

ORAL ARGUMENT SCHEDULED OCTOBER 8, 2020

Nos. 19-1140 and consolidated cases

**In the United States Court of Appeals
for the District of Columbia Circuit**

AMERICAN LUNG ASSOCIATION, *et al.*,
Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,
Respondents.

On Petitions for Judicial Review of an Action of the
United States Environmental Protection Agency
84 Fed. Reg. 32,520 (July 8, 2019)

SUPPLEMENTAL DEFERRED JOINT APPENDIX

VOLUME 2

SA000233 TO SA000244

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SUPPLEMENTAL DEFERRED JOINT APPENDIX — TABLE OF CONTENTS**VOLUME 2****RECORD**

Document ID	Description	Pages
Publicly available at: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100BBV1.txt	U.S. EPA, Guidance for Determining BACT for Reducing Carbon Dioxide Emissions from Bioenergy Production (Mar. 2011) (excerpt)	SA000233– SA000239

MATERIALS INCLUDED FOR THE CONVENIENCE OF THE COURT¹

Date	Description	Pages
Apr. 15, 2009	U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007 (excerpt)	SA000240- SA000244

¹ The following materials are not in the Certified Index to the Administrative Record. These materials are provided as a matter of convenience. By including these materials in the Supplemental Joint Appendix, no party waives current or future arguments as to whether it is appropriate for the Court to consider these materials.

**United States
Environmental Protection
Agency**

Office of Air and Radiation

March 2011



**GUIDANCE FOR DETERMINING BEST AVAILABLE
CONTROL TECHNOLOGY FOR REDUCING
CARBON DIOXIDE EMISSIONS FROM BIOENERGY
PRODUCTION**

**Guidance for Determining Best Available Control
Technology for Reducing Carbon Dioxide Emissions from
Bioenergy Production**

Prepared by the

**U.S. Environmental Protection Agency
Office of Air and Radiation
Washington, DC**

March 2011

Disclaimer

This document explains the requirements of EPA regulations, describes EPA policies, and recommends procedures for permitting authorities to use to ensure that permitting decisions are consistent with applicable regulations. This document is not a rule or regulation, and the guidance it contains may not apply to a particular situation based upon the individual facts and circumstances. This guidance does not change or substitute for any law, regulation, or any other legally binding requirement and is not legally enforceable. The use of non-mandatory language such as “guidance,” “recommend,” “may,” “should,” and “can,” is intended to describe EPA policies and recommendations. Mandatory terminology such as “must” and “required” are intended to describe controlling requirements under the terms of the Clean Air Act and EPA regulations, but this document does not establish legally binding requirements in and of itself.

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I. Introduction

This guidance provides an illustration of reasoning that a Prevention of Significant Deterioration (PSD) permitting authority may use to support the conclusion that the best available control technology (BACT) for carbon dioxide (CO₂) emissions at a bioenergy facility¹ is the combustion of biogenic fuels by itself. As of January 2, 2011, greenhouse gases (GHG), including CO₂, became a pollutant subject to regulation under the Clean Air Act (CAA).² Under existing PSD program regulations and EPA interpretations of those regulations, stationary sources of air pollution that require a PSD permit to authorize construction,³ and that would have the potential to emit (or would increase GHG emissions by) 75,000 tons CO₂ equivalent (CO_{2e}) per year (tpy) or more or are requesting to increase GHG emissions by 75,000 tons CO_{2e} per year (tpy) but that did not obtain such a permit prior to January 2, 2011,⁴ will need to demonstrate to the appropriate reviewing authority⁵ that the proposed facility will meet GHG emission limitations through application of BACT.⁶ To assist PSD permit applicants and reviewing authorities with making this determination, EPA provided guidance on November 10,

¹ A 'bioenergy facility' is defined, for the purposes of this guidance, as a facility that generates energy via the combustion of biologically-derived material other than fossil fuels, for example wood, biosolids, or agricultural products. This could be undertaken either alone or in addition to traditional fossil fuels.

² 75 FR 17004 (April 2, 2010); 75 FR 31514 (June 3, 2010).

³ On June 3, 2010, EPA issued a final rule that "tailors" the applicability provisions of the PSD and title V programs to enable EPA and states to phase in permitting requirements for GHGs in a common sense manner ("Tailoring Rule"). The first Tailoring Rule step begins on January 2, 2011, and ends on June 30, 2011, and this step covers what EPA has called "anyway sources" and "anyway modifications" that would be subject to PSD "anyway" based on emissions of pollutants other than GHGs. The second step begins on July 1, 2011, and continues thereafter to cover both anyway sources and certain other large emitters of GHGs.

⁴ 75 FR 17021 (April 2, 2010); 75 FR 31526 (June 3, 2010)

⁵ This may be EPA or a state or local government authority depending on the status of implementation. See 75 FR 77698 (December 13, 2010); 75 FR 81874 (December 29, 2010); 75 FR 82246 - 82536 (December 30, 2010); 76 FR 752 (January 6, 2011); 76 FR 2070 (January 12, 2011); 76 FR 2581 (January 14, 2011); 76 FR 2591 (January 14, 2011).

⁶ 40 CFR 52.21(b)(49)-(50); 40 CFR 51.166(b)(48)-(49); 40 CFR 52.21(b)(12); 40 CFR 51.166(b)(12); 40 CFR 52.21(j)(2)-(3); 40 CFR 51.166(j)(2)-(3); 75 FR 17004 (April 2, 2010); 75 FR 31514 (June 3, 2010).

2010 entitled *PSD and Title V Permitting Guidance for Greenhouse Gases* (“2010 GHG Permitting Guidance”),⁷ which includes a section on determining BACT for GHG. In addition to the November 10, 2010 guidance EPA also released technical white papers⁸ for several industry sectors.

Any stationary source, including a bioenergy facility, that qualifies as a major stationary source required to obtain a PSD permit must address the BACT requirement for GHGs if it emits or increases its emission of this regulated pollutant in amounts greater than 75,000 tons on a CO₂e basis.⁹ This guidance on determining BACT for CO₂ emissions from a bioenergy facility is intended to supplement the 2010 GHG Permitting Guidance, and not to supersede it. This guidance applies to sources that generate energy from biologically-based material, and it does not apply to other sources that may emit biogenic CO₂ but do not generate energy from the biological material. For the sources with biogenic emissions not covered by this guidance document, one should consult the 2010 GHG Permitting Guidance and prior guidance EPA has provided on the top-down BACT process.

Concurrent with the release of this guidance, EPA is issuing a proposed rule to defer application of PSD permitting requirements to CO₂ emissions from biologically-based material (biogenic CO₂ emissions) for a three-year period. The scope of the proposed deferral is wider than the scope of this guidance: the deferral is intended to cover all sources of biogenic CO₂ emissions, including those that emit CO₂ from biologically-based material but do not generate energy from it.

EPA expects to take final action on the proposed deferral rule in the July 2011 timeframe. In the event that EPA finalizes the deferral for the PSD program as proposed, states may require

⁷ <http://www.epa.gov/nsr/ghgdocs/epa-hq-oar-2010-0841-0001.pdf>

⁸ <http://www.epa.gov/nsr/ghgpermitting.html>

⁹ 75 Fed. Reg. at 31606-07; 40 CFR 52.21(b)(49); 40 CFR 52.166(b)(48).

additional time to review their state laws to incorporate the deferral established by that rule. To the extent no such deferral is available under the PSD permitting regulations applicable at the time a permitting authority issues a PSD permit for a bioenergy facility, the reasoning described below may be used on an interim basis to support a conclusion in such a permit that BACT for CO₂ is combustion of biomass fuels alone.

This document does not provide a final determination of BACT for a particular source, since such determinations can only be made by individual permitting authorities on a case-by-case basis after consideration of the record in each case. Upon considering the record in an individual case, if a permitting authority has a reasoned basis to address particular issues discussed in this document in a different manner than EPA recommends here, permitting authorities (including EPA) have the discretion to do so in decisions on individual permit applications consistent with the relevant requirements in the CAA and regulations. However, EPA believes the analysis described below will be sufficient in most cases to support the conclusion that utilization of biomass fuel alone is BACT for a bioenergy facility.

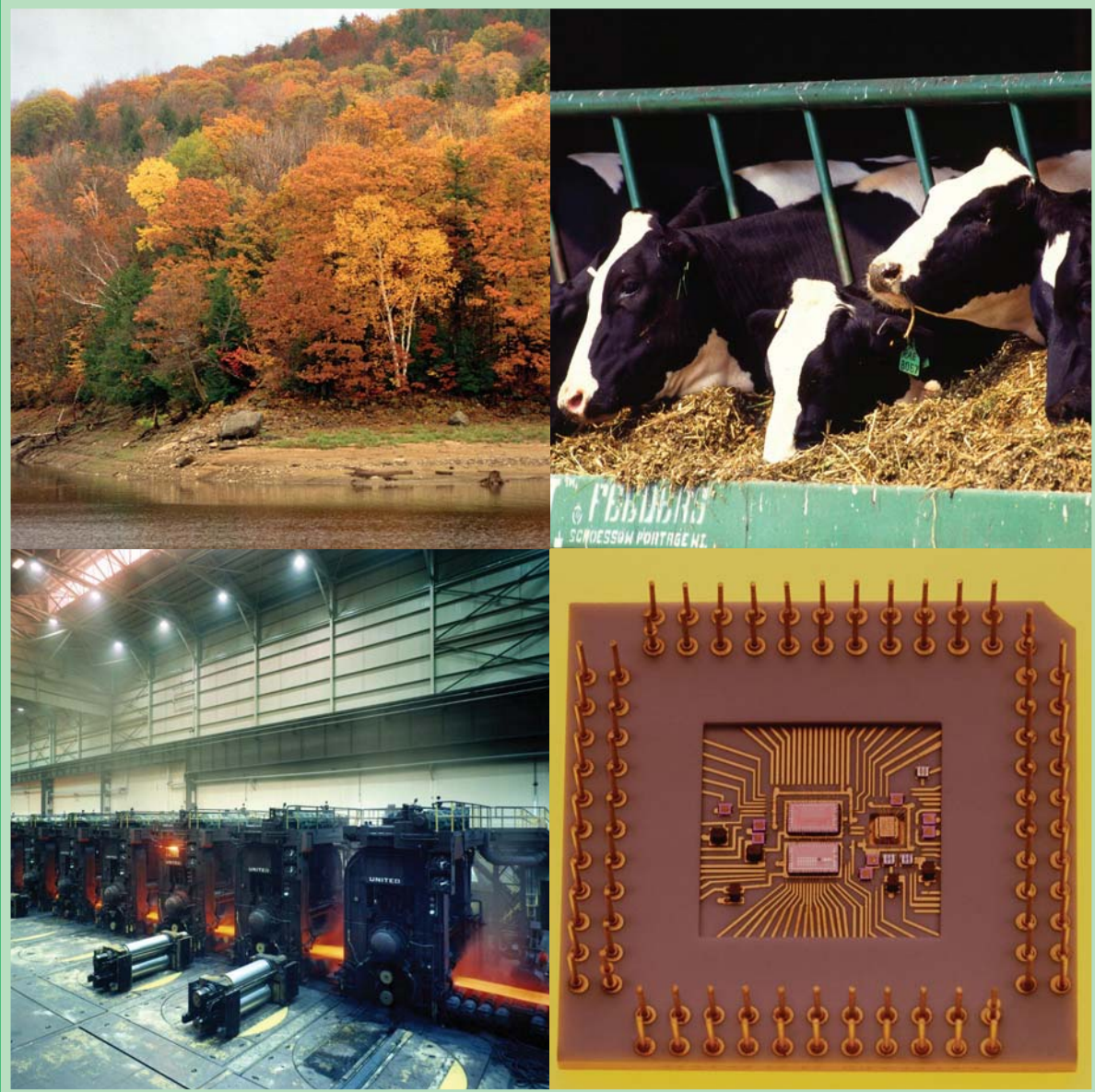
It is also important to note that this guidance is meant to be interim guidance only and that once EPA completes the detailed examination of the science and technical issues associated with accounting for biogenic CO₂ emissions from stationary sources, as discussed in the proposed deferral, those analyses may outweigh many of the considerations mentioned in this guidance.

II. CO₂ Emissions from Bioenergy and the Carbon Cycle

Carbon dioxide emissions from bioenergy facilities are generated during the combustion of biologically-based material (e.g., forest or agricultural products) for energy. The term ‘CO₂ emissions from bioenergy’ is used in this guidance to describe biogenic CO₂ emissions from a



Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2007



**INVENTORY OF U.S. GREENHOUSE GAS
EMISSIONS AND SINKS:
1990–2007**

April 15, 2009

**U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
U.S.A.**

3. Energy

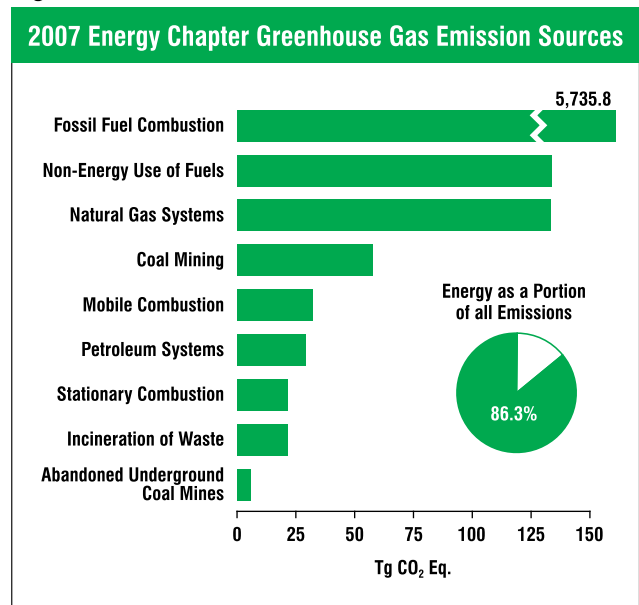
Energy-related activities were the primary sources of U.S. anthropogenic greenhouse gas emissions, accounting for 86.3 percent of total emissions on a carbon dioxide (CO₂) equivalent basis in 2007. This included 97, 35, and 14 percent of the nation's CO₂, methane (CH₄), and nitrous oxide (N₂O) emissions, respectively. Energy-related CO₂ emissions alone constituted 83 percent of national emissions from all sources on a CO₂ equivalent basis, while the non-CO₂ emissions from energy-related activities represented a much smaller portion of total national emissions (4 percent collectively).

Emissions from fossil fuel combustion comprise the vast majority of energy-related emissions, with CO₂ being the primary gas emitted (see Figure 3-1). Globally, approximately 29,195 teragrams (Tg) of CO₂ were added to the atmosphere through the combustion of fossil fuels in 2006, of which the United States accounted for about 20 percent.¹ Due to their relative importance, fossil fuel combustion-related CO₂ emissions are considered separately, and in more detail than other energy-related emissions (see Figure 3-2). Fossil fuel combustion also emits CH₄ and N₂O, as well as indirect greenhouse gases such as nitrogen oxides (NO_x), carbon monoxide (CO), and non-CH₄ volatile organic compounds (NMVOCs). Mobile fossil fuel combustion was the second largest source of N₂O emissions in the United States, and overall energy-related activities were collectively the largest source of these indirect greenhouse gas emissions.

Energy-related activities other than fuel combustion, such as the production, transmission, storage, and distribution of fossil fuels, also emit greenhouse gases. These emissions consist primarily of fugitive CH₄ from natural gas systems, petroleum systems, and coal mining. Smaller quantities of CO₂, CO, NMVOCs, and NO_x are also emitted.

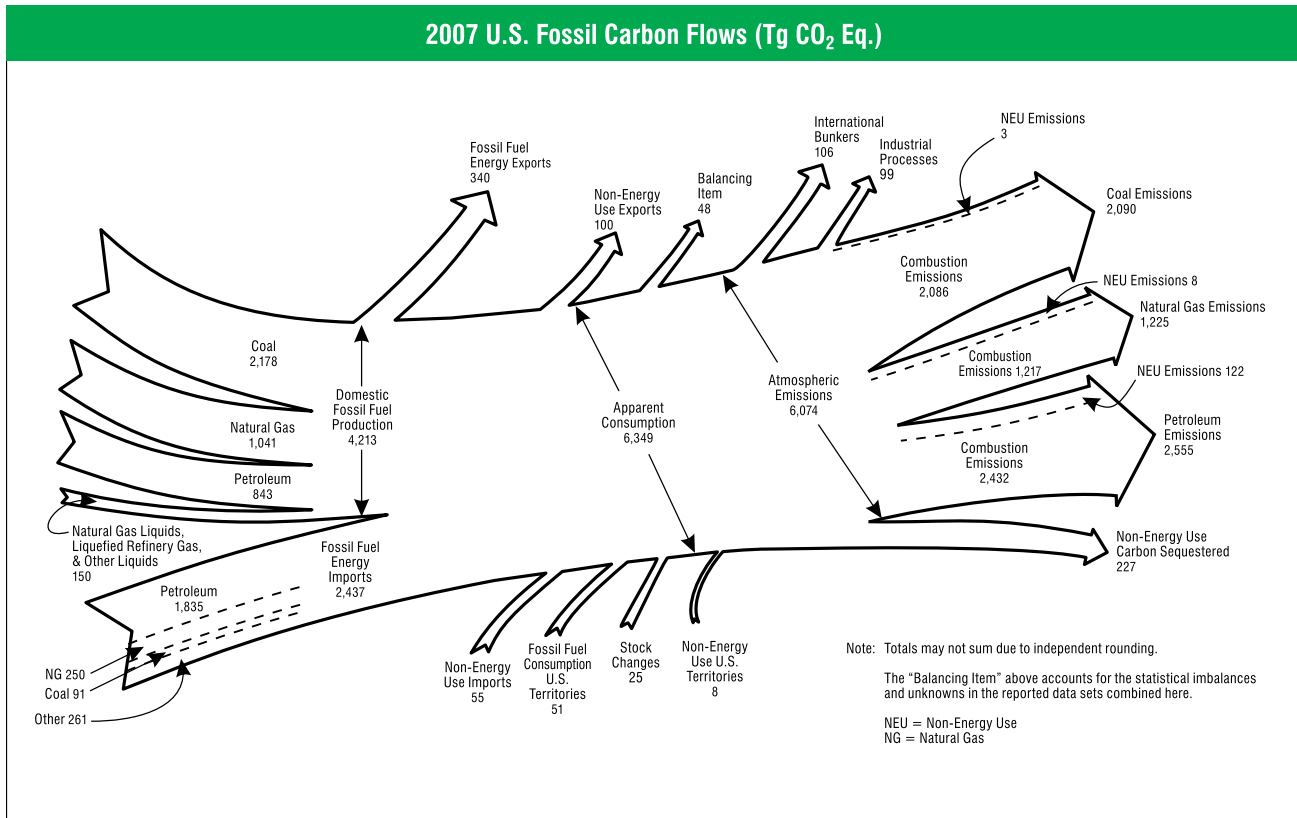
The combustion of biomass and biomass-based fuels also emits greenhouse gases. Carbon dioxide emissions from these activities, however, are not included in national emissions totals because biomass fuels are of biogenic origin. It is assumed that the C released during the consumption of biomass is recycled as U.S. forests and crops regenerate, causing no net addition of CO₂ to the atmosphere. The net impacts of land-use and forestry activities on the C cycle are accounted for separately within the Land Use, Land-Use Change, and Forestry chapter. Emissions of other greenhouse gases from the combustion

Figure 3-1



¹Global CO₂ emissions from fossil fuel combustion were taken from Energy Information Administration *International Energy Annual 2006* <<http://www.eia.doe.gov/emeu/iea/carbon.html>> EIA (2008).

Figure 3-2



of biomass and biomass-based fuels are included in national totals under stationary and mobile combustion.

Table 3-1 summarizes emissions from the Energy sector in units of Tg of CO₂ equivalents (Tg CO₂ Eq.), while

unweighted gas emissions in gigagrams (Gg) are provided in Table 3-2. Overall, emissions due to energy-related activities were 6,170.3 Tg CO₂ Eq. in 2007, an increase of 19 percent since 1990.

Table 3-1: CO₂, CH₄, and N₂O Emissions from Energy (Tg CO₂ Eq.)

Gas/Source	1990	1995	2000	2005	2006	2007
CO₂	4,871.0	5,201.2	5,753.2	5,910.8	5,830.2	5,919.5
Fossil Fuel Combustion	4,708.9	5,013.9	5,561.5	5,723.5	5,635.4	5,735.8
Electricity Generation	1,809.7	1,938.9	2,283.2	2,381.0	2,327.3	2,397.2
Transportation	1,484.5	1,598.7	1,800.3	1,881.5	1,880.9	1,887.4
Industrial	834.2	862.6	844.6	828.0	844.5	845.4
Residential	337.7	354.4	370.4	358.0	321.9	340.6
Commercial	214.5	224.4	226.9	221.8	206.0	214.4
U.S. Territories	28.3	35.0	36.2	53.2	54.8	50.8
Non-Energy Use of Fuels	117.0	137.5	144.5	138.1	145.1	133.9
Natural Gas Systems	33.7	33.8	29.4	29.5	29.5	28.7
Incineration of Waste	10.9	15.7	17.5	19.5	19.8	20.8
Petroleum Systems	0.4	0.3	0.3	0.3	0.3	0.3
Wood Biomass and Ethanol Consumption ^a	219.3	236.8	227.3	231.5	240.4	247.8
International Bunker Fuels ^a	114.3	101.6	99.0	111.5	110.5	108.8

Table 3-1: CO₂, CH₄, and N₂O Emissions from Energy (Tg CO₂ Eq.) (continued)

Gas/Source	1990	1995	2000	2005	2006	2007
CH₄	265.7	251.4	239.0	206.5	205.7	205.7
Natural Gas Systems	129.6	132.6	130.8	106.3	104.8	104.7
Coal Mining	84.1	67.1	60.5	57.1	58.4	57.6
Petroleum Systems	33.9	32.0	30.3	28.3	28.3	28.8
Stationary Combustion	7.4	7.1	6.6	6.7	6.3	6.6
Abandoned Underground Coal Mines	6.0	8.2	7.4	5.6	5.5	5.7
Mobile Combustion	4.7	4.3	3.4	2.5	2.4	2.3
<i>International Bunker Fuels^a</i>	<i>0.2</i>	<i>0.1</i>	<i>0.1</i>	<i>0.1</i>	<i>0.1</i>	<i>0.1</i>
N₂O	57.0	67.5	67.7	51.9	48.5	45.2
Mobile Combustion	43.7	53.7	52.8	36.7	33.5	30.1
Stationary Combustion	12.8	13.3	14.5	14.8	14.5	14.7
Incineration of Waste	0.5	0.5	0.4	0.4	0.4	0.4
<i>International Bunker Fuels^a</i>	<i>1.1</i>	<i>0.9</i>	<i>0.9</i>	<i>1.0</i>	<i>1.0</i>	<i>1.0</i>
Total	5,193.6	5,520.1	6,059.9	6,169.2	6,084.4	6,170.3

^a These values are presented for informational purposes only and are not included or are already accounted for in totals.

Note: Totals may not sum due to independent rounding.

Table 3-2: CO₂, CH₄, and N₂O Emissions from Energy (Gg)

Gas/Source	1990	1995	2000	2005	2006	2007
CO₂	4,870,953	5,201,233	5,753,192	5,910,830	5,830,206	5,919,452
Fossil Fuel Combustion	4,708,918	5,013,910	5,561,515	5,723,477	5,635,418	5,735,789
Non-Energy Use of Fuels	116,977	137,460	144,473	138,070	145,137	133,910
Natural Gas Systems	33,733	33,810	29,394	29,463	29,540	28,680
Incineration of Waste	10,950	15,712	17,485	19,532	19,824	20,786
Petroleum Systems	376	341	325	287	288	287
<i>Wood Biomass and Ethanol Consumption^a</i>	<i>219,341</i>	<i>236,775</i>	<i>227,276</i>	<i>231,481</i>	<i>240,386</i>	<i>247,829</i>
<i>International Bunker Fuels^a</i>	<i>114,330</i>	<i>101,620</i>	<i>98,966</i>	<i>111,487</i>	<i>110,520</i>	<i>108,756</i>
CH₄	12,651	11,970	11,381	9,832	9,795	9,796
Natural Gas Systems	6,171	6,314	6,231	5,062	4,991	4,985
Coal Mining	4,003	3,193	2,881	2,719	2,780	2,744
Petroleum Systems	1,613	1,524	1,441	1,346	1,346	1,370
Stationary Combustion	352	340	315	318	300	315
Abandoned Underground Coal Mines	288	392	350	265	263	273
Mobile Combustion	225	207	163	121	115	109
<i>International Bunker Fuels^a</i>	<i>8</i>	<i>6</i>	<i>6</i>	<i>7</i>	<i>7</i>	<i>7</i>
N₂O	184	218	219	167	156	146
Mobile Combustion	141	173	170	118	108	97
Stationary Combustion	41	43	47	48	47	47
Incineration of Waste	2	1	1	1	1	1
<i>International Bunker Fuels^a</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>3</i>

^a These values are presented for informational purposes only and are not included or are already accounted for in totals.

Note: Totals may not sum due to independent rounding.

CERTIFICATE OF SERVICE

I hereby certify that on August 13, 2020, I electronically filed the above document with the Clerk of the Court and served on the counsel of record for all parties through the CM/ECF system.

/s/ David M. Williamson

David M. Williamson