

Executive Summary

Introduction

The Voluntary Reporting of Greenhouse Gases Program, required by Section 1605(b) of the Energy Policy Act of 1992, records the results of voluntary measures to reduce, avoid, or sequester greenhouse gas emissions. A total of 222 U.S. companies and other organizations reported to the Energy Information Administration (EIA) that, during 2000, they had undertaken 1,882 projects to reduce or sequester greenhouse gases. The reported greenhouse gas emission reductions for the projects reported included 187 million metric tons carbon dioxide equivalent of direct project-level reductions, 61 million metric tons of indirect project-level

reductions, 9 million metric tons of reductions from carbon sequestration, and 12 million metric tons of unspecified project-level reductions (Table ES1). For definitional purposes, direct reductions are emission reductions from sources owned or leased by the reporting entity, indirect reductions are emission reductions from sources not owned or leased by the reporting entity but that occur as a result of the entity's activities, carbon sequestration reductions represent the removal of atmospheric carbon to a carbon sink, and unspecified reductions represent emission reductions reported on Form EIA-1605EZ for which the reporting entity did not specify whether the emission reduction was a direct or indirect reduction.

Table ES1. Reporting Indicators for the Voluntary Reporting of Greenhouse Gases Program, Data Years 1994-2000

Indicator	1994 ^(R)	1995 ^(R)	1996	1997	1998 ^(R)	1999 ^(R)	2000
Number of Entities Reporting	108	142	150	162	207	207	222
Number of Projects Reported	634	960	1,040	1,288	1,549	1,721	1,882
Number of Entity-Level (Organization-Wide) Reports Received	40	51	56	60	76	83	100
Project-Level Reductions Reported (Million Metric Tons Carbon Dioxide Equivalent)							
Direct ^a	63	88	90	95	148	155	187
Modified Reference Case ^b	59	76	75	88	127	126	153
Basic Reference Case ^c	4	13	15	7	21	29	35
Indirect ^d	5	52	53	38	43	57	61
Modified Reference Case ^b	5	52	51	36	38	51	56
Basic Reference Case ^c	0	1	3	2	5	6	5
Sequestration ^e	1	1	9	10	12	10	9
Unspecified ^f	4	6	6	9	19	13	12

^a"Direct" emission reductions are reductions in releases of greenhouse gases "on site." For the purpose of completing Form EIA-1605, "on site" is defined as any source owned (wholly or in part) or leased by the reporting entity.

^bIn a "modified reference case," actual emissions are compared to an estimate of what emissions or sequestration would have been in the absence of the project.

^cIn a "basic reference case," actual emissions are compared with an estimate of historical emissions or sequestration in a particular base year.

^d"Indirect" emission reductions are reductions in emissions from sources not owned or leased by the reporting entity but that occur, wholly or in part, as a result of the entity's activities (for example, an automobile manufacturer's investment in increased automotive fuel economy can result in decreased emissions from vehicles owned by individuals or managed fleets).

^e"Sequestration" is the fixation of atmospheric carbon dioxide in a carbon sink through biological or physical processes, such as photosynthesis.

^f"Unspecified" emission reductions represent quantities reported on the short form (Form EIA-1605EZ) for which the reporting entity did not specify whether the emission reduction was direct or indirect.

(R) = revised.

Notes: 1999 data have been revised upward to include 1999 reports that were submitted after the filing deadline. It is expected that the 2000 data will also be revised upward in next year's report with the inclusion of late 2000 reports. Totals for direct and indirect reductions may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Forms EIA-1605 and EIA-1605EZ.

To calculate reported emission reductions, reporters are allowed to use a “basic reference case” (what emissions were in a particular year) or a “modified reference case” (what emissions would have been in the absence of emission reduction efforts). Generally, as illustrated in Table ES1, most reductions are reported relative to a modified reference case. For example, in 2000, 153 million metric tons, or 81 percent, of the total 187 million metric tons carbon dioxide equivalent of reported direct reductions are based on modified reference cases. Similarly, for reported indirect reductions, 56 million metric tons, or 92 percent, of the total 61 million metric tons carbon dioxide equivalent of reported reductions are based on modified reference cases.

The 222 entities reporting to the Voluntary Reporting Program for the 2000 reporting cycle represent a 7-percent increase from the 207 entities reporting in 1999 (Table ES1). Since 1994, the number of entities reporting to the program has grown by 106 percent (from 108 entities reporting in 1994). The number of projects reported has grown at a more rapid rate, because reporting levels have increased and the number of projects reported by repeat reporters has increased. The total number of projects reported in 2000 (1,882) is 9 percent higher than the number reported in 1999 (1,721) and 197 percent higher than the number reported in 1994 (634). One hundred of the organizations reporting for 2000 provided estimates of emissions and/or emission reductions for the entire organization—21 percent more than in 1999, when 83 entities reported entity-level emissions. Sixty-five of the reporters for 2000 recorded commitments to take action to reduce emissions in future years, mostly during the 2000 to 2005 time frame.

Of the 100 organizations reporting at the entity level, 96 calculated their 2000 entity-wide greenhouse gas emissions. These entities reported direct greenhouse gas emissions of 1,036 million metric tons carbon dioxide equivalent, equal to about 15 percent of total U.S. greenhouse gas emissions in 2000. Also reported by these organizations were 107 million metric tons carbon dioxide equivalent of indirect emissions, equal to 2 percent of total U.S. greenhouse gas emissions in 2000. Ninety-two entity-level reporters also reported emission reductions, including 164.1 million metric tons carbon dioxide equivalent of direct emission reductions, 27.8 million metric tons carbon dioxide equivalent of indirect

emission reductions, and 7.5 million metric tons carbon dioxide equivalent of emission reductions resulting from carbon sequestration projects.

The Voluntary Reporting of Greenhouse Gases Program is used as a registry by several U.S. Government-sponsored voluntary programs to limit greenhouse gas emissions.¹ In the first year of the program (data year 1994), the 95 submissions from electric power producers represented 88 percent of the 108 reports received. In recent years, two factors have combined to lower the proportion of electric utilities among the reporters. First, the program has seen an influx of new participants from outside the electric power sector. Second, ongoing restructuring of the electric power industry has produced several mergers and acquisitions involving reporters to the program. As a result, the electric power sector now represents 46 percent of all the organizations reporting to the program. Participants from outside the electric power sector, representing a diverse set of industries,² made up 54 percent of all the organizations reporting to the program for 2000. Each reporting cycle normally has an influx of new reporters to the program.³

Projects Reported

Electric power sector reporters (including independent power producers) accounted for 1,287 (68 percent) of the projects reported. Also reporting were industrial concerns (206 projects), agriculture and forestry organizations (174 projects), and alternative energy providers (203 projects). Organizations in other sectors (government, commercial, and residential) submitted reports on 12 projects.

Most of the projects reported for 2000 affected energy supply or use in some way. Some 462 of the projects were related to the generation, transmission, or distribution of electricity, almost all of which were reported by electric power sector reporters (Figure ES1). Another 424 were related to energy end use, 18 were cogeneration projects, and 72 were transportation projects. Another 260 projects reduced emissions of methane from waste disposal facilities (234 projects) and from oil and natural gas systems and coal mines (26 projects), many of which included the displacement of fossil fuels through the use of methane as a fuel. Other projects included the reuse of fly ash in concrete (46 projects) and materials recycling

¹These programs include the U.S. Department of Energy (DOE) Climate Challenge program for electric utilities and the U.S. Environmental Protection Agency (EPA) Climate Wise program for manufacturers, Landfill Methane Outreach Program, Coalbed Methane Outreach Program, and Green Lights program, as well as the U.S. Initiative on Joint Implementation.

²Reporters outside the electric power industry include manufacturers such as Bethlehem Steel, General Motors, IBM, Johnson & Johnson; facilities such as Alcan’s Seabee aluminum plant, Motorola’s Austin, TX, integrated circuit fabrication plant, and two California Portland Cement Company plants; a number of operators and developers of landfill methane recovery projects; a trade association (Integrated Waste Services Association); and private voluntary organizations, such as American Forests.

³New reporters for 2000 that are outside the electric power industry include Bristol-Meyers Squibb, Cargill, Danaher Controls, L’ORÉAL USA, Lafarge, Miller Brewing, Texaco, and Unocal.

(35 projects), which reduce emissions in part by reducing energy consumption. The largest reductions were reported for projects that improved the performance of nuclear power plants. The non-energy-related projects reported fell into two major categories: sequestration of carbon, usually in forests (494 projects), and the recycling, reuse, or destruction of halogenated substances such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (44 projects).

Reported Reductions by Project Type

Electric Power

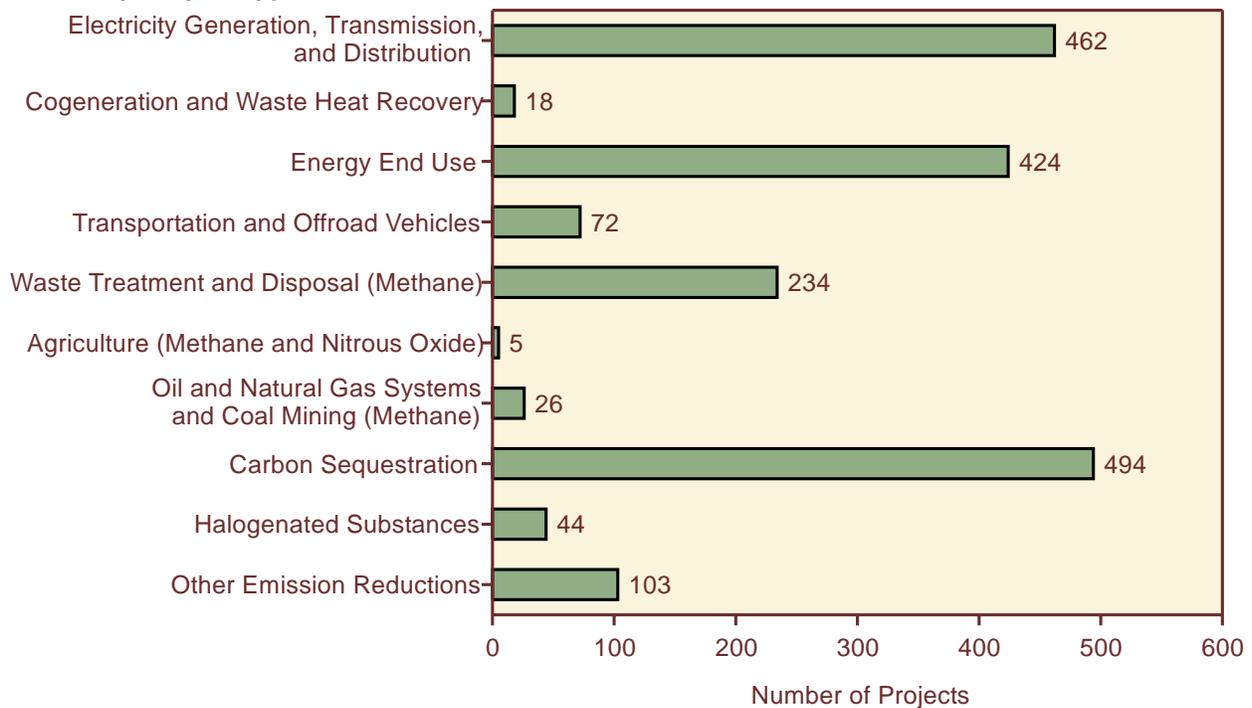
In 2000, total reported emission reductions from electric power projects included 132.7 million metric tons carbon dioxide equivalent from direct sources, 8.6 million metric tons from indirect sources, and 7.8 million metric tons from unspecified sources.⁴ Two hundred forty-nine projects were reported in the “decreasing carbon content” category, which includes projects that reduce the carbon content of fuels used to generate electricity. Emission reductions reported for this category totaled

120.4 million metric tons carbon dioxide equivalent from direct sources, 6.9 million metric tons from indirect sources, and 6.8 from unspecified sources. Reported emission reductions for projects increasing energy efficiency in generation, transmission, and distribution included 15.6 million metric tons carbon dioxide equivalent from direct sources, 1.7 million metric tons from indirect sources, and 1.0 million metric tons from unspecified sources.

Energy End Use and Transportation

Reported reductions for energy end-use applications included 19.7 million metric tons carbon dioxide equivalent from direct sources, 8.3 million metric tons from indirect sources, and 0.4 million metric tons from unspecified sources. Nearly all (99 percent) of the reductions were reported for stationary source applications, including lighting control, appliance improvement or replacement, and heating, ventilation and air conditioning (HVAC) improvements. Much smaller reductions were reported for transportation applications, including 0.02 million metric tons carbon dioxide equivalent from direct sources, 0.1 million metric tons from indirect sources, and 0.002 million metric tons from unspecified sources.

Figure ES1. Number of Projects Reported to the Voluntary Reporting of Greenhouse Gases Program by Project Type, Data Year 2000



Source: Energy Information Administration, Forms EIA-1605 and EIA-1605EZ.

⁴Unspecified reductions represent quantities reported on Form-1605EZ, which does not distinguish between direct and indirect emission reductions.

Carbon Sequestration

Reductions of 9.0 million metric tons carbon dioxide equivalent were reported for carbon sequestration projects in 2000. Most of the reported reductions resulted from afforestation, reforestation, urban forestry, forest management, and forest preservation efforts.

Methane Emissions

In 2000, emission reductions reported for methane abatement projects included 29.5 million tons carbon dioxide equivalent from direct sources, 37.1 million metric tons from indirect sources, and 3.1 million metric tons from unspecified sources. The three key sources of methane reductions are landfill methane recapture, wastewater treatment, and waste combustion. The recapture of methane at landfills is the predominant reported source of methane emission reductions for the 2000 data year, including 27.6 million metric tons carbon dioxide equivalent in direct reductions, 14.1 million metric tons carbon dioxide equivalent in indirect reductions, and 3.1 million metric tons carbon dioxide equivalent in unspecified reductions. Waste combustion, recycling, and source reduction, through the avoidance of methane formation at landfills, is also a significant reported source of indirect reductions in methane emissions (6.3 million metric tons carbon dioxide equivalent reported for 2000).

HFCs, PFCs, and Sulfur Hexafluoride

Reductions reported for projects reducing emissions of HFCs, PFCs, and sulfur hexafluoride in 2000 included 4.6 million metric tons carbon dioxide equivalent from direct sources, 81 metric tons from indirect sources, and 0.02 million metric tons from unspecified sources. The key reported reductions were direct reductions in perfluoromethane (2.7 million metric tons carbon dioxide equivalent), sulfur hexafluoride (1.4 million metric tons carbon dioxide equivalent), and perfluoroethane (0.6 million metric tons carbon dioxide equivalent).

Climate Change Policy Developments

Recent events have again brought the issue of greenhouse gas registries as a mechanism of recording greenhouse gas reduction activities to the forefront. In November 2001, 165 nations that are party to the United Nations Framework Convention on Climate Change (UNFCCC) agreed, subject to ratification, to an international emissions trading framework in order to meet the UNFCCC's Kyoto Protocol.^{5,6} President Bush, however, has indicated that he has no intention of submitting the Protocol to the Senate for ratification and that the United States would not agree to the Kyoto Protocol because "it exempts 80 percent of the world, including major population centers such as China and India, from compliance, and would cause serious harm to the U.S. economy."⁷

There is interest in the Administration and the Congress in seeking alternatives to the Protocol. President Bush has announced plans to develop a National Climate Change Technology Initiative that would promote innovative, long-term technologies to address the issue of climate change.⁸ Many in Congress are interested in setting up methods to document corporate emissions levels and reductions for possible credit in a future regulatory regime or, should the United States at some point become involved, a program of international emissions trading. A number of bills have been introduced in Congress to address this issue, and a number of States are in the process of setting up greenhouse gas registries (see Chapter 1, pages 14-17).

By creating a database of real-world emission reduction actions and actors, the data reported to the Voluntary Reporting Program can be used to gain insight into the incentive effects and beneficiaries of various credit for early action proposals. The database also provides a mechanism for identifying some of the issues that would have to be resolved in developing an accounting system for an effective credit program.

⁵Pew Center on Global Climate Change, "Climate Talks in Marrakech—COP 7: Update, November 9, 2001—Final Analysis," web site www.pewclimate.org/cop7/update_110901.cfm.

⁶The United Nations Framework Convention on Climate Change, which "entered into force" in 1994, calls on Annex I countries, including the United States, to return their greenhouse gas emissions to 1990 levels by the year 2000. The Kyoto Protocol, adopted in December 1997, is a set of quantified greenhouse gas emissions targets for Annex I countries for the 2008 to 2012 commitment period that are collectively about 5 percent lower than the 1990 emissions of those countries. The Kyoto Protocol has not yet "entered into force," which would require 55 countries and Annex I signatories with carbon dioxide emissions totaling 55 percent of total Annex I emissions to ratify the Protocol. The United States, at UNFCCC negotiations in Bonn, Germany, in July 2001, indicated that it believed the Kyoto Protocol to be flawed and that it has no plans, at this time, to ratify the Protocol.

⁷Letter from President Bush to Senators Hagel, Helms, Craig, and Roberts (Office of the Press Secretary, The White House, March 13, 2001).

⁸Remarks by President Bush on Global Climate Change (Office of the Press Secretary, The White House, June 11, 2001).