough, B., Plantinga, A.J., and B. Provencher. 2004. The Dynamic Behavior of Efficient Timber Prices. *Land Economics* 80(1):95-108.
- Wu, J., Adams, R.M., and A.J. Plantinga. 2004. Amenities in an Urban Equilibrium Model: Residential Development in Portland, Oregon. *Land Economics* 80(1):19-32.
- Wu, J., and A.J. Plantinga. 2003. The Influence of Public Open Space on Urban Spatial Structure. *Journal of Environmental Economics and Management* 46(2):288-309.
- Lewis, D.J., Hunt, G.L., and A.J. Plantinga. 2003. Does Public Lands Policy Affect Local Wage Growth? *Growth and Change* 34(1):64-86.
- Plantinga, A.J., and J. Wu. 2003. Co-Benefits from Carbon Sequestration in Forests: Evaluating Reductions in Agricultural Externalities from an Afforestation Policy in Wisconsin. *Land Economics* 79(1):74-85.
- Plantinga, A.J., Lubowski, R.N., and R.N. Stavins. 2002. The Effects of Potential Land Development on Agricultural Land Prices. *Journal of Urban Economics* 52(3):561-581.
- Plantinga, A.J., and S. Ahn. 2002. Efficient Policies for Environmental Protection: An Econometric Analysis of Incentives for Land Conversion and Retention. *Journal of Agricultural and Resource Economics* 27(1):128-45.
- Lewis, D.J., Hunt, G.L., and A.J. Plantinga. 2002. Public Conservation Land and Employment Growth in the Northern Forest Region. *Land Economics* 78(2):245-59.
- Matthews, S., O'Connor, R., and A.J. Plantinga. 2002. Quantifying the Impacts on

Biodiversity of Policies for Carbon Sequestration in Forests. *Ecological Economics* 40(1):71-87.

Ahn, S., Plantinga, A.J., and R.J. Alig. 2002. Determinants and Projections of Land Use in the South Central United States. *Southern Journal of Applied Forestry* 26(2):78-84.

Plantinga, A.J., and D.J. Miller. 2001. Agricultural Land Values and the Value of Rights to Future Land Development. *Land Economics* 77(1):56-67.

Plantinga, A.J., and T. Mauldin. 2001. A Method for Estimating the Cost of CO₂ Mitigation Through Afforestation. *Climatic Change* 49:21-40.

Plantinga, A.J., Alig, R., and H. Cheng. 2001. The Supply of Land from Conservation Uses: Evidence from the Conservation Reserve Program. *Resources, Conservation and Recycling* 31:199-215.

Parsons, G.R., Plantinga, A.J., and K.J. Boyle. 2000. Welfare Estimation with Narrow Choice Sets in Random Utility Models of Recreation Demand. *Land Economics* 76(1):86-99.

Ahn, S., Plantinga, A.J., and R.J. Alig. 2000. Predicting Future Forest Land Area: A Comparison of Econometric Approaches. *Forest Science* 46(3):363-76.

Plantinga, A.J., Mauldin, T., and D.J. Miller. 1999. An Econometric Analysis of the Costs of Sequestering Carbon in Forests. *American Journal of Agricultural Economics* 81(November):812-24.

Miller, D.J., and A.J. Plantinga. 1999. Modeling Land Use Decisions with Aggregate Data. *American Journal of Agricultural Economics* 81(February):180-194.

Mauldin, T.E., Plantinga, A.J., and R.J. Alig. 1999. Determinants of Land Use in Maine with Projections to 2050. *Northern Journal of Applied Forestry* 16(2):82-88.

Plantinga, A.J. 1999. Technological Change is Shaping Operating Strategy in the Maine Pulp-and-Paper Industry. *Maine Management Review* 1(1):16-24.

Plantinga, A.J. 1998. The Optimal Timber Rotation: An Option Value Approach. *Forest Science* 44(2):192-202.

Plantinga, A.J. 1997. The Cost of Carbon Sequestration in Forests: A Positive Analysis. *Critical Reviews in Environmental Science and Technology* 27:S269-S268.

Parks, P.J., Hall, D.O., Kristrom, B., Masera, O.R., Moulton, R.J., Plantinga, A.J., Swisher, J.N., and J.K. Winjum. 1997. An Economic Approach to Planting Trees for Carbon Storage. *Critical Reviews in Environmental Science and Technology* 27:S9-S22.

Plantinga, A.J. 1996. The Effect of Agricultural Policies on Land Use and Environmental Quality. *American Journal of Agricultural Economics* 78(November):1082-1091.

Heath, L.S., Birdsey, R.A., Row, C., and A.J. Plantinga. 1996. Carbon Pools and Fluxes in U.S. Forest Products. *NATO ASI Series I*(40):271-78.

- Plantinga, A.J., and R.A. Birdsey. 1994. Optimal Forest Stand Management When Benefits are Derived from Carbon. *Natural Resource Modeling* 8(4): 373-387.
- Plantinga, A.J., and R.A. Birdsey. 1993. Carbon Fluxes Resulting from U.S. Private Timberland Management. *Climatic Change* 23: 37-53.
- Birdsey, R.A., Plantinga, A.J., and L.S. Heath. 1993. Past and Prospective Carbon Storage in United States Forests. *Journal of Forest Ecology and Management* 58: 33-40.
- Morrisette, P.M., Darmstadter, J., Plantinga, A.J., and M.A. Toman. Prospects for a Global Greenhouse Gas Accord: Lessons from Other Agreements. *Global Environmental Change*, June: 209-223.
- Morrisette, P.M., and A.J. Plantinga. 1991. Global Warming: A Policy Review. *Policy Studies Journal* 19(2): 163-172.
- Rosenberg, N., Ince, P., Skog, K.E., and A. Plantinga. 1990. Understanding the Adoption of New Technologies in the Forest Products Industry. *Forest Products Journal* 40(10): 15-22.
- Plantinga, A.J., Buongiorno, J., and R.J. Alig. 1990. Determinants of Changes in Non-Industrial Private Timberland Ownership in the United States. *Journal of World Forest Resource Management* 5: 29-46.

Other Publications

- Conte, M., Nelson, E., Carney, K., Fissore, C., Olwero, N., Plantinga, A.J., Stanley, B., and T. Ricketts. 2011. Terrestrial Carbon Sequestration and Storage. In: P. Kareiva, H. Tallis, T.H. Ricketts, G.C. Daily, and S. Polasky, eds., *Natural Capital: Theory and Practice of Mapping Ecosystem Service*. Oxford University Press.
- Dempsey, J., Plantinga, A.J., and R.J. Alig. 2010. What Explains Differences in the Costs of Carbon Sequestration in Forests? A Review of Alternative Cost Estimation Methodologies. In: R.J. Alig, tech. coord., *Economic Modeling of Effects of Climate Change on the Forest Sector and Mitigation Options: A Compendium of Briefing Papers*. Gen. Tech. Rep. PNW-GTR-833. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- Alig, R.J., Plantinga, A.J., Haim, D., and M. Todd. 2010. Area Changes in U.S. Forests and Other Major Land Uses, 1982 to 2002, with Projections to 2062. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-815.
- Plantinga, A.J., and K.R. Richards. 2010. International Forest Carbon Sequestration in a Post-Kyoto Agreement. In: Aldy, J.E., and R.N. Stavins, eds. *Post-Kyoto International Climate Policy*. Cambridge University Press.
- Andersson, K.P., Plantinga, A.J., and K.R. Richards. 2009. The National Inventory Approach for International Forest-carbon Sequestration Management. In: Helm, D., and C. Hepburn, eds. *The Economics and Politics of Climate Change*. Oxford University Press.
- Jaeger, W.K., Grout, C., and A.J. Plantinga. 2008. Evidence of the Effects of Oregon's Land Use Planning System on Land Prices. Cambridge, MA:

Lincoln Institute of Land Policy Working Paper WPO8WJ1.

- Alig, R.J., and A. Plantinga. 2007. Methods for Projecting Areas of Private Timberland and Forest Cover Types. In Adams, D.M., and R.W. Haynes, *Resource and Market Projections for Forest Policy Development: Twenty-Five Years of Experience with the US RPA Timber Assessment*, Springer.
- Plantinga, A.J., and S. Bernell. 2007. Can Urban Planning Reduce Obesity? The Role of Self-Selection in Explaining the Link between Weight and Urban Sprawl. AAEA Session paper, 2007 ASSA Meeting, published in *Review of Agricultural Economics* 29(3).
- Plantinga, A.J. 2007. The Economics of Conservation Easements. In Ingram, G.K., and Y.-H. Hong, *Land Policies and their Outcomes*, Proceedings of the 2006 Land Policy Conference, Lincoln Institute of Land Policy.
- Jaeger, W.K., and A.J. Plantinga. 2007. How Have Land-Use Regulations Affected Property Values in Oregon? Oregon State University Extension Service, Special Report 1077, June.
- Jaeger, W.K., and A.J. Plantinga. 2007. The Economics Behind Measure 37. Oregon State University, Extension Service publication EM 8925, February.
- Plantinga, A.J., Alig, R.J., Eichman, H., and D.J. Lewis. 2007. Linking Land-Use Projections and Forest Fragmentation Analysis. Res. Pap. PNW-RP-570. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Station. 41 p.
- Bell, K.P., Boyle, K.J., Plantinga, A.J., Rubin, J., and M.F. Teisl. 2006. Objectives and Perspectives. In Bell, K.P., Boyle, K.J., and Rubin, J., eds., *Economics of Rural Land-Use Change*. Ashgate Publishing.
- Segerson, K., Plantinga, A.J., and E.G. Irwin. 2006. Theoretical Background. In Bell, K.P., Boyle, K.J., and Rubin, J., eds., *Economics of Rural Land-Use Change*. Ashgate Publishing.
- Plantinga, A.J., and E.G. Irwin. 2006. Overview of Empirical Methods. In Bell, K.P., Boyle, K.J., and Rubin, J., eds., *Economics of Rural Land-Use Change*. Ashgate Publishing.
- Plantinga, A.J. 2006. An Application of the Land-Use Shares Model. In Bell, K.P., Boyle, K.J., and Rubin, J., eds., *Economics of Rural Land-Use Change*. Ashgate Publishing.
- Lewis, D.J., and A.J. Plantinga. 2005. The Role of Conservation Lands in Regional Economies: The Case of the Northern Forest Region. In Gustanski, J.A., Hollenhorst, S., Harris, C., and Brabec, E., eds., *Advancing the Land Conservation Debate in the New Millennium: Economics, Technology and Policy*, Island Press.
- Lewis, David J., and Andrew J. Plantinga. 2005. "Research Methods to Address the Economics of Forest Habitat Fragmentation." In: Robert L. Deal and Seth M. White, eds., *Understanding Key Issues of Sustainable Wood Production in the Pacific Northwest*, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-626, pp. 36–41.

- Miller, D., and A.J. Plantinga. 2004. Modeling Non-Stationary Markov Chains with Aggregate Data. 2003 Proceedings of the American Statistical Association, Business and Economic Statistics Section [CD-ROM], Alexandria, VA: American Statistical Association: pp. 290-296.
- Alig, R.J., Plantinga, A.J., Ahn, S., and J.D. Kline. 2003. Land Use Changes Involving Forestry in the United States: 1952 to 1997, with Projections to 2050. General Technical Report PNW-GTR-587. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 92 p.
- Ahn, S., Plantinga, A.J., and R.J. Alig. 2001. Historical Trends and Projections of Land Use for the South-Central United States. U.S. Forest Service, Pacific Northwest Research Station, Research Paper PNW-RP-530.
- Ahn, S., Abt, R.C., and A.J. Plantinga. 2001. Land Use in the South Central United States: A Further Investigation on Land Use Practices by Forestland Ownership. *Forest Law and Economics*. D. Zhang and S. Mehmood, eds., pp. 165-71. Southern Forest Economics Workgroup.
- Plantinga, A.J., Allen, T.G., and C. Bakker. 2001. An Investigation into the Causes of Urban Sprawl in Maine. University of Maine, Department of Resource Economics and Policy, Staff Paper REP-501.
- Lewis, D., and A.J. Plantinga. 2001. Public Conservation Land and Economic Growth in the Northern Forest Region. Maine Agricultural and Forest Experiment Station Miscellaneous Publication 748.
- Teisl, M.F., Plantinga, A.J., Allen, T.G., and D. Field. 2001. Sustainable Forestry Certification: Would a Tax/Subsidy Program Work? *Choices*. Maine Center for Economic Policy.
- Plantinga, A.J. 2000. Conservation Easements. *AERE Newsletter* 20(2):11-14.
- Cronan, C., Mageean, D., Plantinga, A.J., and J. Connors. 2000. State of Maine Climate Change Action Plan. Maine State Planning Office and the University of Maine.
- Plantinga, A.J. 1999. The Economics of Land Use: A Bibliography. Maine Agricultural and Forest Experiment Station Miscellaneous Publication 744.
- Plantinga, A.J. 1999. Optimal Harvesting Policies with Stationary and Non-Stationary Prices: An Option Value Approach. In Abildtrup, J., Helles, F., Holten-Andersen, P., Larsen, J.F., and B.J. Thorsen, eds. *Modern Time Series Analysis in Forest Products Markets*. Dordrecht: Kluwer Academic Publishers.
- Allen, T.G., and A.J. Plantinga. 1999. Investigations into the Potential of Measuring Biodiversity in Maine's Forests with Forest Inventory and Analysis (FIA) Data. Maine Agricultural and Forest Experiment Station Technical Bulletin 171.
- Plantinga, A.J., Mauldin, T., and R.J. Alig. 1999. Land Use in Maine: Determinants of Past Trends and Projections of Future Changes. U.S. Forest Service, Pacific Northwest Station Research Paper PNW-RP-511.
- Mauldin, T., Plantinga, A.J., and R.J. Alig. 1999. Land Use in the Lake States Regions: Analysis of Past Trends and Projections of Future Changes. U.S. Forest Service, Pacific Northwest Station Research Paper PNW-RP-519.

- Plantinga, A.J., Alig, R., and H. Cheng. 1999. Supply Functions for Conservation Lands: Estimates for U.S. Regions. University of Maine, Department of Resource Economics and Policy Staff Paper 481.
- Plantinga, A.J., and D.J. Miller. 1999. Agricultural Land Values and Future Land Development. Proceedings of the Keep America Growing Conference, Philadelphia, PA June 6-9, 1999.
- Mauldin, T., and A.J. Plantinga. 1998. An Econometric Analysis of the Costs of Reducing Atmospheric Carbon Dioxide Concentrations Through Afforestation. Proceedings of the World Congress of Environmental and Resource Economics, Venice, Italy, June 25-27, 1998.
- Plantinga, A.J. 1998. Land Use Projections for the United States South: Preliminary Results. University of Maine, Department of Resource Economics and Policy Staff Paper 480.
- Lindahl, J.B., and A.J. Plantinga. 1998. Input Use in Maine's Wood Products Industry. Maine Agricultural and Forest Experiment Station Miscellaneous Publication 740.
- Lindahl, J.B., and A.J. Plantinga. 1997. Time-Series Analysis of Maine Stumpage Prices. Maine Agricultural and Forest Experiment Station Technical Bulletin 168.
- Lindahl, J.B. and A.J. Plantinga. 1997. Forecasts of Maine Stumpage Prices: Results and Applications to Timber Harvesting. REP Staff Paper 474.
- Plantinga, A.J., and D.J. Miller. 1997. Maximum Entropy Estimation of Land Use Shares and Transitions. Maine Agricultural and Forest Experiment Station Technical Bulletin 166.
- Plantinga, A.J. 1996. Forestry Investments and Option Values: Theory and Estimation. Maine Agricultural and Forest Experiment Station Technical Bulletin 161.
- Morrisette, P.M., and A.J. Plantinga. 1991. The Global Warming Issue: Viewpoints of Different Countries. *Resources* 103: 2-6.
- Darmstadter, J., and A.J. Plantinga. 1991. The Economic Cost of CO₂ Mitigation: A Review of Estimates for Selected World Regions, with a Contribution on Forestry by Andrew Plantinga. Discussion Paper ENR91-06. Washington, DC: Resources for the Future.
- Morrisette, P.M., Darmstadter, J., Plantinga, A.J., and M.A. Toman. 1990. Lessons from Other International Agreements for a Global CO₂ Accord. Discussion Paper ENR91-03. Washington, DC: Resources for the Future.
- Morrisette, P.M., and A.J. Plantinga. 1990. How the CO₂ Issue is Viewed in Different Countries. Discussion Paper ENR91-02. Washington, DC: Resources for the Future.
- Lange, W.J., Skog, K.E., Plantinga, A.J., and H. Spelter. 1990. Do Changes in Timber Resources Induce Technological Change? In: Forestry on the Frontier: Proceedings of the National Society of American Foresters Convention, Spokane, WA, September 1989.

Plantinga, A., Buongiorno, J., Alig, R.J., and J.S. Spencer, Jr. 1989. Timberland Area Change in the Lake States: Past Trends, Causes, and Projections. Res. Pap. NC-287. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 17 p.

Plantinga, A.J., Lange, W.J., and K.E. Skog. 1989. Capacity Change in the Forest Products Industry: An Evaluation of Modeling Approaches. In: Proceedings of the Forest Sector Analysis Symposium, Soderfors, Sweden, August 1989.

GRANTS:

Graduate Education in the Economics of Mitigating and Adapting to Climate Change: Evaluating Tradeoffs, Resiliency and Uncertainty Using an Interdisciplinary Platform (2012-2014). Investigators: Susan Capalbo, Munisamy Gopinath, Andrew Plantinga, and Bruce Weber. Sponsor: U.S. Department of Agriculture, NIFA. Amount: \$241,000.

Economic Research on Landscape Assessment, Modeling, and Management (2011-2012). Investigators: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$20,015.

Collaborative Research WSC Category 2: Anticipating water scarcity and informing integrative water system response in the Pacific Northwest (2010-2015). Investigators: Jeff McDonnell, Philip Mote, Andrew Plantinga, Barbara Bond, John Bolte. Sponsor: National Science Foundation. Amount: \$4,348,693

Predictions of Econometric and Programming Models of Land-Use Change (2010-2012). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$35,000.

Incentives to Promote Afforestation and Reduce Deforestation: Policy Analysis for Climate Change Mitigation (2009-2012). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$60,000.

Collaborative Research: Integrated Dynamic Modeling of Ecosystem Services – Incentive-Based Policies, Land-Use Decisions, and Ecological Outcomes (2008 - 2011). Investigators: S. Polasky, J. Lawler, E. Lonsdorf, A. Plantinga, V. Radeloff, D. Lewis, D. White. Sponsor: National Science Foundation. Amount: \$1,200,000.

Implications of IPCC Population and Income Scenarios for Land-Use Change in the United States (2008-2011). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$71,358.

Establishing Linkages between Land-Use Projections and the U.S. Forest Assessment System (2008-2010). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$36,000.

Interpretation, Documentation, and Presentation of 2010 Land Projection Results and Scenario Analysis (2007-2010). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$35,847.

National-level Projections of Land Conditions with Applications to Impacts of Climate Change (2007-2010). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$38,000.

The Effect of Land Use Regulations on Land Prices: A Case Study from Oregon (2007). Investigators: William Jaeger and Andrew Plantinga. Sponsor: Lincoln

Institute of Land Policy. Amount: \$10,000.

Oregon Land Value Study (2006-2007). Investigators: Andrew Plantinga and William Jaeger. Sponsor: Oregon Community Foundation. Amount: \$85,000.

Economic Assessment of Forest Carbon Sequestration in the U.S. Mountain Region (2005-2009). Investigator: Andrew Plantinga. Sponsor: Montana State University/U.S. Department of Energy. Amount: \$100,000.

Land Condition Projections and Analyses for the 2010 RPA Assessment (2005-2006). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$69,000.

Integration of Land-Use Analyses with Renewable Resource Assessments: A Problem Analysis (2004-2006). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$30,000.

Projecting Forest Fragmentation in the Western United States (2004-2006). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$15,000.

Projecting Land-Use Change in the United States for the RPA (Resource Planning Act) Update of the 2000 RPA Assessment (2003-2006). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$25,698.

Economic and Policy Dimensions of Forest Fragmentation (2003-2005). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$20,000.

Land-Use Policies to Address the Fragmentation of Forest Habitat for Wildlife (2003-2005). Investigators: Andrew Plantinga and Raymond O'Connor. Sponsor: U.S. Forest Service, Pacific Northwest Research Station. Amount: \$27,000.

The Effect of Local Land Use Regulations on Farmland Retention (2001- 2003). Investigators: JunJie Wu and Andrew Plantinga. Sponsor: National Research Initiative Competitive Grants Program. Amount: \$105,000.

Impacts of Large-Scale Afforestation Programs on Wildlife Habitat and Populations (2000-2002). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service, Pacific Northwest Station. Amount: \$25,200.

The Economics of Rural Land-Use Change (1999). Investigators: Kevin Boyle, Andrew Plantinga, Jonathan Rubin, Mario Teisl. Sponsor: Maine Agricultural and Forest Experiment Station. Amount: \$11,000.

Land Use Change and Carbon Sinks: An Econometric Estimation of the Carbon Sequestration Supply Function (1998-2000). Investigators: Robert Stavins and Andrew Plantinga. Sponsor: U.S. Department of Energy. Amount: \$200,000.

A Systems-Based Analysis of Land Use Change (1998-2000). Investigator: Andrew Plantinga. Sponsor: Fund for Rural America. Amount: \$165,000.

An Agricultural Systems Approach to Estimating Land Use Transitions (1997-1999). Investigator: Andrew Plantinga. Sponsor: National Research Initiative Competitive Grants Program. Amount: \$122,975.

Land use projections for the Lake States and Maine (1997-2000). Investigator: Andrew Plantinga. Sponsor: U.S. Forest Service Pacific Northwest Station. Amount: \$50,829.

Using Forest Inventory and Analysis (FIA) Data to Develop Measures of Biodiversity in Maine's Forests (1998). Investigator: Andrew Plantinga. Sponsor: Maine Forest Service. Amount: \$18,747.

One-Time Funding Proposal for Lecture Series (1996). Investigators: Andrew Plantinga and Kevin Boyle. Sponsor: Maine Agricultural and Forest Experiment Station. Amount: \$8000.

Maximum Entropy Estimation of Land Use Transition Probabilities (1996). Investigator: Andrew Plantinga. Sponsor: University of Maine, Summer Faculty Research Fund Award. Amount: \$5000.

**SELECTED
PRESENTATIONS:**

The Value of Terroir: Hedonic Estimation of Vineyard Sale Prices, University of Puget Sound, Department of Economics, March 2011.

Landscape Simulations with Econometric Land-Use Models. Invited speaker at the workshop "Scale, location, and spatial interactions in the economic analysis of multi-functional natural resources: Lessons for forestry," Nancy, France, September 2010.

Land-Use Planning in Oregon: How Have Property Values Been Affected? Invited speaker at the Alberta Agricultural Economics Association meeting, Red Deer, Alberta, May 2010

The Efficiency of Voluntary Incentive Policies for Preventing Biodiversity Loss, Central Florida University, Department of Economics, February 2008; University of Wyoming, Department of Economics, May 2008; INRA-Paris, December 2008; INRA-Dijon, January 2009; GATE (Lyon), January 2009, INRA-Toulouse, March 2009.

Incentives for Reducing Habitat Fragmentation and Enhancing Carbon Sequestration, U.S. Environmental Protection Agency, Corvallis, August 2007.

Land-Use Change and Carbon Sequestration, Keynote Address at the Workshop on Carbon Sequestration in Agriculture and Forestry, Thessaloniki, Greece, June 27, 2007.

Targeting Incentives to Reduce Habitat Fragmentation, University of California, Santa Barbara, Donald Bren School of Environmental Science and Management, March 2007.

Optimal Reduction of Habitat Fragmentation with Incentive-Based Policies, Iowa State University, Department of Economics, February 2007.

Planting Trees to Curb Global Warming: Science, Economics, and Recent Policy Developments, Grinnell College, Department of Economics, February 2007.

Are Biodiversity Protections a Boon or Bane for Local Economies? Evidence from the Northwest Forest Plan, Resources for the Future, November 2006.

Land-Use Change and Carbon Sinks: Econometric Estimation of the Carbon Sequestration Supply Function, Stanford University, Department of Economics, October 2005.

The Economic Consequences of Reserving Federal Land for Biodiversity Protection in the U.S. Pacific Northwest, U.S. Department of Agriculture, Economic Research Service, October 2004.

Urban Sprawl and Obesity, Portland State University, Department of Economics; Harvard University, John F. Kennedy School of Government; University of California-Irvine, Graduate School of Management and Department of Planning, Policy, and Design; Seattle University, Department of Economics and Finance, October and November 2003.

The Dynamic Behavior of Efficient Timber Prices, University of Minnesota, Department of Applied Economics, March 2003.

Internal Consistency in Models of Optimal Resource Use Under Uncertainty, University of California-Davis, Department of Agricultural and Resource Economics Seminar, October 2001.

The Determinants of Historical Changes in Farm Size and Farmland Area, Purdue University, Department of Agricultural Economics Seminar, March 2000.

Agricultural Land Values and Future Land Development, Iowa State University, Department of Economics Seminar, August 1998.

Modeling Land Use Decisions with Aggregate Data. Harvard University, John F. Kennedy School of Government and Department of Economics, Environmental Economics and Policy Seminar, February 1998.

Maximum Entropy Estimation of Land Use Shares and Transitions. University of Connecticut, Department of Agricultural and Resource Economics, December 1996.

Optimal Forest Management: An Option Value Approach. University of Colorado, Department of Economics Seminar, September 1996.

**PROFESSIONAL
ACTIVITIES:**

Member, Association of Resource and Environmental Economists Board of Directors (2011-present)

Associate Editor, *American Journal of Agricultural Economics* (2008 – 2011).

Editorial Council, *Journal of Environmental Economics and Management* (2006 – present).

Publication of Enduring Quality Committee, Association of Environmental and Resource Economists, Member (2004) and Chair (2005).

Member, NASA Land Cover Land Use Change Peer Review Panel, September 2005.

Member, Organizing Committee of the USDA/USEPA/Agriculture Canada Forestry and Agriculture Greenhouse Gas Modeling Forum, 2002.

Member, U.S. Department of Energy, Integrated Assessment of Global Climate Change Research Peer Review Panel, June 2001.

Selected Papers Topic Leader, American Agricultural Economics Association (2001).

Editorial Council, *Agricultural and Resource Economics Review* (1999-2005).

Chair, Selected Papers Committee, Northeast Agricultural and Resource Economics Association Meetings (1998).

Member, Selected Papers Committee, Northeast Agricultural and Resource Economics Association Meetings (1997).

Member, American Economics Association

Member, American Agricultural Economics Association

Member, Association of Environmental and Resource Economists

Member, Western Agricultural Economics Association

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, et al.,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
(Consolidated with 11-1285,
11-1328, and 11-1336)

DECLARATION OF SCOT QUARANDA

I, Scot Quaranda, declare as follows:

1. This declaration is based on my personal knowledge, information and belief. I am over the age of eighteen (18) and suffer from no legal incapacity. I submit this declaration in support of the above-referenced lawsuit brought by the Center for Biological Diversity, Coastal Conservation League, Conservation Law Foundation, Dogwood Alliance, Natural Resources Council of Maine, Natural Resources Defense Council, Georgia ForestWatch, and Wild Virginia (“Center for Biological Diversity, et al.”) challenging the decision by the Environmental

Protection Agency's ("EPA") to defer for three years carbon dioxide ("CO₂") emissions from bioenergy and other biogenic sources from the Prevention of Significant Deterioration ("PSD") and Title V program requirements under the greenhouse gas regulations propounded under the Tailoring Rule. EPA's rule is sometimes referred to as the Biomass Exemption Rule.

2. I am the Campaign Director for Dogwood Alliance ("Dogwood"). I work in Dogwood's principal place of business in Asheville, North Carolina. As the Campaign Director for Dogwood, I am responsible for running Dogwood's public campaigns focused on protecting the forests and communities of the Southern United States. Our primary campaigns are The Paper Campaign and the Bioenergy Campaign. The Paper Campaign is focused on getting the largest customers and producers of paper to stop logging endangered forests and end the worst of the worst practices in the woods, including large-scale clearcutting and conversion of natural forests to plantations, while embracing an overall reduction in the use of paper and increasing the use of post-consumer recycled paper in order to take pressure off the forests of the South, the largest paper producing region in the world. Dogwood's Bioenergy Campaign is focused on stopping the large-scale burning of forests for electricity in the region until protections are in place that fully account for carbon emissions, protect the forests of our region, and prevent the health impacts to local communities associated with burning wood for

electricity. My work requires that I be familiar with the purpose and activities of Dogwood, as well as the related interests and concerns of our members.

3. Dogwood is a membership-supported organization incorporated under the laws of North Carolina. It is recognized as a not-for-profit corporation under Section 501(c)(3) of the United States Internal Revenue Code.

4. In my capacity as Campaign Director for Dogwood, I am familiar with its mission, which is to mobilize diverse voices to defend the unique forests and communities of the Southern U.S. from destruction by industrial forestry. To support this mission, in the energy and forests arena, Dogwood believes it is critical to stop the large scale burning of forests for electricity and sees it as a false solution to climate change and a detriment both to our forests and to the health of our communities in the Southern U.S. Dogwood has made great strides in getting some of the largest Fortune 500 companies and the region's biggest paper producers to end or limit the most destructive forestry practices, thereby increasing protection for millions of acres of our forests. If a large-scale biomass utility industry were to thrive in the region without limitations and no sustainability measures in place, it would set back the progress we have made. In addition to having a major impact on our climate via the huge release of carbon emissions, we believe that, unrestrained, the biomass industry will lead to a huge increase in

large-scale clearcutting and conversion of natural forests to plantations, which will impact wildlife habitat, water quality, and human health.

5. In my capacity at Dogwood, I am aware that Dogwood has engaged on bioenergy issues on numerous fronts. For instance, we have been actively engaging EPA to regulate biogenic carbon emissions from biomass burning. Additionally, we have written reports on the ecological impacts from this industry and also the health and community impacts. Dogwood has also actively engaged the utility industry, asking them to put the brakes on a massive expansion until protective measures for our forests and communities are in place. We have also actively engaged with communities and other organizations across the region that are fighting individual facilities or working to impact state level policy around this relatively new industry

6. By virtue of my history, experience and position at Dogwood, I am aware that Dogwood has more than 30,000 supporters and more than 500 donors. My responsibilities at Dogwood include communicating with members and the public about how regulations and policies governing biomass power plants affect the South's environment and citizens. I have personal knowledge that members of Dogwood joined the organization precisely because of a desire to stop the expansion of the biomass utility industry in the South and support our work fighting individual facilities and protecting the forests of the Southern US.

Dogwood has a track record of success in protecting the forests of our region from the destructive impacts of the paper industry and a majority of our members see biomass as the next great threat and put confidence in Dogwood's strategic ability to take on this next challenge and win.

7. As a result of my role with Dogwood, I am aware of the determination of EPA that elevated concentrations of six greenhouse gases constitute air pollution that endangers public health and welfare in the United States by contributing to climate change. I understand that following up on this endangerment finding, EPA published a rule – often called the Tailoring Rule – designed to establish a permitting process for GHGs from large stationary sources under the PSD and Title V permitting programs under the Clean Air Act (CAA). I understand that Phase 1 of these regulations began in January 2011 and Phase 2 began in July 2011 and that under the first phase stationary sources that already triggered PSD permitting requirements for other pollutants were subject to those same requirements for their CO₂ emissions as well. I understand that EPA initially decided that, in Phase 2, to subject all stationary sources, regardless of fuel source, that emit CO₂ at the statutory threshold to the Clean Air Act's permitting requirements. However, I also understand that, after being asked to reconsider this decision for sources that combust biomass, EPA subsequently decided to defer for three years emissions from facilities that use biomass from the CAA permitting

requirements that apply to other stationary sources that emit CO₂ and other GHGs at the same statutory threshold. I understand that EPA has stated that this final exemption for biomass and other bioenergy sources became effective on July 20, 2011.

8. Based on my personal and professional experience, I firmly believe that allowing the exemption to remain in effect and failing to regulate pollutants from biomass facilities will contribute to air emissions that harm public health, to degradation of forest ecosystems, and to climate change. These consequences under cut Dogwood's purpose and mission and harm the interest of its members. To avoid these results, facilities that use biomass resources to produce energy should be subject to regulations for CO₂ and other pollutants immediately.

I declare under the penalty of perjury that the foregoing is true and correct.

Dated: March 12, 2012

/s/ Scot Quaranda
Scot Quaranda

emissions from bioenergy and other biogenic sources from the Prevention of Significant Deterioration (“PSD”) and Title V program requirements under the Tailoring Rule. The EPA’s rule is sometimes referred to as the Biomass Exemption Rule.

3. I have been on the Board of Directors for Wild Virginia since 2003. As a director, I am responsible for overseeing and guiding the organization’s programs and activities in furtherance of the goals of Wild Virginia. I have also taken on specific tasks, including participating in U.S. Forest Service meetings for the formation of the *Land and Resource Management Plan for the George Washington National Forest*, monitoring projects on the George Washington National Forest (“GWNF”), tracking applications for biomass energy incinerators and preparing comments during comment periods of federal projects under the National Forest Management Act and the National Environmental Policy Act. Being on the board requires that I be familiar with the purpose and activities of Wild Virginia, as well as the related interests and concerns of our members.

4. Wild Virginia is a membership-supported organization incorporated under the laws of Virginia. It is recognized as a not-for-profit corporation under Section 501(c)(3) of the United States Internal Revenue Code.

5. In my capacity as a director of Wild Virginia, I am familiar with its mission, which is to preserve forest ecosystems in Virginia’s national forests, and

the specific efforts that Wild Virginia has pursued to achieve that mission. For instance, Wild Virginia's Forest Watch program is a comprehensive effort which involves hiking, studying, and analyzing and submitting comments to government agencies on management plans and proposed projects to ensure actions taken in and near Virginia's national forests maintain and promote the vitality of those forests.

6. In my capacity as a Wild Virginia director, I am aware that Wild Virginia has submitted numerous comments on national forest plans that have addressed issues relating to biomass production, water quality and drinking water, roadless and wilderness areas, native species preservation, invasive species, and old growth preservation. For instance, Wild Virginia has filed comments on a revision of the *Land and Resource Management Plan for the GWNF* relating to biomass and sourcing for biomass facilities. Wild Virginia concluded that sourcing for woody biomass on the GWNF is incompatible with other uses of the forest for a host of reasons, including the fact that biomass was not inherently a "carbon neutral" fuel (i.e., that it results in no net increases in GHG emissions), that allowing the forests to be harvested to feed biomass combusting facilities, like power plants, would have the impact of degrading the forest ecosystem, and that the conventional pollutants emitted from biomass burning facilities would harm both the GWNF and the people who live near and recreate in the GWNF. Wild

Virginia also submitted a conservation alternative of the forest plan for the GWNF. Among other issues, this alternative plan highlighted various problems that climate change may present to the GWNF and requested further analysis and study about mitigating the effects of changing species ranges due to increased temperatures and the greater stresses placed upon the forests by extreme weather events. Of particular concern is the accommodation and transition to an altered forest composition as faunal and floral populations shift upslope to cooler conditions at heightened elevations.

7. By virtue of my history, experience and position as a director of Wild Virginia, I am aware that Wild Virginia has more than 280 members. I am also aware that our members include Virginia residents who live, work, recreate and own real property in and around Virginia's national forests. My responsibilities at Wild Virginia include communicating with members and the public about Virginia's national forest environments. I have personal knowledge that members of Wild Virginia joined the organization precisely because of their recognition of the many important ecological roles the national forests play in the region, and because of their desire to help conserve and protect these important resources.

8. I have personally been involved in national forest issues since 1988. I served as the Conservation Chair, Forestry Chair, and Wilderness Chair of the Blue Ridge Group of the Sierra Club from 1988 to 1994. I was a member of the

Working Group for the 1991-1992 GWNF forest plan revision, representing Virginians for Wilderness. I have submitted personal administrative comments in at least 15 different national forests in at least 13 different states. I have hiked in every ranger district in both the Jefferson and George Washington National Forests and led numerous hikes in the GWNF since 1992.

9. Based upon my organizational and personal experience with Wild Virginia, I am aware of the organization's and its members' efforts (as shown by Wild Virginia's comments on a revision of the *Land and Resource Management Plan for the GWNF* relating to biomass and sourcing for biomass facilities) to reduce the emissions of conventional pollutants, including the emissions of those pollutants from biomass facilities, such as particulate matter and nitrogen oxides (NO_x), which contributes to ozone formation. I am aware that EPA ran a tree growth model in Virginia's Shenandoah National Park to evaluate the effect of changing ozone scenarios on the growth of mature trees and that EPA found small growth increases in the subject trees and concluded that these small observed effects on individual tree growth may result in substantial effects on forest stand growth after many years. I am also aware that EPA has expressed concerns related to ozone's ability to affect ecosystem components such as soils, water, wildlife, and habitat, either directly or indirectly.

10. Based on my organizational and personal experience at Wild Virginia, I am aware that Wild Virginia's comments on the revision of *the Land and Resource Management Plan for the GWNF* relating to biomass and sourcing for biomass facilities also exemplify the organization's and its members' efforts to oppose extraction of timber from national forests in Virginia for the purpose of producing biomass energy. Wild Virginia's concerns regarding woody biomass harvesting include that the repeated harvesting of timber yields less productive and less healthy ecosystems; trees which grow in the aftermath of logging sequester a fraction of the carbon released by the harvest; subsequent growth fails to replicate, match, or approach the quality of forests they are supposed to replace; and increased biomass demand incentivizes the harvest of old growth forests which have a higher energy content than younger forests.

11. Based on my organizational and personal experience at Wild Virginia, I am aware of Wild Virginia's efforts (as exemplified by Wild Virginia's conservation alternative of the forest plan for the GWNF) to stem the current and projected impacts of climate change on Virginia's national forests. I understand that overwhelming scientific evidence demonstrates that anthropogenic emissions of carbon dioxide and other GHGs have risen sharply since the Industrial Age, that the primary effect of these gases is their influence on the climate system by trapping heat in the atmosphere that would otherwise escape to space, and that this

heating effect is very likely the cause of most of the observed warming over the last 50 years. Of all the GHGs, CO₂ specifically is responsible for the vast portion of the heating effect. This heat trapping effect in the earth's atmosphere elevates air and water temperatures and causes other changes to the earth's climate. The scientific evidence shows that these changing air and water temperatures shift wind patterns and ocean currents that drive the world's climate system, fundamentally altering geographic temperatures and weather patterns – in short, global climate change.

12. Based on my organizational and personal experience at Wild Virginia, I understand that in the Southeastern U.S., including Virginia, documented climate change phenomena associated with GHGs include higher temperatures and increasing frequency of moderate to severe droughts in the spring and summer and that these impacts are projected to get more severe. For instance, while the observed temperature increases in the Southeast have been on the order of 2°F, within 70 years the average temperature in the region is expected to rise anywhere from about 4°F to 9°F, with a 10°F increase in the summer. Likewise, the future frequency, duration, and intensity of droughts are likely to increase. Any increase in groundwater pumping would further stress or deplete aquifers, which could in turn place additional strain on surface water resources. In the Southeast, ecosystem impacts from predicted temperature increases include changing the

distribution of native plants and animals; local extinction of many threatened and endangered species; invasive species displacement of native species; more frequent and severe wildfires, forest pest outbreaks (such as the southern pine beetle); and depletion of lakes, ponds, and wetlands from intense droughts. In addition, warmer water temperatures reduce dissolved oxygen in stream, lakes, and shallow aquatic habitats. This could negatively impact fishing in the region.

13. Based on my organizational and personal experience at Wild Virginia, I am aware of the determination of EPA that elevated concentrations of six greenhouse gases constitute air pollution that endangers public health and welfare in the United States by contributing to climate change. I understand that subsequently EPA published a rule – the Tailoring Rule – designed to establish a permitting process for GHGs from large stationary sources under the PSD and Title V permitting programs under the Clean Air Act (CAA). I understand that the first phase of these regulations began in January 2011 and the second phase began in July 2011. I am aware that under Phase 1 stationary sources that already triggered PSD permitting requirements had their CO₂ emissions subjected to those same requirements as well. And I understand that while EPA at first decided for the second phase to subject all stationary sources that emit CO₂ at the statutory threshold to the CAA's permitting requirements, it subsequently decided to defer for three years emissions from facilities that use biomass from the CAA permitting

requirements that apply to other stationary sources that emit CO₂ and other GHGs at the same statutory threshold. I understand that EPA has stated that this final exemption for biomass and other bioenergy sources became effective on July 20, 2011.

14. I understand that Wild Virginia is challenging the Biomass Exemption Rule. If the court were to uphold the rule, Wild Virginia's efforts to maintain and enhance Virginia's national forests would be undercut in at least three ways.

15. First, because the Biomass Exemption Rule can have the effect of exempting facilities from the PSD program altogether, those facilities will not have to apply best available control technology to their emissions of pollutants like NO_x, particulate matter ("PM"), sulfur dioxide ("SO₂"), and carbon monoxide ("CO") that directly threaten the health of Wild Virginia's members and the ecology of Virginia's national forests. Moreover, the exemption of these sources from the PSD program will also limit Wild Virginia's ability to participate in the permitting processes for major new and modified sources of greenhouse gases by presenting arguments about the need for the facility and whether that need could be met in some more environmentally-friendly way.

16. Second, in giving CO₂ emissions from biomass a "free pass," the Biomass Exemption Rule gives power plants and industrial facilities an added incentive to combust biomass as opposed to fossil fuels, like coal and natural gas,

for which CO₂ emissions would be counted in determining whether PSD applied and whether its requirements were met. This incentive could mean more new plants and facilities that burn biomass and more conversion of existing coal-fired plants and facilities to burn only biomass or biomass and a fossil fuel. Because conventional air pollution from power plants and other facilities that use some kinds of biomass to produce energy can actually exceed the amount of air pollution that result from facilities that use coal and natural gas, this could in turn lead to an increase in NO_x emissions and thus the ozone levels that damage forest ecosystems. With a large number of coal and gas-fired power plants in Virginia, West Virginia, and Kentucky located near or immediately upwind from Virginia's national forests, this is a real concern for Wild Virginia. Also, more new plants and more conversions would lead to a surge in demand for biomass and add to the existing pressure to burn whole trees to satisfy that demand. I believe that the Biomass Exemption Rule would create economic incentives that would scuttle Wild Virginia's efforts to expand national forest acreage generally, and wilderness areas, which disallow any logging or land management activity, in particular.

17. Third, based on my experience at Wild Virginia, I believe that under the Biomass Exemption Rule, there is no chance to assess key factors that are necessary to determine whether increasing biomass combustion exacerbates global climate change. For woody biomass, these factors include the conditions under

which the wood is harvested and the conditions that ensure re-growth of trees to re-capture the emitted CO₂ and the timeframe for this re-growth. Assessing such factors is a real concern for Wild Virginia. But the Biomass Exemption Rule would prevent EPA and state air permitting agencies from requiring new and modified biomass facilities to implement the best available control technology for controlling CO₂. As a result, no such assessment would be required and CO₂ emissions would be greater than if there were no exemption.

18. While there are currently no proposed biomass projects in the vicinity of Virginia's national forests that appear to rely on the Biomass Exemption Rule, I am concerned that it is only a matter of time. The forests of Virginia, like the Southeast generally, have attracted many biomass-burning facilities and I think they will continue to do so. The incentives provided by the Biomass Exemption Rule will only increase that attraction and thus increase the likelihood that the harms that come with biomass combustion will fall on the JNF and GWNF and the Wild Virginia members who enjoy them.

19. My responsibilities at Wild Virginia include communicating with members and the public about the efforts to protect forests, including those caused by the conventional pollutants emitted by biomass combusting facilities, the turning over of land to produce biomass for those facilities, and effects of climate change. I can therefore attest that Wild Virginia's members are aware and

supportive of the work Wild Virginia is doing to strengthen regulatory responses to the threats that emissions of conventional pollutants emissions from biomass facilities, forested land conversion for biomass, and climate change and increasing GHG emissions pose to the interests of Wild Virginia and its members.

20. I believe that EPA's Biomass Exemption Rule will add to the motivation for more biomass combustion and biomass harvesting in and around Virginia's national forests, resulting in more pollution that is harmful to public health and to forest health, in more forest degradation through increased logging of whole trees and harvesting of logging residues, and in adding to climate change impacts. Wild Virginia and its members therefore have a direct interest in, and their injuries can be redressed by, ensuring that the Biomass Exemption Rule is overturned.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: March 12, 2012

/s/ Ernest Q. Reed Jr.
Ernest Q. Reed Jr.

**UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

CENTER FOR BIOLOGICAL
DIVERSITY, *et al.*,

Petitioners,

V.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Respondent.

No. 11-1101
(Consolidated with 11-1285,
11-1328, and 11-1336)

DECLARATION OF DR. RANAJIT (RON) SAHU

A. Biographical Information

1. I, Ranajit Sahu, have over twenty years of experience in the fields of environmental, mechanical, and chemical engineering including: program and project management services; design and specification of pollution control equipment; soils and groundwater remediation; combustion engineering evaluations; energy studies; multimedia environmental regulatory compliance (involving statutes and

regulations such as the Federal Clean Air Act and its Amendments, Clean Water Act, Toxic Substances Control Act, Resource Conservation and Recovery Act, CERCLA, SARA, OSHA, National Environmental Policy Act as well as various related state statutes); transportation air quality impact analysis; multimedia compliance audits; multimedia permitting (including air quality New Source Review/Prevention of Significant Deterioration (“PSD”) permitting, Title V permitting, National Pollutant Discharge ES permitting for industrial and storm water discharges, RCRA permitting, etc.), multimedia/multi-pathway human health risk assessments for toxics; air dispersion modeling; and regulatory strategy development and support including negotiation of consent agreements and orders.

2. I have a B.S., M.S., and Ph.D. in Mechanical Engineering, the first from the Indian Institute of Technology (Kharagpur, India) and the latter two from the California Institute of Technology (Caltech) in Pasadena, California. My research specialization was in fuel combustion and, among other things, understanding air pollution aspects of fuel combustion in power plants.

3. I have over eighteen years of project management experience and have successfully managed and executed numerous projects in this time period, including basic and applied research projects, design projects, regulatory compliance projects, permitting projects, energy studies, risk assessment projects, and projects involving the communication of environmental data and information to the public.
4. I have provided consulting services to numerous private sector, public sector and public interest group clients. My major clients over the past eighteen years include various steel mills, petroleum refineries, cement companies, aerospace companies, power generation facilities, lawn and garden equipment manufacturers, spa manufacturers, chemical distribution facilities, and various entities in the public sector including EPA, the states of New York, New Jersey, New Mexico, the US Dept. of Justice, California DTSC, various municipalities, etc.). I have performed projects in 48 US states, numerous local jurisdictions and internationally.
5. In addition to consulting, I have taught and continue to teach numerous courses in several Southern California universities including UCLA (air

pollution), UC Riverside (air pollution, process hazard analysis), and Loyola Marymount University (air pollution, risk assessment, hazardous waste management) for the past seventeen years. In this time period I have also taught at Caltech, my alma mater, at USC (air pollution) and at Cal State Fullerton (transportation and air quality).

6. I have provided and continue to provide expert witness services in a number of environmental areas, as discussed above, in both state and Federal courts as well as before administrative bodies. I regularly consult for the Natural Resources Defense Council, including on developing more effective emissions control strategies for the electric power industry.
7. Additional details regarding my background and experience can be found in my curriculum vitae, provided as Attachment A.

B. Subject of this Declaration

1. I have been asked to address the impact that EPA's exemption for biogenic carbon emissions from Prevention of Significant Deterioration (PSD) permitting requirements ("Biomass Exemption") will have on

emissions of criteria pollutants (or air pollutants for which EPA has set National Ambient Air Quality Standards, such as nitrogen oxides (NO_x) and particulate matter (PM)), criteria pollutant precursors (such as NO_x which contributes to formation of ground-level ozone), and hazardous air pollutants (HAPs) from biomass-combusting facilities. I will address this question after providing background on the PSD permitting process and requirements.

2. The opinions expressed here are based on the above experience and my review of the following:
 - i. Allendale plant: Permit, Response to Comments, and Statement of Basis
 - ii. Anderson plant: August 2011 Region IX Letter
 - iii. Biomass One, OR: Permit and Staff Report
 - iv. Biogreen plant: Permit No. 09-9557-ST-01, issued December 15, 2010 by the Oregon DEQ
 - v. Concord plant: Permit No. TP-0014, issued August 12, 2011 by the New Hampshire DES
 - vi. Dorchester plant: Permit No. 0900-0102-CA, issued June 30, 2011 by the South Carolina DHEC

- vii. Hu Honua plant: Initial Covered Source Permit Review Summary
- viii. Kershaw plant: Permit No. 1380-0077-CA, issued June 30, 2011
by the South Carolina DHEC
- ix. Klamath Falls plant: Permit No. 18-9542-ST-01, issued December
30, 2010 by the Oregon DEQ
- x. Mancelona plant: Permit No. 404-08, issued February 9, 2010 by
the Michigan DNRE
- xi. Menominee plant: Permit No. 102-10, issued May 11, 2011 by the
Michigan DNRE
- xii. Palmer Plant: MassDEP Conditional Approval, June 30, 2011
- xiii. Port Manatee Plant: Final Permit, Permit Application, Final
Determination

C. Summary of Findings

1. I will show that biomass power plants that avoid PSD permitting due to the Biomass Exemption Rule will likely have greater emissions of other air pollutants than if they had gone through PSD permitting based on their carbon dioxide emissions.

D. PSD Permitting Background

1. Biomass combustion results in a number of air pollutants, most notably for present purposes PM, NO_x, and carbon monoxide (CO). PM consists of a mixture of solid particles and liquid droplets found in the air. EPA has defined two categories of PM based on size: inhalable coarse particulate or PM₁₀ (diameter larger than 2.5 micrometers and smaller than 10 micrometers) and fine particulate or PM_{2.5} (diameter of 2.5 micrometers or smaller). PM, especially PM_{2.5}, is linked to a number of health effects, including increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing), decreased lung function, aggravated asthma, development of chronic bronchitis, irregular heartbeat, nonfatal heart attacks, and premature death in people with heart or lung disease.¹ Individuals particularly sensitive to PM_{2.5} exposure include older adults, people with heart and lung disease, and children. NO_x, in turn, is a precursor to ground-level ozone, which is associated with reduction in lung function and increased respiratory symptoms, as well as respiratory-related emergency department visits, hospital admissions, and possibly premature deaths.² As with PM, children, the elderly, and those with compromised lung function are the

¹ See, e.g., <http://www.epa.gov/pm/health.html>

² See, e.g., <http://www.epa.gov/air/ozonepollution/health.html>

most susceptible to ozone pollution. People who work and/or exercise outside also are at increased risk for health effects from ozone. CO inhibits the blood's ability to carry oxygen to body tissues, including vital organs. Impacts range from headaches and nausea at lower exposures to unconsciousness and death at the high end of the spectrum.³

2. Sources qualify as major emitting facilities that must obtain federal PSD permits if they emit, in the case of biomass-burning plants, over 250 tons per year of any air pollutant subject to regulation under the Act (or in the case of greenhouse gases, higher amounts as set forth below). Sources that do not emit above these major thresholds are typically subject to minor source permitting requirements under state laws and regulations.
3. A source that requires a PSD permit is subject to best available control technology ("BACT") and air quality requirements for each regulated PSD pollutant that the facility has the potential to emit in significant amounts. The facility's potential to emit ("PTE") for each pollutant is the maximum amount of that pollutant that can be emitted from all

³ See, e.g., <http://www.epa.gov/airquality/carbonmonoxide/health.html>

sources and operations within the facility, i.e., the sum of all emissions of that pollutant from each new unit or affected operation within the facility under maximum operating conditions. Thus, for particulate matter it includes fugitive emissions from plant roadways and material handling operations as well as “stack” emissions from process equipment operation. EPA has set significant emission levels for each pollutant for BACT purposes, including but not limited to the following: 100 tons per year (tpy) of CO; 40 tpy of NO_x; and 25 tpy of PM, 15 tpy of PM₁₀, and 10 tpy of PM_{2.5}. If a facility’s potential to emit a given pollutant exceeds these significance thresholds, the facility must comply with BACT for each component of the facility that was included in calculating its potential to emit.

4. Under the Clean Air Act, BACT consists of “an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or

treatment or innovative fuel combustion techniques for control of each such pollutant.” EPA has issued draft guidance for using a “top-down” five step process to determine BACT, which, while not binding, is relied upon by many states and permit applicants. The five steps are summarized as follows: (1) identify all control technologies, (2) eliminate technically infeasible options, (3) rank remaining control technologies by control effectiveness, (4) evaluate most effective controls and document results, and (5) select BACT. Thus, while BACT is based on a control technology inquiry, BACT itself is an emission limit based on what the top control option can achieve at a proposed project. Where setting and implementing a numeric limit is infeasible, BACT may consist of a work practice, design, or operation standard.

5. When determining available controls and the emission limits the controls can meet, EPA advises applicants and state agencies to review a wide range of data sources, both domestic and from other countries, including EPA’s BACT/LAER Clearinghouse and Control Technology Center, Best Available Control Technology Guideline - South Coast Air Quality Management District, control technology vendors, Federal/State/Local new source review permits and associated inspection/performance test reports, environmental consultants,

technical journals, reports and newsletters, air pollution control seminars, and EPA's New Source Review (NSR) bulletin board. Vendor guarantees can serve as important evidence of control equipment's expected performance.

6. A BACT analysis determines the emissions limit to which the facility will be held, i.e., how much pollution a facility may emit when operating over the short- and long-term. For the following reasons, BACT limits are typically more stringent than limits imposed through state "minor source" permitting, i.e., state permitting programs that apply to facilities that emit or have the potential to emit below the federal major source thresholds. First, a BACT analysis usually results in the use of a more effective control option (which can include a combination of technologies and work practices) than would otherwise have been used. Second, BACT numeric emissions limits usually are lower (i.e., more stringent) than the numeric emissions limits that states apply without a BACT review. Third, the BACT emissions limit often is set on a shorter averaging period than the annual or monthly bases that are seen with minor source permits. A shorter averaging period provides greater protection from short-term, periodic high pollution episodes, and so is more protective of public health for pollutants such

as PM, NO_x, or VOCs than a longer averaging period, e.g., a limit set on an annual basis. Fourth, BACT requirements must be met at all times when the emitting source operates, during all modes of operation, including periods of startup, shutdown and maintenance/malfunction, whereas emission limits in minor source permits usually do not apply during these periods.

7. While HAPs are not regulated PSD pollutants⁴, BACT limits for regulated PSD pollutants can produce HAP reductions, as the controls used to meet such limits can, in many cases, also reduce HAPs. For example, control of the smaller fraction of PM (i.e., PM_{2.5} or fine particulate matter) using a fabric filter or a wet electrostatic precipitator (WESP) (as opposed to the more conventional dry ESP (ESP)), will also reduce condensable organic HAPs that can result from biomass combustion.

8. EPA has also finalized PSD regulations under which facilities that emit greenhouse gases (carbon dioxide, methane, nitrous oxide,

⁴ Section 112(b)(6) of the Act provides as follows: “The provisions of part C of this subchapter (prevention of significant deterioration) shall not apply to [hazardous air] pollutants listed under this section.”

hydroflourocarbons, perflourocarbons, and sulfur hexafluoride) in amounts greater than 100,000 tons per year, on a CO₂-equivalent (CO₂e) and mass basis, are required to obtain PSD permits even though their criteria air pollutant emissions are below the 100 tons per year or 250 tons per year thresholds for those air pollutants. Under these greenhouse gas rules, permits are also required for major modifications to an existing facility, i.e., for projects that have the potential to emit 75,000 tons per year or more of greenhouse gases on a CO₂e and mass basis.

9. EPA's biomass exemption, however, exempts biogenic carbon emissions⁵ from counting towards these thresholds, such that new facilities that emit more than 100,000 tpy CO₂, and modifications that emit more than 75,000 tpy of CO₂, are not required to obtain a PSD permit, and are not required to comply with BACT, if those CO₂ emissions come from burning a biomass fuel.

10. EPA's biomass exemption allows facilities that would otherwise trigger PSD based solely on their biogenic CO₂ emissions to avoid BACT not

⁵ Defined by EPA in the Biomass Exemption as CO₂ from a stationary source directly resulting from the combustion or decomposition of biologically-based materials other than fossil fuels and mineral sources of carbon.

only for greenhouse gases, but also for all other regulated PSD pollutants that they will emit in significant amounts.

E. **BACT for Biomass Facilities that Escape PSD Due to the Biomass Exemption.** I provide some examples to illustrate the points above.

1. The proposed Allendale, South Carolina plant will have a 275 MMBtu/hr, 17.5 MW stoker boiler fired using wood waste and will be equipped with an electrostatic precipitator (“ESP”) to control PM emissions, selective non-catalytic reduction (“SNCR”) to control NO_x emissions, and sorbent injection to control acid gases.⁶ The facility is permitted to emit up to 250 tons of NO_x, CO, and PM₁₀, though background documents indicate that estimated emissions are not exactly 250 tons. This facility did not go through PSD major source permitting, but received a minor source construction air permit under state law on August 15, 2011.

- i. *Greenhouse Gases.* According to the permitting agency’s Response to Comments for the Allendale permit, the facility has the potential to emit over 249,000 tpy of CO₂, as well as additional

⁶ South Carolina Department of Health and Environmental Control, Bureau of Air Quality, Statement of Basis for Permit No. 0160-0022-CA, SRE Allendale LLC, August 15, 2011.

emissions of methane and nitrous oxide. Thus, in the absence of the Biomass Exemption Rule, based on these emissions levels, this facility would have triggered PSD review. The permitting authority cited EPA's July 2011 Biomass Exemption as grounds for determining that the proposed plant is not a major source of greenhouse gases for PSD purposes.⁷ In addition, the facility will be fueled with "wood waste" according to the permit (according to the application, "untreated wood or untreated wood products including clean untreated lumber, tree stumps (whole or chipped) and tree limbs (whole or chipped)") and thus is likely to burn fuels with large carbon debts.

- ii. *BACT Significant Emissions.* According to the permitting documents, the Allendale facility can emit 36.1 tons per year of PM, 241.76 tons per year of NO_x and over 200 tons per year of CO⁸, after allowing for the controls discussed earlier. Thus, had it

⁷ South Carolina Department of Health and Environmental Control, Bureau of Air Quality, "Response to Comments," Public Notice #11-027-TV-C and #11-038-TV-C-H, SRE Allendale, LLC. Construction Permit, Allendale, Allendale County, South Carolina, Permit No. 0160-0022-CA, at 21.

⁸ The Allendale permit documents do not clearly provide the uncontrolled and controlled potential-to-emit figures for CO, but instead cite several figures ranging from 240.9 tpy to 723 tpy. As similarly-sized biomass plants report controlled CO PTEs of around 240 tpy, I assume that this facility has a similar PTE.

triggered PSD based on its greenhouse gas emissions, it would have been required to meet BACT requirements for at least NO_x, PM and CO because it is above the BACT significance levels for these pollutants.

- iii. *Alternative Designs.* As an initial matter, the applicant did not consider alternative boiler designs to a stoker boiler. EPA has pointed out that, as part of the BACT analysis for an approximately 24 MW biomass-fired boiler, other boiler designs like bubbling bed and circulating fluidized bed (“CFB”) boilers should be considered.⁹ As described below, such designs achieve lower emissions than the permitted limits for the Allendale stoker boiler.
- iv. *Nitrogen Oxides.* Allendale's maximum allowable NO_x emission rate of 0.2 lb/MMBtu (on a monthly average basis, meaning likely much higher levels on a shorter term basis) for NO_x is significantly less stringent than it would have been had it been subject to a BACT analysis. First, it allows approximately 33-50% more NO_x pollution than limits for other new and proposed biomass facilities

⁹ Letter from Gerardo Rios, Chief, Permits Office, Air Division, U.S. EPA Region IX, to Eric Albright, Senior Manager, ENVIRON International Corp., “Subject: Sierra Pacific Industries-Anderson Prevention of Significant Deterioration (PSD) Permit Application,” August 5, 2011.

around the country using SNCR, with many such facilities in the 0.13 to 0.15 lb/MMBtu range for NO_x. It is also far higher than the lowest emission rates found in EPA's RACT/BACT/LAER Clearinghouse, with typical values found in the 0.06-0.07 lb/MMBtu range for facilities using selective catalytic reduction ("SCR"), with similar averaging periods. SCR can provide greater NO_x reductions than SNCR, and recently, biomass burning facilities have been issued permits based on use of SCR for control of NO_x. In addition, other facilities have been proposing and/or meeting lower numeric limits on significantly shorter averaging periods – 3-hours versus the monthly average here. For example, the Anderson stoker boiler facility proposed a NO_x limit of 0.15 lb/MMBtu on a 3-hour average. Other facilities using a CFB design have demonstrated compliance with lower limits, for example the Covanta Delano facility with an emission limit of 0.10 lb/MMBtu on a 24-hour rolling average. Both of these limits are much more stringent than the Allendale NO_x limit of 0.2 lb/MMBtu on a monthly average basis.

- v. *Particulate Matter*. In addition, an ESP is not state-of-the-art equipment for control of PM, PM₁₀ and PM_{2.5} on a stoker boiler of

this size. Typically, the best PM control is achieved by a fabric filter or baghouse. For example, a fabric filter baghouse has been used or proposed for use on the Hu Honua facility (a 21 MW boiler), which is permitted to use an ESP in conjunction with a baghouse to meet emissions limits of 0.012 lb/MMBtu PM₁₀ (filterable) and 0.024 lb/MMBtu total PM₁₀ (filterable and condensable). These limits are significantly lower than the Allendale facility's permitted 13 ng/joule heat input (equaling around 0.03 lb/MMBtu for filterable PM). Thus, Allendale's PM filterable limit is 2.5 times the Hu Honua limit. Use of a baghouse would also reduce opacity from 10-20% with just an ESP to below 5% with a baghouse. Even setting aside a baghouse, the vendor for Allendale's ESP guaranteed the equipment at a PM emission rate of 0.0015 lb/MMBtu. The permitted rate of 0.03 lb/MMBtu is over 20 times this guaranteed rate, and therefore significantly above the level that a BACT analysis would have produced. Another proposed stoker boiler capable of generating 24 MW, the Sierra Pacific Industries' Anderson facility referred to earlier, has proposed a PM limit of 0.0011 lb/MMBtu on a 3-hour averaging period using an ESP.

- vi. *Carbon Monoxide.* The Allendale permit fails to include an emission limit on carbon monoxide. Several other permits for similarly-sized biomass plants include emission limits for CO ranging from 0.12 lb/MMBtu to 0.2 lb/MMBtu, as set forth below. The inclusion of an emission limit for carbon monoxide is more protective of air quality and public health than no limit at all.
- vii. *Startup, Shutdown, and Malfunction.* The Allendale permit also outright exempts the facility from meeting the opacity and PM standards during startup, shutdown, and malfunction. BACT would apply during these time periods. Although in some circumstances BACT limits may be different during these time periods than under standard operating periods, and can include work practices that minimize emissions during such periods (such as the use of cleaner burning natural gas as opposed to fuel oil during startup, etc., nonetheless requiring that BACT limits are met during these time periods is clearly more protective of air quality and human health than a situation where no emissions limits need be met at all.

viii. *Fugitives*. Typically, BACT for fugitive dust would involve adherence to a set of work practices such as dust suppression using periodic watering or other means, minimizing the silt contents of roadways, covering conveyors and other fuel handling equipment, and the like. These requirements would be enforceable. Such limits are important for air quality, as fugitive PM from these sources can itself cause or contribute to local air quality violations. Other than an unenforceable opacity limit of 20%, the Allendale permit does not contain any enforceable numerical or narrative fugitive emissions limits (the narrative descriptions in the permit are so vague as to be unenforceable).

2. Other biomass facilities also would have had to comply with more stringent BACT limits had they gone through PSD permitting based on their biogenic carbon emissions. The table below shows a number of biomass facilities that were recently permitted, many of which have not commenced construction under their minor source permits and so would have to comply with PSD for greenhouse gases absent the Biomass Exemption in order to construct, as their total greenhouse gas emissions exceed the Tailoring Rule thresholds. The plants are all permitted to allow firing of woody biomass feedstocks, and all would

have the potential to emit over 100,000 tpy of biogenic CO₂. In each case, it is my opinion that a BACT analysis pursuant to PSD review would have been likely to produce more stringent limits than those in the respective facility permits, in particular with respect to PM/PM₁₀/PM_{2.5}, NO_x, and CO.

Table 1. Comparison of Limits for “Minor Source” Biomass Plants

Plant name; boiler type, heat rate, MW; fuel information	Limits*			
	Pollution controls; fuel	PM/opacity: significance level of 25/15/10 tpy; lowest permitted = 0.0011 lb/MMBtu 3-hr 0.0015 lb/MMBtu	NOx: significance level of 40 tpy; lowest permitted = 0.065 lb/MMBtu (SCR LAER) 0.12 lb/MMBtu 3-hr 0.10 lb/MMBtu 24-hr (SNCR BACT)	CO: significance level of 100 tpy; lowest permitted = 0.12 lb/MMBtu
Biogreen, OR; “steam boiler”, 332-352 MMBtu/hr, 24.9 MW	ESP w/ multicyclone, SNCR; same as Klamath in permit	0.029 lb/ MMBtu PM/PM10 0.024 lb/MMBtu PM2.5 (above signif for both, 38 and 46 tpy)	0.15 lb/MMBtu (above signif, 232 tpy)	0.16 lb/MMBtu (above signif, 247 tpy)
Concord CHP, NH; stoker, 305 MMBtu/hr, 19.5 MW	ESP w/ cyclone, SCR (LAER – NNSR for NOx); “Only virgin wood chips and non- contaminated wood products such as pallet wood chips or untreated wood product chips will be used as fuel for Boiler 1.”	0.012 lb/MMBtu (above signif level for “PM,” 41.65 tpy)	0.065 lb/MMBtu (above signif, 95.93 tpy)	0.18 lb/MMBtu (above signif, 246.51 tpy)
Dorchester, SC; stoker boiler, 275 MMBtu/hr, 21 MW gross, 17.5 MW planned	Dry sorbent Trona or hydrated lime, ESP, SNCR; “clean, untreated wood waste...defined in SC Regulation 61- 62.1 as untreated wood or untreated wood products including clean untreated lumber, tree stumps (whole or chipped), and tree limbs (whole or chipped). Clean wood does not include yard waste,	0.03 lb/MMBtu except SSM, 20% opacity (above signif, 36.1 tpy)	0.2 lb/MMBtu, 30-day ave (above signif, 240.9 tpy)	55.0 lb/hr based on 0.2 lb/MMBtu (above signif, 240.9 tpy)

	or construction, renovation, and demolition waste (including but not limited to railroad ties and telephone poles)."			
Kershaw, SC: All same as Dorchester, except nothing for CO, VOCs, or CO2				
Klamath, OR	"Wood biomass" includes "forest management residue (slash), sawmill residue, hog fuel, bark, chips, wood from yard debris, and construction and demolition wood. Byproducts from plywood or resin materials may not be burned." (per permit, no application)	0.030, SSM exemption (above signif, 35 tpy PM10 25 tpy PM2.5)	0.12 lb/MMBtu 3-hr ave (above signif, 230 tpy NOx)	None (above signif, 230 tpy)
Mancelona, MI; bubbling fluidized bed, 565.2 MMBtu/hr, 36 MW net;	FF, SNCR; "only virgin or high quality wood fuel as defined by the Wood Fuel Procurement and Monitoring Plan (WFPMP)" [note: no WFPMP yet] "The sole fuel for the proposed plant is wood. Wood is a sustainable and renewable source of boiler fuel. This wood can come from two primary sources; forest/logging suppliers or sawmill residues (sawdust, bark, chipped slabs). Forest sources represent over 70% of the likely supply of wood... Whole tree chips from loggers	0.1 gr/dscf corrected to 12% CO2 0.03 lb/MMBtu 20% opacity SSM exemption	0.12 lb/MMBtu, 3-hr ave SSM exemption	None

	are the core component of the wood supply.” (Fuel Study)			
Menominee Cogen, MI; bubbling fluidized bed, 493 MMBtu/hr, 31.5 MW; slash, mill residue	<p>FF, SNCR or SCR** (no discussion in agency decision doc about how choice will be made and why), sorbent injection; “The biomass to be used as fuel will primarily be obtained from forestry operations (e.g., low-value tree tops, bark, and small branches, also know as ‘slash’), as well as existing wood-based businesses, such as lumber and sawmills (e.g waste wood). The boiler will also have the capability to combust mill residual material. The mill residual material consists primarily of paper sludge.” (SOB)</p> <p>“Burn only virgin or high quality wood fuel in the Wood Fuel Procurement and Monitoring Plan (WFPMP), natural gas and biodiesel fuel, and mill residuals in EU-BOILER.” (permit. Note: no WFPMP yet)</p>	<p>0.02 lb/MMBtu PM</p> <p>0.025 lb/MMBtu PM10, PM2.5</p> <p>12.33 lb/hr</p> <p>10% opacity (above signif level for both)</p>	<p>0.12 lb/MMBtu, 30-day</p> <p>59.16 lb/hr, 30-day</p>	<p>0.12 lb/MMBtu, 30-day</p> <p>59.16 lb/hr, 30-day</p>

*Gray shaded boxes indicate limits above the lowest identified permitted limit.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief.

Executed in Alhambra, California, on March 8, 2012

/s/ Ranajit Sahu

Ranajit Sahu

RANAJIT (RON) SAHU, Ph.D, QEP, CEM (Nevada)

CONSULTANT, ENVIRONMENTAL AND ENERGY ISSUES

**311 North Story Place
Alhambra, CA 91801
Phone: 626-382-0001
e-mail (preferred): sahuron@earthlink.net**

EXPERIENCE SUMMARY

Dr. Sahu has over twenty one years of experience in the fields of environmental, mechanical, and chemical engineering including: program and project management services; design and specification of pollution control equipment; soils and groundwater remediation; combustion engineering evaluations; energy studies; multimedia environmental regulatory compliance (involving statutes and regulations such as the Federal CAA and its Amendments, Clean Water Act, TSCA, RCRA, CERCLA, SARA, OSHA, NEPA as well as various related state statutes); transportation air quality impact analysis; multimedia compliance audits; multimedia permitting (including air quality NSR/PSD permitting, Title V permitting, NPDES permitting for industrial and storm water discharges, RCRA permitting, etc.), multimedia/multi-pathway human health risk assessments for toxics; air dispersion modeling; and regulatory strategy development and support including negotiation of consent agreements and orders.

He has over nineteen years of project management experience and has successfully managed and executed numerous projects in this time period. This includes basic and applied research projects, design projects, regulatory compliance projects, permitting projects, energy studies, risk assessment projects, and projects involving the communication of environmental data and information to the public. Notably, he has successfully managed a complex soils and groundwater remediation project with a value of over \$140 million involving soils characterization, development and implementation of the remediation strategy, regulatory and public interactions and other challenges.

He has provided consulting services to numerous private sector, public sector and public interest group clients. His major clients over the past seventeen years include various steel mills, petroleum refineries, cement companies, aerospace companies, power generation facilities, lawn and garden equipment manufacturers, spa manufacturers, chemical distribution facilities, and various entities in the public sector including EPA, the US Dept. of Justice, California DTSC, various municipalities, etc.). Dr. Sahu has performed projects in over 44 states, numerous local jurisdictions and internationally.

Dr. Sahu's experience includes various projects in relation to industrial waste water as well as storm water pollution compliance include obtaining appropriate permits (such as point source NPDES permits) as well development of plans, assessment of remediation technologies, development of monitoring reports, and regulatory interactions.

In addition to consulting, Dr. Sahu has taught and continues to teach numerous courses in several Southern California universities including UCLA (air pollution), UC Riverside (air pollution, process hazard analysis), and Loyola Marymount University (air pollution, risk assessment, hazardous waste management) for the past seventeen years. In this time period he has also taught at Caltech, his alma mater and at USC (air pollution) and Cal State Fullerton (transportation and air quality).

Dr. Sahu has and continues to provide expert witness services in a number of environmental areas discussed above in both state and Federal courts as well as before administrative bodies (please see Annex A).

EXPERIENCE RECORD

- 2000-present **Independent Consultant.** Providing a variety of private sector (industrial companies, land development companies, law firms, etc.) public sector (such as the US Department of Justice) and public interest group clients with project management, air quality consulting, waste remediation and management consulting, as well as regulatory and engineering support consulting services.
- 1995-2000 Parsons ES, **Associate, Senior Project Manager and Department Manager for Air Quality/Geosciences/Hazardous Waste Groups**, Pasadena. Responsible for the management of a group of approximately 24 air quality and environmental professionals, 15 geoscience, and 10 hazardous waste professionals providing full-service consulting, project management, regulatory compliance and A/E design assistance in all areas.
- Parsons ES, **Manager for Air Source Testing Services.** Responsible for the management of 8 individuals in the area of air source testing and air regulatory permitting projects located in Bakersfield, California.
- 1992-1995 Engineering-Science, Inc. **Principal Engineer and Senior Project Manager** in the air quality department. Responsibilities included multimedia regulatory compliance and permitting (including hazardous and nuclear materials), air pollution engineering (emissions from stationary and mobile sources, control of criteria and air toxics, dispersion modeling, risk assessment, visibility analysis, odor analysis), supervisory functions and project management.
- 1990-1992 Engineering-Science, Inc. **Principal Engineer and Project Manager** in the air quality department. Responsibilities included permitting, tracking regulatory issues, technical analysis, and supervisory functions on numerous air, water, and hazardous waste projects. Responsibilities also include client and agency interfacing, project cost and schedule control, and reporting to internal and external upper management regarding project status.
- 1989-1990 Kinetics Technology International, Corp. **Development Engineer.** Involved in thermal engineering R&D and project work related to low-NOx ceramic radiant burners, fired heater NOx reduction, SCR design, and fired heater retrofitting.
- 1988-1989 Heat Transfer Research, Inc. **Research Engineer.** Involved in the design of fired heaters, heat exchangers, air coolers, and other non-fired equipment. Also did research in the area of heat exchanger tube vibrations.

EDUCATION

- 1984-1988 Ph.D., Mechanical Engineering, California Institute of Technology (Caltech), Pasadena, CA.
- 1984 M. S., Mechanical Engineering, Caltech, Pasadena, CA.
- 1978-1983 B. Tech (Honors), Mechanical Engineering, Indian Institute of Technology (IIT) Kharagpur, India

TEACHING EXPERIENCE**Caltech**

"Thermodynamics," Teaching Assistant, California Institute of Technology, 1983, 1987.

"Air Pollution Control," Teaching Assistant, California Institute of Technology, 1985.

"Caltech Secondary and High School Saturday Program," - taught various mathematics (algebra through calculus) and science (physics and chemistry) courses to high school students, 1983-1989.

"Heat Transfer," - taught this course in the Fall and Winter terms of 1994-1995 in the Division of Engineering and Applied Science.

"Thermodynamics and Heat Transfer," Fall and Winter Terms of 1996-1997.

U.C. Riverside, Extension

"Toxic and Hazardous Air Contaminants," University of California Extension Program, Riverside, California. Various years since 1992.

"Prevention and Management of Accidental Air Emissions," University of California Extension Program, Riverside, California. Various years since 1992.

"Air Pollution Control Systems and Strategies," University of California Extension Program, Riverside, California, Summer 1992-93, Summer 1993-1994.

"Air Pollution Calculations," University of California Extension Program, Riverside, California, Fall 1993-94, Winter 1993-94, Fall 1994-95.

"Process Safety Management," University of California Extension Program, Riverside, California. Various years since 1992-2010.

"Process Safety Management," University of California Extension Program, Riverside, California, at SCAQMD, Spring 1993-94.

"Advanced Hazard Analysis - A Special Course for LEPCs," University of California Extension Program, Riverside, California, taught at San Diego, California, Spring 1993-1994.

"Advanced Hazardous Waste Management" University of California Extension Program, Riverside, California. 2005.

Loyola Marymount University

"Fundamentals of Air Pollution - Regulations, Controls and Engineering," Loyola Marymount University, Dept. of Civil Engineering. Various years since 1993.

"Air Pollution Control," Loyola Marymount University, Dept. of Civil Engineering, Fall 1994.

"Environmental Risk Assessment," Loyola Marymount University, Dept. of Civil Engineering. Various years since 1998.

"Hazardous Waste Remediation" Loyola Marymount University, Dept. of Civil Engineering. Various years since 2006.

University of Southern California

"Air Pollution Controls," University of Southern California, Dept. of Civil Engineering, Fall 1993, Fall 1994.

"Air Pollution Fundamentals," University of Southern California, Dept. of Civil Engineering, Winter 1994.

University of California, Los Angeles

"Air Pollution Fundamentals," University of California, Los Angeles, Dept. of Civil and Environmental Engineering, Spring 1994, Spring 1999, Spring 2000, Spring 2003, Spring 2006, Spring 2007, Spring 2008, Spring 2009.

International Programs

"Environmental Planning and Management," 5 week program for visiting Chinese delegation, 1994.

"Environmental Planning and Management," 1 day program for visiting Russian delegation, 1995.

"Air Pollution Planning and Management," IEP, UCR, Spring 1996.

"Environmental Issues and Air Pollution," IEP, UCR, October 1996.

PROFESSIONAL AFFILIATIONS AND HONORS

President of India Gold Medal, IIT Kharagpur, India, 1983.

Member of the Alternatives Assessment Committee of the Grand Canyon Visibility Transport Commission, established by the Clean Air Act Amendments of 1990, 1992-present.

American Society of Mechanical Engineers: Los Angeles Section Executive Committee, Heat Transfer Division, and Fuels and Combustion Technology Division, 1987-present.

Air and Waste Management Association, West Coast Section, 1989-present.

PROFESSIONAL CERTIFICATIONS

EIT, California (# XE088305), 1993.

REA I, California (#07438), 2000.

Certified Permitting Professional, South Coast AQMD (#C8320), since 1993.

QEP, Institute of Professional Environmental Practice, since 2000.

CEM, State of Nevada (#EM-1699). Expiration 10/07/2011.

PUBLICATIONS (PARTIAL LIST)

"Physical Properties and Oxidation Rates of Chars from Bituminous Coals," with Y.A. Levendis, R.C. Flagan and G.R. Gavalas, *Fuel*, **67**, 275-283 (1988).

"Char Combustion: Measurement and Analysis of Particle Temperature Histories," with R.C. Flagan, G.R. Gavalas and P.S. Northrop, *Comb. Sci. Tech.* **60**, 215-230 (1988).

"On the Combustion of Bituminous Coal Chars," PhD Thesis, California Institute of Technology (1988).

"Optical Pyrometry: A Powerful Tool for Coal Combustion Diagnostics," *J. Coal Quality*, **8**, 17-22 (1989).

"Post-Ignition Transients in the Combustion of Single Char Particles," with Y.A. Levendis, R.C. Flagan and G.R. Gavalas, *Fuel*, **68**, 849-855 (1989).

"A Model for Single Particle Combustion of Bituminous Coal Char." Proc. ASME National Heat Transfer Conference, Philadelphia, **HTD-Vol. 106**, 505-513 (1989).

"Discrete Simulation of Cenospheric Coal-Char Combustion," with R.C. Flagan and G.R. Gavalas, *Combust. Flame*, **77**, 337-346 (1989).

"Particle Measurements in Coal Combustion," with R.C. Flagan, in "**Combustion Measurements**" (ed. N. Chigier), Hemisphere Publishing Corp. (1991).

"Cross Linking in Pore Structures and Its Effect on Reactivity," with G.R. Gavalas in preparation.

"Natural Frequencies and Mode Shapes of Straight Tubes," Proprietary Report for Heat Transfer Research Institute, Alhambra, CA (1990).

"Optimal Tube Layouts for Kamui SL-Series Exchangers," with K. Ishihara, Proprietary Report for Kamui Company Limited, Tokyo, Japan (1990).

"HTRI Process Heater Conceptual Design," Proprietary Report for Heat Transfer Research Institute, Alhambra, CA (1990).

"Asymptotic Theory of Transonic Wind Tunnel Wall Interference," with N.D. Malmuth and others, Arnold Engineering Development Center, Air Force Systems Command, USAF (1990).

"Gas Radiation in a Fired Heater Convection Section," Proprietary Report for Heat Transfer Research Institute, College Station, TX (1990).

"Heat Transfer and Pressure Drop in NTIW Heat Exchangers," Proprietary Report for Heat Transfer Research Institute, College Station, TX (1991).

"NOx Control and Thermal Design," Thermal Engineering Tech Briefs, (1994).

"From Purchase of Landmark Environmental Insurance to Remediation: Case Study in Henderson, Nevada," with Robin E. Bain and Jill Quillin, presented at the AQMA Annual Meeting, Florida, 2001.

"The Jones Act Contribution to Global Warming, Acid Rain and Toxic Air Contaminants," with Charles W. Botsford, presented at the AQMA Annual Meeting, Florida, 2001.

PRESENTATIONS (PARTIAL LIST)

"Pore Structure and Combustion Kinetics - Interpretation of Single Particle Temperature-Time Histories," with P.S. Northrop, R.C. Flagan and G.R. Gavalas, presented at the AIChE Annual Meeting, New York (1987).

"Measurement of Temperature-Time Histories of Burning Single Coal Char Particles," with R.C. Flagan, presented at the American Flame Research Committee Fall International Symposium, Pittsburgh, (1988).

"Physical Characterization of a Cenospheric Coal Char Burned at High Temperatures," with R.C. Flagan and G.R. Gavalas, presented at the Fall Meeting of the Western States Section of the Combustion Institute, Laguna Beach, California (1988).

"Control of Nitrogen Oxide Emissions in Gas Fired Heaters - The Retrofit Experience," with G. P. Croce and R. Patel, presented at the International Conference on Environmental Control of Combustion Processes (Jointly sponsored by the American Flame Research Committee and the Japan Flame Research Committee), Honolulu, Hawaii (1991).

"Air Toxics - Past, Present and the Future," presented at the Joint AIChE/AAEE Breakfast Meeting at the AIChE 1991 Annual Meeting, Los Angeles, California, November 17-22 (1991).

"Air Toxics Emissions and Risk Impacts from Automobiles Using Reformulated Gasolines," presented at the Third Annual Current Issues in Air Toxics Conference, Sacramento, California, November 9-10 (1992).

"Air Toxics from Mobile Sources," presented at the Environmental Health Sciences (ESE) Seminar Series, UCLA, Los Angeles, California, November 12, (1992).

"Kilns, Ovens, and Dryers - Present and Future," presented at the Gas Company Air Quality Permit Assistance Seminar, Industry Hills Sheraton, California, November 20, (1992).

"The Design and Implementation of Vehicle Scrapping Programs," presented at the 86th Annual Meeting of the Air and Waste Management Association, Denver, Colorado, June 12, 1993.

"Air Quality Planning and Control in Beijing, China," presented at the 87th Annual Meeting of the Air and Waste Management Association, Cincinnati, Ohio, June 19-24, 1994.

Annex A

Expert Litigation Support

1. Matters for which Dr. Sahu has have provided depositions and affidavits/expert reports include:

- (a) Deposition on behalf of Rocky Mountain Steel Mills, Inc. located in Pueblo, Colorado – dealing with the manufacture of steel in mini-mills including methods of air pollution control and BACT in steel mini-mills and opacity issues at this steel mini-mill
- (b) Affidavit for Rocky Mountain Steel Mills, Inc. located in Pueblo Colorado – dealing with the technical uncertainties associated with night-time opacity measurements in general and at this steel mini-mill.
- (c) Expert reports and depositions (2/28/2002 and 3/1/2002; 12/2/2003 and 12/3/2003; 5/24/2004) on behalf of the US Department of Justice in connection with the Ohio Edison NSR Cases. *United States, et al. v. Ohio Edison Co., et al.*, C2-99-1181 (S.D. Ohio).
- (d) Expert reports and depositions (5/23/2002 and 5/24/2002) on behalf of the US Department of Justice in connection with the Illinois Power NSR Case. *United States v. Illinois Power Co., et al.*, 99-833-MJR (S.D. Ill.).
- (e) Expert reports and depositions (11/25/2002 and 11/26/2002) on behalf of the US Department of Justice in connection with the Duke Power NSR Case. *United States, et al. v. Duke Energy Corp.*, 1:00-CV-1262 (M.D.N.C.).
- (f) Expert reports and depositions (10/6/2004 and 10/7/2004; 7/10/2006) on behalf of the US Department of Justice in connection with the American Electric Power NSR Cases. *United States, et al. v. American Electric Power Service Corp., et al.*, C2-99-1182, C2-99-1250 (S.D. Ohio).
- (g) Affidavit (March 2005) on behalf of the Minnesota Center for Environmental Advocacy and others in the matter of the Application of Heron Lake BioEnergy LLC to construct and operate an ethanol production facility – submitted to the Minnesota Pollution Control Agency.
- (h) Expert reports and depositions (10/31/2005 and 11/1/2005) on behalf of the US Department of Justice in connection with the East Kentucky Power Cooperative NSR Case. *United States v. East Kentucky Power Cooperative, Inc.*, 5:04-cv-00034-KSF (E.D. KY).
- (i) Deposition (10/20/2005) on behalf of the US Department of Justice in connection with the Cinergy NSR Case. *United States, et al. v. Cinergy Corp., et al.*, IP 99-1693-C-M/S (S.D. Ind.).
- (j) Affidavits and deposition on behalf of Basic Management Inc. (BMI) Companies in connection with the BMI vs. USA remediation cost recovery Case.

- (k) Expert report on behalf of Penn Future and others in the Cambria Coke plant permit challenge in Pennsylvania.
- (l) Expert report on behalf of the Appalachian Center for the Economy and the Environment and others in the Western Greenbrier permit challenge in West Virginia.
- (m) Expert report, deposition (via telephone on January 26, 2007) on behalf of various Montana petitioners (Citizens Awareness Network (CAN), Women's Voices for the Earth (WVE) and the Clark Fork Coalition (CFC)) in the Thompson River Cogeneration LLC Permit No. 3175-04 challenge.
- (n) Expert report and deposition (2/2/07) on behalf of the Texas Clean Air Cities Coalition at the Texas State Office of Administrative Hearings (SOAH) in the matter of the permit challenges to TXU Project Apollo's eight new proposed PRB-fired PC boilers located at seven TX sites.
- (o) Expert testimony (July 2007) on behalf of the Izaak Walton League of America and others in connection with the acquisition of power by Xcel Energy from the proposed Gascoyne Power Plant – at the State of Minnesota, Office of Administrative Hearings for the Minnesota PUC (MPUC No. E002/CN-06-1518; OAH No. 12-2500-17857-2).
- (p) Affidavit (July 2007) Comments on the Big Cajun I Draft Permit on behalf of the Sierra Club – submitted to the Louisiana DEQ.
- (q) Expert reports and deposition (12/13/2007) on behalf of Commonwealth of Pennsylvania – Dept. of Environmental Protection, State of Connecticut, State of New York, and State of New Jersey (Plaintiffs) in connection with the Allegheny Energy NSR Case. *Plaintiffs v. Allegheny Energy Inc., et al.*, 2:05cv0885 (W.D. Pennsylvania).
- (r) Expert reports and pre-filed testimony before the Utah Air Quality Board on behalf of Sierra Club in the Sevier Power Plant permit challenge.
- (s) Expert reports and deposition (October 2007) on behalf of MTD Products Inc., in connection with General Power Products, LLC v MTD Products Inc., 1:06 CVA 0143 (S.D. Ohio, Western Division)
- (t) Experts report and deposition (June 2008) on behalf of Sierra Club and others in the matter of permit challenges (Title V: 28.0801-29 and PSD: 28.0803-PSD) for the Big Stone II unit, proposed to be located near Milbank, South Dakota.
- (u) Expert reports, affidavit, and deposition (August 15, 2008) on behalf of Earthjustice in the matter of air permit challenge (CT-4631) for the Basin Electric Dry Fork station, under construction near Gillette, Wyoming before the Environmental Quality Council of the State of Wyoming.
- (v) Affidavit/Declaration and Expert Report on behalf of NRDC and the Southern Environmental Law Center in the matter of the air permit challenge for Duke Cliffside Unit 6, under construction in North Carolina.
- (w) Dominion Wise County MACT Declaration (August 2008)
- (x) Expert Report on behalf of Sierra Club for the Green Energy Resource Recovery Project, MACT Analysis (June 13, 2008).

- (y) Expert Report on behalf of Sierra Club and the Environmental Integrity Project in the matter of the air permit challenge for NRG Limestone's proposed Unit 3 in Texas (February 2009).
- (z) Expert Report and deposition on behalf of MTD Products, Inc., in the matter of Alice Holmes and Vernon Holmes v. Home Depot USA, Inc., et al. (June 2009, July 2009).
- (aa) Expert Report on behalf of Sierra Club and the Southern Environmental Law Center in the matter of the air permit challenge for Santee Cooper's proposed Pee Dee plant in South Carolina (August 2009).
- (bb) Statements (May 2008 and September 2009) on behalf of the Minnesota Center for Environmental Advocacy to the Minnesota Pollution Control Agency in the matter of the Minnesota Haze State Implementation Plans.
- (cc) Expert Report (August 2009) and Deposition (October 2009) on behalf of Environmental Defense, in the matter of permit challenges to the proposed Las Brisas coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).
- (dd) Deposition (October 2009) on behalf of Environmental Defense and others, in the matter of challenges to the proposed Coletto Creek coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH). (October 2009).
- (ee) Expert Report, Rebuttal Report (September 2009) and Deposition (October 2009) on behalf of the Sierra Club, in the matter of challenges to the proposed Medicine Bow Fuel and Power IGL plant in Cheyenne, Wyoming.
- (ff) Expert report (December 2009), Rebuttal reports (May 2010 and June 2010) and depositions (June 2010) on behalf of the US Department of Justice in connection with the Alabama Power Company NSR Case. *United States v. Alabama Power Company*, CV-01-HS-152-S (Northern District of Alabama, Southern Division).
- (gg) Prefiled testimony (October 2009) and Deposition (December 2009) on behalf of Environmental Defense and others, in the matter of challenges to the proposed White Stallion Energy Center coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).
- (hh) Deposition (October 2009) on behalf of Environmental Defense and others, in the matter of challenges to the proposed Tenaska coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH). (April 2010).
- (ii) Written Direct Testimony (July 2010) and Written Rebuttal Testimony (August 2010) on behalf of the State of New Mexico Environment Department in the matter of Proposed Regulation 20.2.350 NMAC – *Greenhouse Gas Cap and Trade Provisions*, No. EIB 10-04 (R), to the State of New Mexico, Environmental Improvement Board.
- (jj) Expert report (August 2010) and Rebuttal Expert Report (October 2010) on behalf of the US Department of Justice in connection with the Louisiana Generating NSR Case. *United States v. Louisiana Generating, LLC*, 09-CV100-RET-CN (Middle District of Louisiana).

- (kk) Declaration (August 2010) on behalf of the US EPA and US Department of Justice in the matter of DTE Energy Company, Detroit, MI (Monroe Unit 2).
- (ll) Expert Report and Deposition (August 2010) as well as Affidavit (September 2010) on behalf of Kentucky Waterways Alliance, Sierra Club, and Valley Watch in the matter of challenges to the NPDES permit issued for the Trimble County power plant by the Kentucky Energy and Environment Cabinet to Louisville Gas and Electric, File No. DOW-41106-047.
- (mm) Expert Report (August 2010) and Rebuttal Expert Report (September 2010) on behalf of Wild Earth Guardians in the matter of opacity exceedances and monitor downtime at the Public Service Company of Colorado (Xcel)'s Cherokee power plant. No. 09-cv-1862 (D. Colo.).
- (nn) Written Direct Expert Testimony (August 2010) on behalf of Fall-Line Alliance for a Clean Environment and others in the matter of the PSD Air Permit for Plant Washington issued by Georgia DNR at the Office of State Administrative Hearing, State of Georgia (OSAH-BNR-AQ-1031707-98-WALKER).
- (oo) Deposition (August 2010) on behalf of Environmental Defense, in the matter of the remanded permit challenge to the proposed Las Brisas coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).
- (pp) Expert Report, Supplemental/Rebuttal Expert Report, and Declarations (October 2010) on behalf of New Mexico Environment Department (Plaintiff-Intervenor), Grand Canyon Trust and Sierra Club (Plaintiffs) in the matter of Public Service Company of New Mexico (PNM)'s Mercury Report for the San Juan Generating Station, CIVIL NO. 1:02-CV-0552 BB/ATC (ACE). US District Court for the District of New Mexico.
- (qq) Comment Report (October 2010) on the Draft Permit Issued by the Kansas DHE to Sunflower Electric for Holcomb Unit 2. Prepared on behalf of the Sierra Club and Earthjustice.
- (rr) Expert Report (October 2010) and Rebuttal Expert Report (November 2010) (BART Determinations for PSCo Hayden and CSU Martin Drake units) to the Colorado Air Quality Commission on behalf of Coalition of Environmental Organizations.
- (ss) Expert Report (November 2010) (BART Determinations for TriState Craig Units, CSU Nixon Unit, and PRPA Rawhide Unit) to the Colorado Air Quality Commission on behalf of Coalition of Environmental Organizations.
- (tt) Comment Report (December 2010) on the Pennsylvania Department of Environmental Protection (PADEP)'s Proposal to grant Plan Approval for the Wellington Green Energy Resource Recovery Facility on behalf of the Chesapeake Bay Foundation, Group Against Smog and Pollution (GASP), National Park Conservation Association (NPCA), and the Sierra Club.
- (uu) Written Expert Testimony (January 2011) to the Georgia Office of State Administrative Hearings (OSAH) in the matter of Minor Source HAPs status for the proposed Longleaf Energy Associates power plant (OSAH-BNR-AQ-1115157-60-HOWELLS) on behalf of the Friends of the Chattahoochee and the Sierra Club).

2. Occasions where Dr. Sahu has provided oral testimony at trial or in similar proceedings include the following:

- (vv) In February, 2002, provided expert witness testimony on emissions data on behalf of Rocky Mountain Steel Mills, Inc. in Denver District Court.
- (ww) In February 2003, provided expert witness testimony on regulatory framework and emissions calculation methodology issues on behalf of the US Department of Justice in the Ohio Edison NSR Case in the US District Court for the Southern District of Ohio.
- (xx) In June 2003, provided expert witness testimony on regulatory framework, emissions calculation methodology, and emissions calculations on behalf of the US Department of Justice in the Illinois Power NSR Case in the US District Court for the Southern District of Illinois.
- (yy) In August 2006, provided expert witness testimony regarding power plant emissions and BACT issues on a permit challenge (Western Greenbrier) on behalf of the Appalachian Center for the Economy and the Environment in West Virginia.
- (zz) In May 2007, provided expert witness testimony regarding power plant emissions and BACT issues on a permit challenge (Thompson River Cogeneration) on behalf of various Montana petitioners (Citizens Awareness Network (CAN), Women's Voices for the Earth (WVE) and the Clark Fork Coalition (CFC)) before the Montana Board of Environmental Review.
- (aaa) In October 2007, provided expert witness testimony regarding power plant emissions and BACT issues on a permit challenge (Sevier Power Plant) on behalf of the Sierra Club before the Utah Air Quality Board.
- (bbb) In August 2008, provided expert witness testimony regarding power plant emissions and BACT issues on a permit challenge (Big Stone Unit II) on behalf of the Sierra Club and Clean Water before the South Dakota Board of Minerals and the Environment.
- (ccc) In February 2009, provided expert witness testimony regarding power plant emissions and BACT issues on a permit challenge (Santee Cooper Pee Dee units) on behalf of the Sierra Club and the Southern Environmental Law Center before the South Carolina Board of Health and Environmental Control.
- (ddd) In February 2009, provided expert witness testimony regarding power plant emissions, BACT issues and MACT issues on a permit challenge (NRG Limestone Unit 3) on behalf of the Sierra Club and the Environmental Integrity Project before the Texas State Office of Administrative Hearings (SOAH) Administrative Law Judges.
- (eee) In November 2009, provided expert witness testimony regarding power plant emissions, BACT issues and MACT issues on a permit challenge (Las Brisas Energy

Center) on behalf of the Environmental Defense Fund before the Texas State Office of Administrative Hearings (SOAH) Administrative Law Judges.

- (fff) In February 2010, provided expert witness testimony regarding power plant emissions, BACT issues and MACT issues on a permit challenge (White Stallion Energy Center) on behalf of the Environmental Defense Fund before the Texas State Office of Administrative Hearings (SOAH) Administrative Law Judges.
- (ggg) In September 2010 provided oral trial testimony on behalf of Commonwealth of Pennsylvania – Dept. of Environmental Protection, State of Connecticut, State of New York, State of Maryland, and State of New Jersey (Plaintiffs) in connection with the Allegheny Energy NSR Case in US District Court in the Western District of Pennsylvania. *Plaintiffs v. Allegheny Energy Inc., et al.*, 2:05cv0885 (W.D. Pennsylvania).
- (hhh) Oral Direct and Rebuttal Expert Testimony (September 2010) on behalf of Fall-Line Alliance for a Clean Environment and others in the matter of the PSD Air Permit for Plant Washington issued by Georgia DNR at the Office of State Administrative Hearing, State of Georgia (OSAH-BNR-AQ-1031707-98-WALKER).
- (iii) Oral Testimony (September 2010) on behalf of the State of New Mexico Environment Department in the matter of Proposed Regulation 20.2.350 NMAC – *Greenhouse Gas Cap and Trade Provisions*, No. EIB 10-04 (R), to the State of New Mexico, Environmental Improvement Board.
- (jjj) Oral Testimony (October 2010) regarding mercury and total PM/PM10 emissions and other issues on a remanded permit challenge (Las Brisas Energy Center) on behalf of the Environmental Defense Fund before the Texas State Office of Administrative Hearings (SOAH) Administrative Law Judges.
- (kkk) Oral Testimony (November 2010) regarding BART for PSCo Hayden, CSU Martin Drake units before the Colorado Air Quality Commission on behalf of the Coalition of Environmental Organizations.
- (lll) Oral Testimony (December 2010) regarding BART for TriState Craig Units, CSU Nixon Unit, and PRPA Rawhide Unit) before the Colorado Air Quality Commission on behalf of the Coalition of Environmental Organizations.
- (mmm) Deposition (December 2010) on behalf of the US Department of Justice in connection with the Louisiana Generating NSR Case. *United States v. Louisiana Generating, LLC*, 09-CV100-RET-CN (Middle District of Louisiana).
- (nnn) Deposition (February 2011) on behalf of Wild Earth Guardians in the matter of opacity exceedances and monitor downtime at the Public Service Company of Colorado (Xcel)'s Cherokee power plant. No. 09-cv-1862 (D. Colo.).
- (ooo) Oral Expert Testimony (February 2011) to the Georgia Office of State Administrative Hearings (OSAH) in the matter of Minor Source HAPs status for the proposed Longleaf Energy Associates power plant (OSAH-BNR-AQ-1115157-60-HOWELLS) on behalf of the Friends of the Chattahoochee and the Sierra Club).

ORAL ARGUMENT NOT YET SCHEDULED

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

)
CENTER FOR BIOLOGICAL DIVERSITY,)
et al.,)
) No. 11-1101
Petitioners,) (consolidated with Nos.
) 11-1285, 11-1328,
v.) and 11-1336)
)
UNITED STATES ENVIRONMENTAL)
PROTECTION AGENCY, et al.,)
)
Respondents.)
)
)
)

DECLARATION OF KASSIA R. SIEGEL

I, Kassia R. Siegel, declare as follows:

1. I am the director of the Center for Biological Diversity's Climate Law Institute. I have personal knowledge of the facts and statements contained herein and, if called as a witness, could and would competently testify to them.

2. The Center for Biological Diversity (the "Center") is a non-profit corporation with offices in San Francisco, Joshua Tree, Sacramento and Los Angeles, California; Tucson and Flagstaff, Arizona; Anchorage, Alaska; Minneapolis and Duluth, Minnesota; Las Vegas, Nevada; Silver City, New Mexico; Brooklyn, New York; Portland, Oregon; Richmond, Vermont; Seattle, Washington; and Washington, DC. The Center works to protect wild places and their inhabitants. The Center believes that the health and vigor of human

societies and the integrity and wildness of the natural environment are closely linked. Combining conservation biology with litigation, policy advocacy, and strategic vision, the Center is working to secure a future for animals and plants hovering on the brink of extinction, for the wilderness they need to survive, and by extension, for the physical health and spiritual welfare of generations to come. In my role as director of the Center's Climate Law Institute, I oversee all aspects of the Center's climate and air quality work.

3. The Center works on behalf of its members, who rely upon the organization to advocate for their interests in front of state, local and federal entities, including the EPA and the courts. The Center has approximately 40,000 members nationwide.

4. The Center has developed several different practice areas and programs, including the Climate Law Institute (formerly, our "Climate, Air, and Energy Program"), an internal institution with the primary mission of curbing global warming and other air pollution, and sharply limiting their damaging effects on endangered species and their habitats, and on all of us who depend on clean air, a safe climate, and a healthy web of life.

5. Global warming represents the most significant and pervasive threat to biodiversity worldwide, affecting both terrestrial and marine species from the tropics to the poles. Absent major reductions in greenhouse gas emissions, by the middle of this century upwards of 35 percent of the earth's species could be extinct or committed to extinction as a result of global warming. With even moderate warming scenarios producing sufficient sea level rise to largely inundate otherwise "protected" areas like the Everglades and the Northwest Hawaiian Islands, global warming threatens to render many other biodiversity conservation efforts either futile or irrelevant. To prevent extinctions from occurring at levels unprecedented in the last 65 million years, emissions of carbon dioxide and other greenhouse gases must be reduced deeply

and rapidly. Given the lag time in the climate system and the likelihood that positive feedback loops will accelerate global warming, leading scientists have warned that we have only a few decades, at most, to significantly reduce greenhouse gas emissions if we are to avoid catastrophic effects. Deep and immediate greenhouse gas reductions are required if we are to save many species which the Center is currently working to protect, including but not limited to the polar bear, Pacific walrus, ribbon seal, Kittlitz's murrelet, American pika, Emperor penguin, and many species of corals. Leading scientists have also stated that levels of carbon dioxide, the most important greenhouse gas, must be reduced to no more than 350 parts per million (ppm) and likely less than that, "to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted" (J. Hansen et al., *Target Atmospheric CO2: Where Should Humanity Aim?*, 2 Open Atmospheric Sci. J. 217, 218 (2008)).

6. One of the Climate Law Institute's top priorities is the full and immediate use of the Clean Air Act to rein in greenhouse gases and other pollutants. The Clean Air Act is our strongest and best existing tool for doing so, and we have long worked to enforce the Clean Air Act's mandates to accomplish this goal. For example, the Center was a Plaintiff in *Massachusetts vs. EPA*, which resulted in the landmark Supreme Court decision finding that greenhouse gases are pollutants under the Clean Air Act, which ultimately led to the EPA's first-ever rulemaking to reduce greenhouse gas emissions from passenger cars and light trucks under section 202 of the Clean Air Act. That rulemaking is comprised of the *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) ("Endangerment Finding"), and the *Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards*, 75 Fed. Reg. 25,324, 25,397 (May 7, 2010).

7. The EPA's rulemaking to reduce greenhouse gases from passenger vehicles preceded significant additional regulatory activity for greenhouse gases under other Clean Air Act programs, including rulemakings that enforce the Clean Air Act's Prevention of Significant Deterioration ("PSD") and Title V permitting programs for greenhouse gases emitted by stationary sources. We are involved in numerous Clean Air Act administrative proceedings and legal actions seeking to enforce the Act's provisions for greenhouse gases, including but not limited to *In re Shell Gulf of Mexico, Inc.*, OCS Appeal Nos. 10-01 through 10-04 (EAB Dec. 30, 2010), 14 E.A.D. ____ (challenging errors in air permits that would allow Shell to conduct exploratory drilling in the Arctic ocean), *Sierra Club v. EPA*, No. 11-73342 (9th Cir. filed Nov. 3, 2011) (challenging errors in air permits that would allow construction of a power plant in Avenal, California), and *Center for Biological Diversity v. EPA*, No. 10-985 (D.D.C. filed June 6, 2010) (seeking to compel a response from EPA on petitions to issue greenhouse gas standards for ships, aircraft, and offroad engines). In September, 2010, we petitioned the EPA to issue greenhouse gas standards for locomotive engines pursuant to Clean Air Act section 213(a)(5). *Petition for Rulemaking Under the Clean Air Act to Reduce Greenhouse Gas and Black Carbon Emissions from Locomotives* (Sept. 21, 2010), available at http://www.biologicaldiversity.org/programs/climate_law_institute/transportation_and_global_warming/pdfs/Locomotives_Petition_09_21_2010.pdf. In December 2009, we petitioned EPA to designate greenhouse gases as criteria air pollutants under Clean Air Act section 108 and to issue national ambient air quality standards sufficient to protect public health and welfare. *Petition to Establish National Pollution Limits for Greenhouse Gases Pursuant to the Clean Air Act* (Dec. 2, 2009), available at http://www.biologicaldiversity.org/programs/climate_law_institute/global_warming_litigation/clean_air_act/pdfs/Petition_G

[HG_pollution_cap_12-2-2009.pdf](#). These examples are illustrative of our advocacy in this area, not exhaustive.

8. In addition to our work on greenhouse pollution, the Center has worked through the Clean Air Act to address other pollutants that adversely impact biodiversity and human health. For example, in 2005 we filed suit against the EPA for failing to review and revise the air quality criteria for oxides of nitrogen and sulfur oxides and the national ambient air quality standards (NAAQS) for nitrogen dioxide and sulfur dioxide. *Center for Biological Diversity, et al. v. EPA*, No. 05-1814 (LFO) (D.D.C. filed September 12, 2005). This case resulted in a court-ordered settlement agreement setting forth deadlines for the EPA to update these critically important standards. On February 9, 2010, EPA issued updated primary NAAQS for nitrogen dioxide. Primary National Ambient Air Quality Standards for Nitrogen Dioxide; Final Rule, 75 Fed. Reg. 6474 (February 9, 2010). On June 22, 2010, EPA issued updated primary NAAQS for sulfur dioxide. Primary National Ambient Air Quality Standard for Sulfur Dioxide; Final Rule, 75 Fed. Reg. 35520 (June 22, 2010). Pursuant to the settlement agreement, EPA has until March 20, 2012 to finalize its review and revision of the secondary NAAQS for oxides of nitrogen and sulfur. Secondary National Ambient Air Quality Standards for Oxides of Nitrogen and Sulfur; Proposed Rule, 76 Fed. Reg. 46084 (August 1, 2011). We also filed suit in 2010 against EPA for failing to meet numerous deadlines for limiting dangerous particle pollution, including failing to determine whether areas in five western states are complying with existing air-pollution standards and by failing to ensure that states are implementing legally required plans to meet the standards, and again reached a settlement setting forth deadlines for EPA to carry out these important duties.

9. This declaration is made in support of the Center for Biological Diversity's Petition for Review in case number 10-1101 and the cases

consolidated therewith. Petitioners in these cases have challenged an EPA rulemaking that exempts sources of “biogenic” greenhouse gas emissions, produced by combustion of biomass fuels, from the Clean Air Act’s PSD and Title V permitting programs. Deferral for CO₂ Emissions From Bioenergy and Other Biogenic Sources Under the Prevention of Significant Deterioration (PSD) and Title V Programs, 76 Fed. Reg. 43,490 (July 20, 2011) (“Biomass Exemption Rule”). Petitioners in case number 11-1101 also challenge EPA’s decision to grant a petition for reconsideration filed by the National Alliance of Forest Owners seeking such an exemption.

10. The Biomass Exemption Rule challenged here, if allowed to stand, would impair the Center’s ability to carry out its mission and our members’ ability to protect their interests in multiple ways.

11. First, the PSD and Title V programs, two of the most important programs provided under the Clean Air Act for the reduction of air pollution from stationary sources, would be effectively disabled for greenhouse emissions from biomass combustion. This would prevent EPA from requiring new and modified biomass facilities to implement the best available control technology for controlling greenhouse gases. Moreover, because the Biomass Exemption Rule exempts many facilities from the PSD program altogether, those facilities will not have to apply best available control technology to their emissions of pollutants like nitrogen oxides and carbon monoxide that directly threaten the health and welfare of the Center’s members. Simply stated, the Biomass Exemption Rule allows additional pollution to be emitted, thus harming the Center and our members’ interests in reducing air pollution.

12. Second, exemption of these sources from the PSD and Title V programs would also impair the Center’s ability to participate in the permitting processes for major new and modified sources of greenhouse gases. The Center and our members would be deprived of our ability to participate in and influence

the permitting process. These permitting processes are a vital source of information about bioenergy facilities, and the Exemption first and foremost deprives the Center and its members of information that would otherwise have been available about proposed bioenergy facilities. The Center and our members use and benefit from this information in many ways. For example, we participate in the permitting process by reviewing and commenting upon proposed facilities and alternatives, and in many instances advocate for alternatives other than those initially proposed by project proponents. In addition, we review and comment upon the technologies and processes that constitute BACT. We also often use the information provided by such permitting processes for additional communication and advocacy work. For example, we use the information to communicate to our members, the media, the public, and our elected representatives about the impacts of proposed facilities, because greater awareness of these impacts is an important step in our efforts to reduce and eliminate them. By depriving the Center and its members of multiple opportunities for such participation, the Biomass Exemption severely harms the Center's ability to carry out our mission.

13. Third, the exemption of biomass sources from the PSD and Title V permitting programs would create an incentive for construction of more biomass-burning facilities, especially energy generation facilities. This would result not only in increased greenhouse gas emissions, but also increased demand for biomass fuels from forests and cropland across the nation. In particular, a growing demand for woody biomass fuel would increase pressure to log native forests and even to convert native forests to biomass plantations. The Center has worked for many years to protect forests and the Center's and our members' interests in observing, appreciating, using, and conserving the multitude of threatened and endangered species that rely on mature and native forest habitat throughout the United States. Thus the Biomass Exemption Rule

harms our ability to protect our interest in healthy forests by incentivizing increased logging and forest conversion.

14. The Center's members rely on the organization to compel EPA to comply with its existing legal duties and to advocate for the strongest possible air pollution controls. The Center's members also rely on the organization to compel EPA to comply with the provisions of the Clean Air Act and to operate lawfully.

15. EPA's failure to comply with the Clean Air Act in adopting the rule challenged here harms the interests of the Center and its members. These interests include procedural and informational interests advanced by the Clean Air Act's permitting programs, interests directly threatened by EPA's unlawful adoption of the Biomass Exemption Rule. These interests also include the substantive interests of the organization and its members in pollution reduction and cleaner air.

16. If EPA had followed the law, I believe that the agency would not have adopted the Biomass Exemption Rule at all. This would have protected both the procedural and substantive interests of the Center and its members.

17. If this court were to remand the rule we challenge in this action, the EPA would be required to reconsider the rule in accordance with the requirements of the Clean Air Act, and the harm to the Center and its members that have resulted from the agency's illegal actions would be redressed.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on March 8, 2012, at San Francisco, CA.

/s/ Kassia R. Siegel

Kassia R. Siegel