

Voluntary Reporting of Greenhouse Gases 2002 Summary

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Energy Information Administration
Office of Integrated Analysis and Forecasting
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For More Information

Individuals or members of organizations wishing to report reductions in emissions of greenhouse gases under the auspices of the Voluntary Reporting of Greenhouse Gases Program can contact the Energy Information Administration (EIA) at:

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For reporting purposes, EIA has both a long form (EIA-1605) and a short form (EIA-1605EZ) available, as well as an electronic version of the form. They are available upon request or on EIA's web site at www.eia.doe.gov/oiaf/1605/forms.html.

The reports submitted to EIA are compiled into a database that can be obtained on CD-ROM by contacting the Voluntary Reporting of Greenhouse Gases Program Communications Center at 1-800-803-5182 or can be downloaded from EIA's web site at www.eia.doe.gov/oiaf/1605/database.html.

General or specific technical information concerning the contents of this report may also be obtained by contacting the Voluntary Reporting of Greenhouse Gases Program.

Preface

Title XVI, Section 1605(b) of the Energy Policy Act of 1992 (EPACT) directed the Energy Information Administration (EIA) to establish a mechanism for “the voluntary collection and reporting of information on . . . annual reductions of greenhouse gas emissions and carbon fixation achieved through any measures, including fuel switching, forest management practices, tree planting, use of renewable energy, manufacture or use of vehicles with reduced greenhouse gas emissions, appliance efficiency, methane recovery, cogeneration, chlorofluorocarbon capture and replacement, and power plant heat rate improvement”

The legislation further instructed EIA to create forms for the reporting of greenhouse gas emissions and reductions, and to establish a database of the information voluntarily reported under this subsection of EPACT. The reporting Forms EIA-1605 and EIA-1605EZ, “Voluntary Reporting of Greenhouse Gases,” were first made available to the public in July 1995, providing a vehicle for voluntary reporting on activities that occurred before and during 1994. This publication summarizes data reported for 2002, the ninth year of data collection for the Voluntary Reporting of Greenhouse Gases Program.

The data reported to the Program are available through several media. All nonconfidential reports received by the Program are compiled into a Public Use Database, available on CD-ROM or by download from the Internet. The software is interactive and modular by design, allowing the user to select, view, or print the reports filed by the voluntary reporters, for each year of their participation. The user can also connect to and query

the database with Microsoft Access 97 (or later versions) or other software that supports 32-bit open database connectivity (ODBC).

The Public Use Database and the current reporting software are also available at the Program’s FTP (File Transfer Protocol) site on the Internet at <http://www.eia.doe.gov/oiaf/1605/database.html>. Interested parties are encouraged to visit the Program’s home page at <http://www.eia.doe.gov/oiaf/1605/frntvrvgg.html> for more information and background on the Program. Software, additional copies of this report, paper reporting forms, and technical support information can be downloaded from that web site or obtained from the Voluntary Reporting of Greenhouse Gases Communications Center by e-mail at infohgh@eia.doe.gov, toll-free at 1-800-803-5182, or locally at 202-586-0688.

This report was prepared under the guidance of Mary J. Hutzler, Director of EIA’s Office of Integrated Analysis and Forecasting, and John Conti, Director of the International, Economic and Greenhouse Gases Division. Significant contributions to the Program, the current software, and the preparation of this report have been made by Paul McArdle, Stephen Calopedis, Matthew Aberant, Nancy Checklick, Kristin Franks, Laura Gehlin, Sarah Goldstein, William LaPerch, Michael Mondshine, Dick Richards, Charles L. Smith, and Peggy Wells.

EIA would like to express special thanks to the voluntary reporters, without whom this program would not be possible.

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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 228 U.S. companies and other organizations reported to the Energy Information Administration (EIA) that, during 2002, they had undertaken 2,027 projects to reduce or sequester greenhouse gases. The reported greenhouse gas emission reductions for the projects reported included 265 million metric tons carbon dioxide equivalent of direct reductions, 79 million metric tons of indirect reductions, 7 million metric tons of reductions from carbon sequestration, and 17 million metric tons of unspecified reductions (Table S1).¹

The number of entities reporting to the Voluntary Reporting Program for the 2002 reporting cycle (228) is the same as the number that had reported for 2001 when the database was closed in July 2002 for preparation of the 2001 annual report. After the 2001 database was closed in July 2002, EIA received 4 additional reports, bringing the total number of entities reporting for the 2001 data year to 232. As of January 5, 2004, EIA had received 3 additional 2002 reports since the database was closed for preparation of the 2002 annual report.²

The number of entities reporting to the program has grown by 111 percent from its inception in 1994, when 108 entities reported. The number of projects reported has grown at a more rapid rate than the number of

reporters, because the number of projects reported by repeat reporters has increased. The 2,027 projects reported for 2002 represent an increase of 220 percent over the 634 projects reported in 1994 and a 7-percent increase from the final tally of 1,897 projects reported for 2001.

Of the 228 organizations reporting for 2002, 114 provided estimates of emissions and/or emission reductions for the entire organization—the same as the number that provided entity-wide estimates for 2001. Seventy-nine of the reporters for 2002 recorded commitments to take action to reduce emissions, mostly during the 2000 to 2005 time frame.

Of the 114 organizations reporting at the entity level, 109 calculated their 2002 entity-wide greenhouse gas emissions. These entities reported direct greenhouse gas emissions of 870 million metric tons carbon dioxide equivalent, equal to about 13 percent of total U.S. greenhouse gas emissions in 2002.³ Also reported by these organizations was 111 million metric tons carbon dioxide equivalent of indirect emissions, equal to 2 percent of total U.S. greenhouse gas emissions in 2002. One hundred eight entity-level reporters also reported emission reductions, including 209 million metric tons carbon dioxide equivalent of direct emission reductions, 36 million metric tons carbon dioxide equivalent of indirect emission reductions, and 7 million metric tons carbon dioxide equivalent of emission reductions resulting from carbon sequestration projects.

¹For 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, on which the reporting entity is not asked whether the emission reduction was a direct or indirect reduction.

²The deadline for submitting reports to EIA for inclusion in each annual edition of the Public Use Database is June 1. EIA typically grants reporters extensions to the deadline, usually until early July, before closing the database to new reports to allow analysis of the information for the annual report. EIA includes reports received after the database has been closed in the next annual edition of the Public Use Database and revises the data for that reporting year in the corresponding annual report, to reflect the addition of late reports.

³Based on total emissions from Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2002*, DOE/EIA-0573(2002) (Washington, DC, October 2003), web site www.eia.doe.gov/oiaf/1605/1605a.html.

Table S1. Reporting Indicators for the Voluntary Reporting of Greenhouse Gases Program, Data Years 1994-2002

Indicator	1994	1995	1996	1997	1998	1999	2000	2001 ^(R)	2002
Number of Entities Reporting									
Long Form (EIA-1605)	73	101	109	122	159	166	199	200	193
Short Form (EIA-1605EZ)	35	41	41	40	48	41	37	32	35
Total	108	142	150	162	207	207	236	232	228
Number of Projects Reported									
Long Form (EIA-1605)	509	796	861	1,087	1,297	1,484	1,860	1,687	1,774
Short Form (EIA-1605EZ)	125	164	179	201	252	237	229	210	253
Total	634	960	1,040	1,288	1,549	1,721	2,089	1,897	2,027
Project-Level Reductions and Sequestration Reported on the Long Form (Million Metric Tons Carbon Dioxide Equivalent)									
Direct ^a	63	88	90	95	148	155	211	247	265
Indirect ^b	5	52	53	38	43	57	62	72	79
Sequestration ^c	1	1	9	10	12	10	9	8	7
Project-Level Reductions and Sequestration Reported on the Short Form^d (Million Metric Tons Carbon Dioxide Equivalent)									
	4	6	6	9	19	13	12	15	17
Number of Entity-Level (Organization-Wide) Reports Received									
	39	50	55	60	76	83	109	114	114
Entity-Level Reductions and Sequestration Reported on the Long Form by Source (Million Metric Tons Carbon Dioxide Equivalent)									
Direct ^a	61	95	110	94	128	150	207	212	209
Basic Reference Case ^e	23	39	45	20	23	35	83	90	61
Modified Reference Case ^f	38	56	65	74	106	115	124	121	148
Indirect ^b	3	49	49	28	42	39	27	32	36
Basic Reference Case ^e	1	3	6	3	13	8	-8	-7	-8
Modified Reference Case ^f	2	46	43	25	28	30	35	39	44
Sequestration ^c	0	1	8	7	11	8	7	7	7
Number of Entities Reporting Commitments for Future Reductions									
	42	60	64	72	72	66	70	87	79

^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.

^b“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).

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

^dThe short form does not allow reporters to distinguish among direct reductions, indirect reductions, and sequestration quantities.

^eIn a “basic reference case,” actual emissions (or sequestration) are compared with an estimate of historical emissions (or sequestration) in a particular base year or average of years.

^fIn a “modified reference case,” actual emissions (or sequestration) are compared to an estimate of what emissions (or sequestration) would have been in the absence of the project.

(R) = revised.

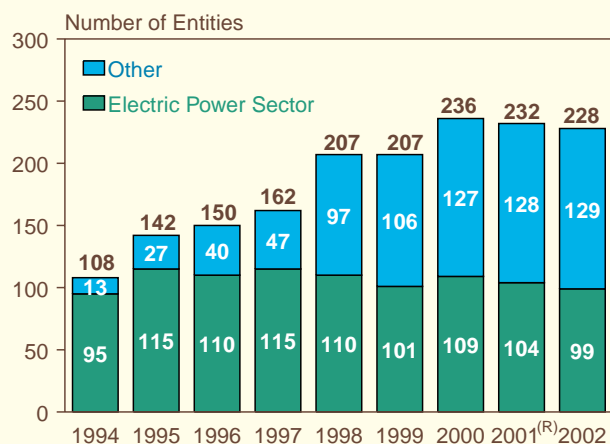
Notes: 2001 data have been revised upward to include 2001 reports that were submitted after the filing deadline. It is expected that the 2002 data will also be revised upward in next year’s report with the inclusion of late 2002 reports. Totals for direct and indirect reductions may not equal sum of components due to independent rounding.

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

Who Reported?

Reports for the 2002 data year were received from 228 participants in 29 different industries or services, as compared with the 26 different industries represented among 2001 reporters. The number of different industries represented continues to be higher than it was in the first year of the program (1994 data year), when the 108 reports received included participants in 9 different industries or services (Table S2). In the early years of the program, reporting was dominated by the electric power sector. In the first reporting year, the 95 submissions from electric power producers represented 88 percent of the 108 reports received (Figure S1). Since then, the program has seen an influx of new participants from outside the electric power sector, representing a diverse

Figure S1. Electric Power Sector and Other Entities Submitting Reports to the Voluntary Reporting of Greenhouse Gases Program, Data Years 1994-2002



(R) = revised.

Notes: Electric power sector includes electric utilities and independent power producers. 2001 data year includes 4 late reports that were not included in the totals presented in last year's annual report and database.

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

set of other industries. In addition, several mergers and acquisitions involving reporters to the program have accompanied the ongoing restructuring of the electric power industry. Many of these merged entities have submitted single, consolidated reports, thus reducing the number of reports received from electricity producers. As a result, only 43 percent of the organizations reporting to the program for data year 2002 were from the electric power sector.

Although the number of reporters from other individual industries remains relatively small, in many cases, reports were received from key companies in those other industries: for example, DaimlerChrysler Corporation, General Motors, the Ford Motor Company, and Toyota North America in the automotive products industry; Noranda and Alcan's Primary Metals Group in the metals industry; Sunoco, Inc., and ChevronTexaco Corporation in the petroleum industry; Johnson & Johnson and The Dow Chemical Company in the chemicals industry; Rolls Royce in the aerospace industry; Pharmacia & Upjohn Caribe, Inc., in the pharmaceuticals industry; and IBM and Motorola Austin in the electronic equipment industry.⁴

What Was Reported?

EIA collects information for the Voluntary Reporting Program on two forms: the long form (Form EIA-1605) and the short form (Form EIA-1605EZ). Three distinct types of reporting are permitted on Form EIA-1605:

- Project-level emissions and reductions, defined as the emission reduction consequences of a particular action
- Entity-level emissions and reductions, defined as the emissions and reductions of an entire organization, usually defined as a corporation
- Commitments to take action to reduce emissions in the future.

Form EIA-1605EZ accommodates reporting on project-level reductions and sequestration only.

⁴A complete listing of all 2002 reporters is provided in Appendix B, Table B1, of the full report, *Voluntary Reporting of Greenhouse Gases 2002*, which is available from web site www.eia.doe.gov/oiaf/1605/vrrpt/index.html. Table B8 in Appendix B lists reporters by sector and standard industrial classification (SIC) code.

Table S2. Forms Filed by Standard Industrial Classification, Data Years 1994-2002
(Number of Reports)

SIC Code ^a	Description	Data Year								
		1994	1995	1996	1997	1998	1999	2000	2001 ^(R)	2002
01	Agricultural Production: Crops	0	0	0	0	1	0	0	1	0
08	Forestry	1	2	1	1	3	3	1	0	1
12	Coal Mining	1	2	2	1	4	3	4	6	7
14	Nonmetallic Minerals, Except Fuels	0	0	0	0	1	1	0	0	0
20	Food and Kindred Products	0	0	0	0	1	2	6	4	4
22	Textile Mill Products	0	0	0	0	0	1	5	11	12
23	Apparel and Other Textile Products	0	0	0	0	0	0	1	1	2
24	Lumber and Wood Products	0	0	0	0	0	0	1	1	0
25	Furniture and Fixtures	0	0	0	0	0	0	1	1	1
26	Paper and Allied Products	0	0	0	0	0	1	1	0	0
27	Printing and Publishing	0	1	0	1	0	1	1	0	0
28	Chemicals and Allied Products	1	3	2	3	8	5	11	9	10
29	Petroleum Refining and Other Related Industries	0	0	2	3	8	9	8	7	6
30	Rubber and Miscellaneous Plastic Products	0	0	0	0	0	0	2	2	2
32	Stone, Clay, Glass, and Concrete Products	0	0	1	4	12	13	7	5	2
33	Primary Metals Industries	2	2	4	4	5	5	5	11	11
34	Fabricated Metal Products, Except Machinery and Transportation Equipment	0	2	1	1	3	1	1	1	1
35	Industrial and Commercial Equipment and Components	0	0	0	0	0	0	1	1	1
36	Electronic and Other Electrical Equipment	1	1	2	4	4	4	9	9	8
37	Transportation Equipment	1	1	1	2	3	5	6	7	8
38	Instruments and Related Products	0	0	0	0	2	0	1	1	1
39	Miscellaneous Manufacturing Industries	0	1	1	0	2	2	1	1	1
48	Communications	0	0	0	0	0	1	0	0	1
49	Electric, Gas, and Sanitary Services	95	121	125	129	138	135	151	145	138
51	Wholesale Trade: Nondurable Goods	0	0	0	0	0	0	0	0	1
57	Furniture and Home Furnishings Stores	0	0	0	0	2	1	1	0	1
65	Real Estate	0	1	1	1	1	1	1	1	1
67	Holding and Other Investment Offices	0	0	1	1	1	1	1	1	1
72	Personal Services	0	0	0	0	0	0	1	1	1
80	Health Services	0	0	0	0	1	0	0	0	0
82	Educational Services	1	2	2	2	0	2	0	0	0
86	Membership Organizations	0	0	0	1	1	1	1	0	1
87	Engineering and Management Services	0	0	2	2	2	1	0	1	0
88	Private Households	2	1	1	1	1	1	1	1	1
89	Services Not Elsewhere Classified	0	0	0	1	1	3	2	1	1
91	Executive, Legislative, and General	0	0	0	0	1	2	2	2	1
97	National Security and International Affairs	0	0	0	0	0	0	1	0	0
99	Nonclassifiable Establishments	0	0	0	0	0	0	0	0	1
Total Number of Reporters^b		108	142	150	162	207	207	236	232^c	228^c
Number of 2-Digit SIC Codes Represented		9	13	16	18	24	26	30	26^c	29^c

^aThe Voluntary Reporting of Greenhouse Gases database was designed in 1994-1995, when the Standard Industrial Classification (SIC) system was still in use. For the 2004 data year reporting cycle, EIA intends to modify the database to use the North American Industry Classification System (NAICS), which was introduced in 1997 by the United States, Canada, and Mexico to provide comparability in statistics about business activity across North America.

^bTotals may be greater than the sum of reporters in each SIC code, because confidential reporters are excluded from the latter.

^cIncludes 4 late reports for the 2001 data year. The 2002 total will also be revised upward in next year's report with the inclusion of late 2002 reports. As of January 27, 2004, EIA had received 3 late 2002 reports, which are not included in this report's 2002 database.

(R) = Revised.

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

Of the 228 reports received, 193 (85 percent) were submitted on Form EIA-1605 and 35 on Form EIA-1605EZ (Figure S2). The proportion of reporters using the short form has declined from 32 percent for 1994 to 15 percent for 2002. EIA believes that reporters are choosing the long form in order to document their emission reductions more thoroughly. Also, for the same reason, several government-sponsored voluntary programs, such as the U.S. Environmental Protection Agency's Landfill Methane Outreach Program, require or encourage participants to use the long form.

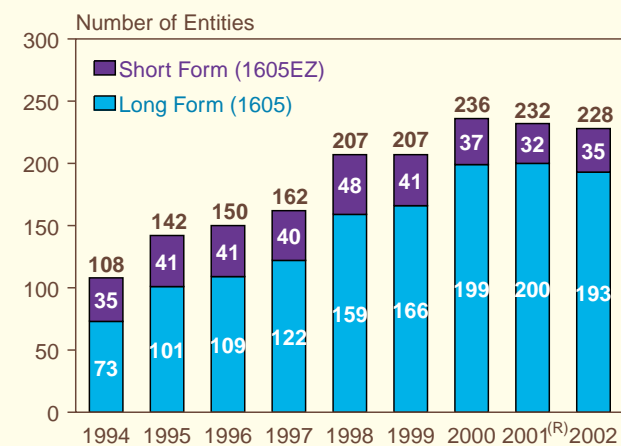
Most reporters (173 or 76 percent) reported projects, and 114 reported entity-level emissions and/or reductions. Most (59) of the reporters that reported entity-level emissions or reductions also reported at the project level. One hundred twelve organizations submitted only project-level reports, whereas 55 reported only entity-level information. Seventy-nine reporters provided information on their commitments to reduce emissions or increase sequestration in the future.

Sources of greenhouse gas emissions and emission reductions reported to the Voluntary Reporting Program are characterized as direct, indirect, or unspecified. The unspecified category includes carbon sequestration reported on the long form and all reductions and sequestration reported on the short form. Because of concern about possible double counting, EIA does not aggregate reported emissions or emission reductions across the three categories.

Most reporters indicated that their projects were affiliated with one or more government-sponsored voluntary programs. Of the 2,027 projects reported for 2002, 1,045 were affiliated with the U.S. Department of Energy (DOE) Climate Challenge Program; 360 with the U.S. Environmental Protection Agency (EPA) Landfill Methane Outreach Program; 87 with various Energy STAR programs (including Energy STAR Buildings, Energy STAR Computers, and Energy STAR Transformers);⁵

38 with the U.S. Initiative on Joint Implementation; 27 with the DOE Energy Efficiency and Renewable Energy Information and Training Programs; 19 with the EPA Natural Gas STAR Program; 17 with the EPA Green Lights Program; 14 with the EPA Climate Wise Recognition Program;⁶ 9 each with the EPA Sulfur Hexafluoride Emissions Reduction Partnership, Coalbed Methane Outreach Program, and WasteWise; and 7 with the EPA Compressed Air Challenge. Other voluntary programs cited included the EPA Voluntary Aluminum Industrial Partnership and the DOE Motor Challenge, Rebuild America, Cool Communities Program, Partnerships for Technology Introduction, and Steam Challenge. Not all participants in the various voluntary programs provided information to the Voluntary Reporting Program.

Figure S2. Number of Reports Received by Form Type, Data Years 1994-2002



(R) = revised.

Notes: Electric power sector includes electric utilities and independent power producers. 2001 data year includes 4 late reports that were not included in the totals presented in last year's annual report and database.

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

⁵Energy STAR is a joint Government-backed program, developed by the EPA in partnership with DOE, that helps businesses and individuals protect the environment through increased energy efficiency.

⁶Although the EPA Climate Wise partnerships were fully integrated under the Energy STAR name in fall 2000, many reporters continue to report affiliation with Climate Wise for projects initiated before that time.

Projects Reported on the Long Form

Overview

Reporters provided detailed information on Form EIA-1605 on a total of 1,774 projects for 2002 (Table S3). The total number of projects reported on the long form increased by 87, or 5 percent, compared with the 2001 reporting cycle. Most of the projects reported for 2002 were also among the 1,687 projects reported for 2001, because they continue to yield emission reductions after their initial implementation. Projects often yield emission reductions over an extended period of time; for example, an availability improvement project at a nuclear power plant typically involves the adoption of new maintenance and refueling programs that, once in place, are followed over a multi-year period. A project may even involve no new activity. The reforestation of an area in one year can result in the sequestration of carbon in many subsequent years, even if no additional trees are planted. Reporters continue to report the

annual emission reductions and carbon sequestration achieved by such long-lived projects on a yearly basis.

Most projects involve actions within the United States; however, some are conducted in foreign countries, designed to test various concepts of joint implementation with other nations (Table S4). Sixty-one of the 94 foreign projects reported for 2002 represent shares in two forestry programs in Belize and Malaysia sponsored by the electric utility industry.

The principal objective of the majority of projects reported for 2002 was to reduce carbon dioxide emissions (Table S3). Most of these projects reduced carbon dioxide either by reducing fossil fuel consumption or by switching to less carbon-intensive sources of energy. Many also achieved small reductions in emissions of other gases. A total of 958 projects involved either efficiency improvements and switching to less carbon-intensive sources in the electric power industry or energy end-use measures affecting stationary or mobile combustion sources. Projects that primarily reduced carbon dioxide emissions also included the 103 “other”

Table S3. Distribution of Projects by Reduction Objective, Project Type, and Form Type, Data Year 2002

Reduction Objective and Project Type	Number of Projects			Number of Reporters		
	Long Form	Short Form	Total	Long Form	Short Form	Total
Reducing Carbon Dioxide Emissions	793	165	958	171	51	222
Electricity Generation, Transmission, and Distribution	398	58	456	65	25	90
Cogeneration and Waste Heat Recovery	20	1	21	12	1	13
Energy End Use	315	97	412	62	20	82
Transportation and Offroad Vehicles	60	9	69	32	5	37
Reducing Methane and Nitrous Oxide Emissions	246	51	297	75	7	82
Waste Treatment and Disposal (Methane)	403	49	452	52	5	57
Agriculture (Methane and Nitrous Oxide)	3	0	3	3	0	3
Oil and Natural Gas Systems and Coal Mining (Methane)	39	2	41	20	2	22
Carbon Sequestration	412	14	426	50	11	61
Halogenated Substances	42	2	44	29	2	31
Other Emission Reduction Projects	82	21	103	46	10	56
Entity-Level Reporting Only (No Projects)	NA	NA	NA	55	NA	55
Commitment Reporting Only (No Projects or Entity-Level Data)	NA	NA	NA	1	NA	1
Total	1,774	253	2,027	193	35	228

NA = not applicable.

Notes: The total number of reporters is smaller than the sum of the number of reporters for each project type, because most reporters provided information on more than one project. Table excludes projects submitted in confidential reports.

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

emission reduction projects, most of which involved either the reuse of fly ash as a cement substitute in concrete or the recycling of waste materials.

Projects that primarily affected carbon dioxide emissions accounted for reported direct reductions of 188 million metric tons carbon dioxide equivalent, representing 71 percent of the total direct reductions reported for 2002 on a carbon dioxide equivalent basis (Table S5). In addition, indirect reductions totaling 24 million metric tons carbon dioxide equivalent were also reported for projects that reduced carbon dioxide emissions.

Almost all of the 412 carbon sequestration projects reported on the long form (Table S6) increased the amount of carbon stored in sinks through various forestry measures, including afforestation, reforestation, urban forestry, forest preservation, and modified forest management techniques. These activities accounted for 23 percent of the projects reported on the long form for 2002; 257 of the reported carbon sequestration projects represented 28 participating electric utilities' shares in 9 projects conducted by the UtiliTree Carbon Company. The sequestration reported for carbon sequestration projects on the long form for 2002 totaled 7 million metric tons carbon dioxide equivalent. Direct emission

reductions totaling 1,875 metric tons carbon dioxide equivalent were also reported for a few carbon sequestration projects in which changes in forest management practices reduced fuel consumption.

A variety of efforts to reduce emissions of gases with high global warming potentials (GWPs) were also reported. Four hundred forty-five (25 percent) of the projects reported on the long form for 2002 reduced methane and nitrous oxide emissions from waste management systems, animal husbandry operations, oil and gas systems, or coal mines. The direct emission reductions for these projects totaled 67 million metric tons carbon dioxide equivalent, representing 25 percent of the total direct reductions reported for 2002. Reported indirect reductions from these projects totaled 40 million metric tons carbon dioxide equivalent, representing 51 percent of the total indirect emission reductions reported for 2002.

Forty-two projects reduced emissions of halogenated substances, including perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆). For the third consecutive year, no offsetting increases in emissions of hydrofluorocarbons (HFCs)—which are used as substitutes for chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs)

Table S4. Geographic Scope of Reports Received and Location of Emission Reduction Projects, Data Years 1994-2002

Year	Reports Received					Projects Reported ^b			
	U.S. Only		Foreign Only	Both U.S. and Foreign	Total ^a	U.S. Only		Foreign Only	Total ^a
	Long Form	Short Form				Long Form	Short Form		
1994	65	34	2	4	108	500	125	9	634
1995	82	40	2	16	142	760	164	36	960
1996	83	41	1	24	150	828	179	33	1,040
1997	90	40	1	31	162	1,017	201	70	1,288
1998	118	47	1	40	207	1,212	252	85	1,549
1999	125	39	4	37	207	1,397	237	87	1,721
2000	153	36	1	45	236	1,761	229	99	2,089
2001 ^(R)	155	32	1	43	232	1,596	210	91	1,897
2002	150	35	3	39	228	1,680	253	94	2,027

^aTotals are greater than the sum of the components because the latter exclude information from confidential reports.

^bExcludes projects submitted in confidential reports.

(R) = revised.

Notes: The number of reports received for 2001 was revised to reflect the receipt of 4 reports after the finalization of the Public Use Database for last year's annual report. For 2001, additional reports were received from Agilent Technologies, DaimlerChrysler Corporation, New York Power Authority, and Waste Management Inc. The number of projects reported for 2001 has also been revised to reflect the projects included in those reports.

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

Summary

being phased out under the Montreal Protocol—were reported for 2002. Direct reductions of PFC and SF₆ emissions totaled 7 million metric tons carbon dioxide equivalent, representing more than 99 percent the PFC and SF₆ emission reductions reported for 2002. Reductions in emissions of other gases, including carbon monoxide (CO), nonmethane volatile organic compounds (NMVOCs), CFCs, and HCFCs, were reported, but those gases do not have reliable GWP values and are not included in the carbon dioxide equivalent data presented in this report.

Overall, direct project-level emission reductions reported for 2002 increased by 7 percent over those reported for 2001, to 265 million metric tons carbon dioxide equivalent (see Table S1), and were more than quadruple the reductions reported in the first year of the program (data year 1994). Reported reductions of indirect emissions for 2002 increased by 10 percent compared with those reported for 2001, to 79 million metric tons carbon dioxide equivalent. Reported sequestration peaked at 12 million metric tons for 1998, 5 million metric tons higher than the 7 million metric tons reported for 2002. The

difference is caused by the absence in 2002 of previously reported sequestration for several large forest preservation initiatives.

Project-Level Reference Cases

In this report, EIA has broken out the project-level data reported to the Voluntary Reporting Program according to the reference case employed in calculating project-specific emission reductions. A “reference case” is an emissions or sequestration level against which actual emissions are compared in order to estimate emission reductions. In a “basic” reference case, actual historical emissions (or sequestration) in a specific year, or an average of a range of years, are used as the reference case. In a “modified” reference case, an estimate is made of what emissions or sequestration would have been in the absence of the project, and that estimate serves as the reference case.

Ninety-three percent of the projects reported for 2002 on Form EIA-1605 used modified reference cases (Table S6). A modified reference case is generally preferred for

Table S5. Reported Emission Reductions and Sequestration for Projects Reported on Form EIA-1605 by Reduction Objective, Project Type, Source, and Reference Case Employed, Data Year 2002 (Metric Tons Carbon Dioxide Equivalent)

Reduction Objective and Project Type	Direct Reductions		Indirect Reductions		Sequestration	
	Modified	Basic	Modified	Basic	Modified	Basic
Reducing Carbon Dioxide Emissions	185,490,343	2,220,921	24,285,647	149,321	0	0
Electricity Generation, Transmission, and Distribution	160,390,367	1,622,551	11,905,462	430	NA	NA
Cogeneration and Waste Heat Recovery	1,098,076	-482	3,327,057	0	NA	NA
Energy End Use	23,975,176	583,610	8,893,438	147,425	NA	NA
Transportation and Offroad Vehicles	26,724	15,242	159,690	1,466	NA	NA
Reducing Methane and Nitrous Oxide Emissions	66,138,998	381,639	39,212,250	1,103,307	NA	NA
Waste Treatment and Disposal (Methane)	47,812,587	372,667	39,173,085	1,103,307	NA	NA
Agriculture (Methane and Nitrous Oxide)	180	0	22,623	0	NA	NA
Oil and Natural Gas Systems and Coal Mining (Methane)	18,326,231	8,972	16,541	0	NA	NA
Carbon Sequestration	1,875	0	0	0	6,827,104	469,410
Halogenated Substances	855,269	5,745,315	127	0	NA	NA
Other Emission Reduction Projects	4,068,692	0	14,028,588	672,187	NA	NA
Total	256,555,177	8,347,875	77,526,612	1,924,815	6,827,104	469,410

NA = not applicable.

Note: Excludes reductions and sequestration for projects reported on the short form (Form EIA-1605EZ), which does not collect information on the reference case employed. Excludes projects submitted in confidential reports.

Source: Energy Information Administration, Form EIA-1605.

project-level analysis, because this approach attempts to isolate the effect of the action taken by the reporter from other factors that may have affected the reporter's emissions since the action was taken. The reported use of basic reference cases for 2002 was greatest for projects that involved reducing emissions of halogenated substances (50 percent), because the techniques for evaluating reductions are particularly suited to the use of basic reference cases. Emissions of a given halogenated substance are determined using inventory management data, with emissions of a particular substance being equal to the amount purchased during the year to replace quantities emitted. Annual reductions can be calculated by subtracting the emissions in each year after emission abatement measures have been instituted from the emissions in the year before the measures were instituted.

For the emission reductions and sequestration reported on the long form for 2002, 257 million metric tons carbon dioxide equivalent of direct reductions (97 percent of total direct reductions), 78 million metric tons carbon dioxide equivalent of indirect reductions (98 percent of

total indirect reductions), and 7 million metric tons carbon dioxide equivalent of sequestration (94 percent of total sequestration reductions) were reported as having been estimated using modified reference cases (Table S5).

Electric Power

In 2002, total emission reductions from electric power and cogeneration projects reported on the long form included 163 million metric tons carbon dioxide equivalent from direct sources and 15 million metric tons from indirect sources (Table S5). Two hundred thirty projects that reduced the carbon content of fuels used to generate electricity were reported, with emission reductions totaling 152 million metric tons carbon dioxide equivalent from direct sources and 11 million metric tons from indirect sources. Reported emission reductions for projects increasing energy efficiency in generation, transmission, and distribution included 16 million metric tons carbon dioxide equivalent from direct sources and 4 million metric tons from indirect sources.

Table S6. Number of Projects Reported on Form EIA-1605 by Reduction Objective, Project Type, and Reference Case Employed, Data Year 2002
(Number of Projects)

Reduction Objective and Project Type	Type of Reference Case				Total Number of Projects
	Modified		Basic		
	Number of Projects	Percent	Number of Projects	Percent	
Reducing Carbon Dioxide Emissions	732	92	61	8	793
Electricity Generation, Transmission, and Distribution	392	98	6	2	398
Cogeneration and Waste Heat Recovery	19	95	1	5	20
Energy End Use	266	84	49	16	315
Transportation and Offroad Vehicles	55	92	5	8	60
Reducing Methane and Nitrous Oxide Emissions	438	98	7	2	445
Waste Treatment and Disposal (Methane)	399	99	4	1	403
Agriculture (Methane and Nitrous Oxide)	3	100	0	0	3
Oil and Natural Gas Systems and Coal Mining (Methane)	36	92	3	8	39
Carbon Sequestration	392	95	20	5	412
Halogenated Substances	21	50	21	50	42
Other Emission Reduction Projects	72	88	10	12	82
Total	1,655	93	119	7	1,774

Notes: Excludes projects reported on the short form (Form EIA-1605EZ), which does not collect information on the reference case employed. Excludes two projects reported on the long form (Form EIA-1605) for which no reference case was specified because reductions were not estimated. Table excludes projects submitted in confidential reports.

Source: Energy Information Administration, Form EIA-1605.

Energy End Use

Reported reductions for the 315 energy end-use projects reported on the long form included 25 million metric tons carbon dioxide equivalent from direct sources and 9 million metric tons from indirect sources. Energy end-use reductions were reported for stationary-source applications, such as building shell improvements, lighting and lighting control, appliance improvement or replacement, and heating, ventilation and air conditioning (HVAC) improvements. Much smaller reductions were reported for the 60 transportation projects reported on the long form, including 42 thousand metric tons carbon dioxide equivalent from direct sources and 161 thousand metric tons from indirect sources.

Carbon Sequestration

Sequestration or avoided emissions of 7 million metric tons carbon dioxide equivalent were reported for 412 carbon sequestration projects reported on the long form for 2002. Most of the reported reductions resulted from afforestation, reforestation, urban forestry, forest management, and forest preservation efforts.

Methane and Nitrous Oxide Emissions

In 2002, emission reductions for the 445 methane and nitrous oxide abatement projects reported on the long form included 67 million metric tons carbon dioxide equivalent from direct sources and 40 million metric tons from indirect sources. The three most frequently reported sources of methane reductions were municipal waste landfills (390 projects), natural gas systems (21 projects), and coal mines (18 projects). In addition to reducing methane emissions, projects that involved the recovery and use of methane for energy also reduced carbon dioxide emissions by displacing fossil fuels, such as oil and coal, that have higher carbon contents and thus produce more carbon dioxide when burned.

HFCs, PFCs, and Sulfur Hexafluoride

More than 99 percent of the reductions for the 42 projects reducing emissions of HFCs, PFCs, and SF₆ in 2002 reported on the long form were direct reductions. The reported reductions from direct sources totaled 6.6 million metric tons carbon dioxide equivalent, compared

with only 127 metric tons carbon dioxide equivalent in reported reductions from indirect sources. The largest reported reductions were direct reductions in emissions of perfluoromethane and SF₆ (3.0 million metric tons carbon dioxide equivalent each) and perfluoroethane (0.5 million metric tons carbon dioxide equivalent).

Projects Reported on the Short Form

Two hundred fifty-three projects were reported by 35 entities on the short form (Table S3), 165 of which (65 percent) were efforts that affected emissions of carbon dioxide from electricity generation, transmission, and distribution, energy end use, and transportation. Such projects reduced emissions by a reported 12 million metric tons carbon dioxide. Reductions totaling 4 million metric tons carbon dioxide equivalent were reported for 49 projects involving waste treatment and disposal and oil and natural gas systems and coal mining. Carbon sequestration or avoided emissions of carbon dioxide were reported for 14 projects and totaled 11 thousand metric tons carbon dioxide equivalent. Two projects reported reductions of halogenated substances: 131 thousand metric tons carbon dioxide equivalent in reductions of perfluoroethane (C₂F₆) emissions and 10 thousand metric tons carbon dioxide equivalent in reductions of SF₆ emissions. Twenty-one other projects reported on the short form included recycling and fly ash reuse, for which reductions of 856 thousand metric tons carbon dioxide equivalent were reported.

Entity-Level Reporting

Most of the 114 reporters providing entity-level information included data on emissions as well as emission reductions or sequestration. Six reporters provided entity-level data on emissions only, and another 5 reporters provided entity-level data on emission reductions or sequestration only.

Total direct entity-level emissions of greenhouse gases reported for 2002 were 870 million metric tons, representing a 9-percent increase from the 800 million metric tons reported for 2001 (Table S7). Direct emission reductions reported at the entity level totaled 209 million

metric tons carbon dioxide equivalent for 2002, 1 percent less than the 212 million metric tons carbon dioxide equivalent reported for 2001. For 2002, 148 million metric tons carbon dioxide equivalent (71 percent) of the reported direct reductions was estimated using modified reference cases, and 29 percent was estimated with basic reference cases.

Reported indirect entity-level emission reductions for 2002 totaled 36 million metric tons carbon dioxide equivalent. Reported indirect reductions of 44 million metric tons carbon dioxide equivalent calculated with modified reference cases were partially offset by -8 million metric tons carbon dioxide equivalent reported for indirect reductions (i.e., a net emission increase) calculated with basic reference cases. Through the 1999 data year, the total of reported indirect emission reductions calculated using basic reference cases was a positive number. The shift to a negative total occurred in the 2000 data year when two reports, which previously had incorrectly reported reductions using basic reference cases, were corrected to reported increases. Entity-level sequestration reported for 2002 remained at 7 million metric tons

carbon dioxide equivalent, unchanged from the amounts reported for 2000 and 2001.

Commitments

Seventy-nine entities reported formal commitments to reduce future emissions, to take specific actions to reduce emissions, or to provide financial support for activities related to greenhouse gas reductions.⁷ More than one-third (35 percent) of these entities are electricity generators participating in the Climate Challenge Program (Figure S3). Other voluntary programs represented among the commitments reported for 2002 included Climate Wise, the Voluntary Aluminum Industrial Program, the U.S. Initiative on Joint Implementation, the Green Lights Program, the Landfill Methane Outreach Program, the Coalbed Methane Outreach Program, Motor Challenge, and the Sulfur Hexafluoride Emissions Reduction Partnership for Electric Power Systems.

There are three forms of commitment in the Voluntary Reporting Program: entity commitments, financial

Table S7. Number of Entities Reporting at the Entity Level, Reported Emissions by Source, Emission Reductions by Source and Type of Reference Case Employed, and Sequestration, Data Years 1994-2002

(Million Metric Tons Carbon Dioxide Equivalent)

Year	Number of Entities Reporting	Emissions		Emission Reductions by Type of Reference Case						Sequestration
		Direct	Indirect	Direct			Indirect			
				Modified	Basic	Total	Modified	Basic	Total	
1994	39	752.7	494.9	38.2	22.6	60.8	1.6	1.2	2.8	0.5
1995	50	875.8	499.6	56.0	39.3	95.3	46.0	2.7	48.6	0.8
1996	55	1,183.1	461.5	65.4	44.6	110.0	42.9	5.7	48.6	7.9
1997	60	1,006.6	525.8	73.7	20.3	94.0	24.8	3.4	28.2	7.1
1998	76	1,110.7	473.5	105.8	22.6	128.4	28.3	13.2	41.6	11.2
1999	83	967.9	481.0	114.7	35.3	150.0	30.3	8.4	38.7	8.4
2000	109	1,068.2	111.7	123.6	83.0	206.7	34.8	-7.8	27.0	7.5
2001 ^(R)	114	799.6	111.5	121.4	90.4	211.9	38.9	-6.7	32.2	7.5
2002	114	869.8	111.0	148.2	60.9	209.1	44.2	-7.7	36.4	6.8

(R) = revised.

Notes: 2001 data year includes late reports that were not received in time to be included in last year's annual report and database. Negative reductions represent increases in emissions.

Source: Energy Information Administration, Form EIA-1605.

⁷Forty-five companies reported formal commitments in one or more of the entity-level, project-level, or financial categories accommodated by Form EIA-1605. Thirty-four companies provided only descriptions of future activities in the Additional Information section of Schedule IV.

commitments, and project commitments. Entity and project commitments roughly parallel the entity and project aspects of emissions reporting: an entity commitment is a commitment to reduce the emissions of an entire organization; a project commitment is a commitment to take a particular action that will have the effect of reducing the reporter's emissions through a specific project. A financial commitment is a pledge to spend a particular sum of money on activities related to emission reductions, without a specific promise as to the emissions consequences of the expenditure.

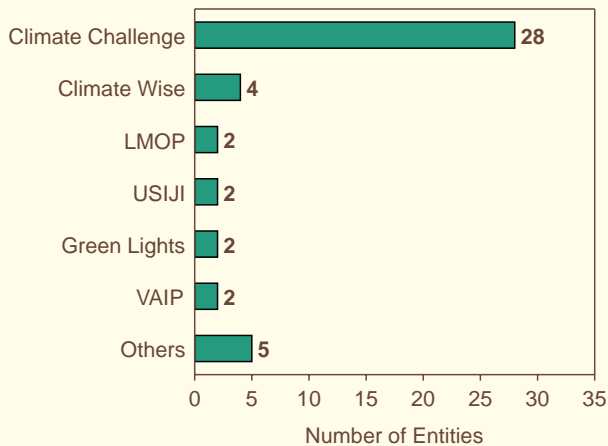
Twenty-four firms made 30 specific promises to reduce, avoid, or sequester future emissions at the entity level. Some of these entity-level commitments were to reduce emissions below a specific baseline, others to limit the growth of emissions per unit of output, and others to limit emissions by a specific amount relative to a baseline emissions growth trend. In their reports for 2002,

companies reported commitments to reduce entity-level emissions by a total of 340 million metric tons carbon dioxide equivalent. Seventeen of the reported commitments, representing 67 million metric tons carbon dioxide equivalent or 20 percent of the promised emission reductions, were to be fulfilled by 2002 or earlier. Thirteen of the commitments, representing 273 million metric tons carbon dioxide equivalent, were to be fulfilled by 2003 or later.

Twenty-six entities reported on commitments to undertake 184 individual emission reductions projects. Some of the commitments were linked to results from projects that were already underway and were part of the reporters' submissions. Others were for projects not yet begun. Reporters indicated that the projects were expected to reduce emissions by 329 million metric tons carbon dioxide equivalent, most of which (253 million metric tons carbon dioxide equivalent, or 77 percent) was reported for 10 separate projects by The Forest Bird Society—a first-time reporter for 2002. The emission reductions expected from 131 of the individual project commitments were to be achieved by 2002; reductions from the other 53 reported project-level commitments were expected in 2003 or later.

Twenty-one firms made 41 separate financial commitments. The total amount of funds promised was \$51 million, of which \$5 million was reported to have been spent in 2002.

Figure S3. Number of Entities Reporting Commitments Associated with Voluntary Programs in Data Year 2002, by Program



Notes: LMOP = Landfill Methane Outreach Program, USJI = United States Initiative on Joint Implementation, VAIP = Voluntary Aluminum Industry Partnership. Others include Coalbed Methane Outreach Program, Cool Communities Program, Motor Challenge Program, and Sulfur Hexafluoride Emissions Reduction Partnership for Electric Power Systems. The sum of entities reporting commitments associated with each program exceeds the total number of entities reporting commitments because several entities reported commitments associated with more than one program.

Source: Energy Information Administration, Form EIA-1605.

Climate Change Policy Developments

In 2003, the Bush Administration continued to develop components of its Global Climate Change Initiative, which is expected to include enhancements to the Voluntary Reporting of Greenhouse Gases Program. In addition, some States and other organizations continued progress toward the development of greenhouse gas registry and trading programs; and the U.S. Congress considered, but did not pass, legislation relevant to greenhouse gas reporting. These developments, which occurred in 2003, would not have affected the reported emissions and emission reductions data for activities in 2002 discussed in this report, even if they had been formalized in laws or policies; however, they may affect the

future of the Voluntary Reporting Program, future reporting of reductions or commitments, or both.

Global Climate Change Initiative

On February 14, 2002, President George W. Bush announced the Administration's Global Climate Change Initiative, which includes new goals for reducing U.S. greenhouse gas emissions intensity, incentives for clean technology development, added support for scientific research, an agenda for expanded collaboration with foreign governments, and a framework for enhancement of the Voluntary Reporting Program.

A primary goal of the Global Climate Change Initiative is to slow the rate of growth in U.S. greenhouse gas emissions while sustaining economic growth, using market mechanisms and energy technology development. In the proposal, the President established a national goal of reducing the greenhouse gas intensity of the U.S. economy by 18 percent between 2002 and 2012. Emissions intensity is a measure of the ratio of emissions to economic output (gross domestic product). To achieve the goal, the Initiative focuses on fossil fuel energy conservation, methane recovery, and carbon sequestration in the short term, and development of advanced energy technologies in the longer term.

Inasmuch as the Global Climate Change Initiative will rely on voluntary measures to achieve emission reduction goals, enhancing the Voluntary Reporting Program is an important part of the Initiative. The Initiative also includes other domestic and international elements, such as expanded funding for basic scientific research and advanced technology development; tax incentives; challenges for businesses to undertake voluntary initiatives and to commit to greenhouse gas intensity goals; fuel economy standards; carbon sequestration programs; economic incentives to encourage developing countries to participate in climate change initiatives; and technology transfer and capacity building in the developing world.

The Global Climate Change Initiative includes a future progress check, through which the United States, in 2012, will evaluate whether its greenhouse gas emissions reduction progress is sufficient and whether scientific understanding at that time will justify further action. If further action is deemed necessary,

the Initiative proposes to accelerate technology development and deployment using additional market-based mechanisms, voluntary measures, and incentive programs.

Enhanced 1605(b) Voluntary Emissions Reduction Registry

The primary goal of DOE in working to improve and expand the 1605(b) Voluntary Reporting of Greenhouse Gases Program is to create a credible and transparent program to report real reductions that support the national greenhouse gas intensity goal laid out in the Global Climate Change Initiative. In addition, a goal of the enhanced 1605(b) Program is to allow businesses and individuals to record their reductions and ensure that reporters are not penalized under a future climate policy. The objective of improving the registry is to help motivate firms to take cost-effective, voluntary actions to reduce greenhouse gas emissions, which would, in part, aid in the achievement of the Initiative's greenhouse gas intensity goal.

An interagency working group has undertaken several actions to improve the Voluntary Reporting Program, including outreach efforts, solicitation of public comments, and review of the existing program. On July 8, 2002, the Secretary of Energy, joined by the Secretary of Commerce, the Secretary of Agriculture, and the EPA Administrator, submitted recommendations to the White House to guide the process for improving and expanding the Voluntary Reporting Program.

In 2003, DOE continued to collaborate with the Departments of Agriculture and Commerce and the EPA in developing revised Guidelines for the Voluntary Reporting of Greenhouse Gases Program. In November 2003, DOE released proposed revisions to the General Guidelines, which outline the principles that would govern the program. That release was followed by a 60-day comment period. DOE also held a public workshop in Washington, DC, on January 12, 2004, to encourage open exchange of views on issues raised by the proposal.

To supplement the General Guidelines, DOE is also developing Technical Guidelines that specify the methods and factors to be used in measuring and estimating greenhouse gas emissions, emission reductions, and carbon sequestration. DOE expects to release proposed

Technical Guidelines in early 2004. Following public review, the revised General and Technical Guidelines are to be released for combined review in late spring or early summer 2004. DOE plans to issue final revised General and Technical Guidelines for the Voluntary Reporting Program by the end of 2004, and EIA expects to implement the enhanced program in 2005.

Other U.S., State, and International Greenhouse Gas Initiatives and Registry Programs

Voluntary greenhouse gas emissions reporting programs and other State initiatives, such as emissions targets, emissions inventories and monitoring, and emissions mitigation strategies, continue to gain momentum as the Federal Government develops programs to meet the greenhouse gas emission intensity goals established in the President's Global Climate Change Initiative, and as the States investigate the most cost-effective policies to address climate change. Highlights of Federal, State, regional and other voluntary program activities in 2003 are summarized below.

President's Climate VISION. On February 12, 2003, DOE, on behalf of President Bush, launched the President's "Climate VISION" (Voluntary Innovative Sector Initiatives: Opportunities Now)—a voluntary public-private partnership to pursue cost-effective initiatives to reduce the projected growth in U.S. greenhouse gas emissions. Climate VISION, to be administered by DOE, is intended to help meet the President's greenhouse gas intensity goal. Climate VISION involves Federal agencies, including DOE, the EPA, and the Departments of Agriculture and Transportation, working with industry partners to reduce greenhouse gas emissions voluntarily over the next decade. Business associations representing 12 industry sectors and the Business Roundtable have become program partners with the Federal Government and have issued letters of intent to meet specific targets for reducing greenhouse gas emissions intensity. These Climate VISION partners, which include some of the largest companies in America, represent a broad range of industry sectors: oil and gas production, transportation, and refining; electricity generation; coal and

mineral production and mining; manufacturing (automobiles, cement, iron and steel, magnesium, aluminum, chemicals, and semiconductors); railroads; and forestry products.

Climate Leaders. In February 2002, the EPA established Climate Leaders, a new voluntary industry-government partnership to encourage companies to establish clear greenhouse gas emission reduction targets and develop comprehensive long-term strategies for mitigating climate change. In 2003, the EPA recruited additional partners into the program and continued to develop reporting requirements. The Climate Leaders program has recruited 54 partners, 20 of which have established greenhouse gas reduction goals. By joining Climate Leaders, the partners commit themselves to documenting their emissions of the six major greenhouse gases (carbon dioxide, methane, nitrous oxide, HFCs, PFCs, and SF₆) on a company-wide, facility-level basis (including, at a minimum, all their domestic facilities). Climate Leaders includes a number of reporting options, and the EPA plans to solicit feedback from partners in early 2004 on the type and level of data to be reported under the program.

California. The California Climate Action Registry (CCAR), a voluntary program for reporting and registering greenhouse gas emissions that occur inside or outside the State of California, issued reporting protocols and began enrolling members in October 2002. The CCAR requires third-party verification and seeks to protect participants' reported reductions under possible future regulatory programs. As of November 2003, the CCAR had enrolled more than 40 organizations and companies, with combined annual revenues of more than \$140 billion.⁸ The CCAR has also developed an online reporting tool, the California Action Registry Reporting On-line Tool (CARROT), in order to simplify the inventorying and reporting of greenhouse gas emissions.

Wisconsin. Wisconsin has developed a registry for recording reductions in emissions of greenhouse gases and other pollutants. To date, the registry has received one report involving a reduction in emissions of volatile organic compounds.

⁸Seven of the organizations have at one time or another submitted reports to the Voluntary Reporting Program, including the following reporters for 2002: Los Angeles Department of Water and Power, PG&E Corporation, Sacramento Municipal Utility District, and Southern California Edison.

Northeastern States. The six New England States and the Eastern Canadian Provinces are engaged in a joint effort to develop a regional greenhouse gas registry, as specified in the New England Governors and Eastern Canadian Premiers (NEG/ECP) Climate Change Action Plan, which was issued in 2001. In the United States, this effort has been spearheaded by the Northeast States for Coordinated Air Use Management (NESCAUM), an interstate association of air quality control divisions from the New England States, New York, and New Jersey.⁹ NESCAUM has received a grant from The Energy Foundation to develop and implement a regional greenhouse gas registry and is collaborating with California to use CCAR's CARROT software.¹⁰ In July 2003, New York Governor George Pataki announced that he had received commitments from nine northeastern States (the NESCAUM States plus Pennsylvania) to develop a cap-and-trade program to reduce carbon dioxide emissions from power plants.¹¹

West Coast States. In September 2003, the governors of Washington, Oregon, and California announced a new joint initiative to address climate change by developing policy recommendations on a range of issues that require regional cooperation, including the development of protocols and standard accounting methods for greenhouse gas emissions reporting.¹² The specifics of the registry have not been announced.

Other States. Other States, including Illinois, Iowa, Maine, and Texas, have taken initial steps toward the development of State-level registries of greenhouse gas emissions.

WRI/WBCSD Greenhouse Gas Protocol Initiative. The World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD)

Greenhouse Gas Protocol initiative is not a formal reporting program but an international program for developing accounting and reporting standards for greenhouse gas emissions and reductions that can be adopted by other reporting programs and registries. WRI/WBCSD has developed a corporate protocol for entity-level reporting, which is currently under revision. WRI/WBCSD is also developing a project module, which is expected to be released in 2004, and various calculation tools to assist users of the protocol in quantifying their greenhouse gas emissions.¹³

World Economic Forum Global Greenhouse Gas Register. In December 2003, the World Economic Forum announced the creation of a Global Greenhouse Gas Register to provide a transparent, internationally consistent framework for companies to report emissions inventories and reduction targets. Eight major corporations (which, according to the World Economic Forum, represent nearly 5 percent of all global greenhouse gas emissions) have committed to participate in the registry: Anglo American, Cemex, Hewlett-Packard, Lafarge, RAO Unified UESR, RWE, ScottishPower and Vattenfall.¹⁴ The Global Greenhouse Gas Register intends to begin accepting reports in January 2004, using reporting software based on CCAR's CARROT software.¹⁵

Federal Legislation on Voluntary Greenhouse Gas Reporting

Several bills addressing the reporting of greenhouse gas emissions, emission reductions, and carbon sequestration by individual entities were introduced at the beginning of the 108th Congress, which convened in January 2003. Of the bills that were introduced, only S. 139, the

⁹Conference of New England Governors and Eastern Canadian Premiers, *Report to the New England Governors and Eastern Canadian Premiers on Climate Change Projects* (August 2003), web site www.cmp.ca/images/pdf/eng/2003ReportClimate.pdf.

¹⁰"Regionally Coordinated Climate Change Policies Gaining Momentum in the Northeast U.S.," in *Issue Spotlight* (U.S. Climate Policy Service, M.J. Bradley Associates, Inc.), web site www.mjbradley.com/uscps.html.

¹¹Governor George Pataki, "Governor Announces Cooperation on Clean Air Initiative" (Press Release, July 24, 2003), web site www.state.ny.us/governor/press/year03/july24_03.htm.

¹²"Statement of the Governors of California, Oregon and Washington on Regional Action to Address Global Warming" (September 22, 2003), web site www.climatesolutions.org/pubs/pdfs/Governors%20Statement.pdf.

¹³World Business Council for Sustainable Development and World Resources Institute, *Greenhouse Gas Protocol Initiative*, Newsletter No. 9 (September 2003).

¹⁴World Economic Forum, "World Economic Forum Creates Global Greenhouse Gas Register" (Press Release, December 9, 2003), web site www.weforum.org.

¹⁵California Climate Action Registry, "CA Registry's Online Tool To Serve as Foundation for Global Greenhouse Gas Register" (Press Release, December 9, 2003), web site www.climateregistry.org.

Climate Stewardship Act of 2003, introduced in the U.S. Senate by Senators Joe Lieberman (D-CT) and John McCain (R-AZ), was the subject of a floor vote in either chamber. S. 139 was intended to limit greenhouse gas emissions by establishing a system of tradable emissions allowances, similar to the cap-and-trade system that has been used to limit sulfur dioxide emissions from electric power plants.

Beginning in 2010, the system proposed in S. 139 would have required allowances for emissions from entities with emissions exceeding 10,000 metric tons carbon dioxide equivalent, from producers and importers of HFCs, PFCs, and SF₆, and from producers and importers of fossil fuels used for transportation. The objective of the legislation was to reduce emissions by the covered entities to 2000 levels by 2010. The original bill also included a second target that would have required covered entities to reduce emissions to 1990 levels by 2016; however, that provision was removed before the floor vote. The bill also included provisions for voluntary reporting of greenhouse gas emission reductions achieved between 1990 and 2010. Allowance allocation credits would have been awarded to the reporters of emission reductions.¹⁶ On October 30, 2003, the Senate voted by a 55-43 margin to reject S. 139.¹⁷

Other legislation introduced in the 108th Congress included the following bills:

S. 17, Global Climate Security Act of 2003. Senator Tom Daschle (D-SD) and 15 other Senators introduced S. 17 in January 2003. Title II of the bill, the National Greenhouse Emissions Inventory and Registry Act of 2003, was based on S. 1870, a bill introduced in December 2001 by Senator Jon Corzine (D-NJ) in the 107th Congress.¹⁸ S. 17

included provisions for mandatory reporting of greenhouse gas emissions by entities emitting more than a threshold quantity of greenhouse gas (to be determined by the EPA Administrator). It also included provisions for voluntary reporting of emission reductions and sequestration increases by participating entities, with the EPA establishing and administering a national greenhouse gas registry to collect the information reported.

S. 366, Clean Power Act of 2003. Introduced by Senator Jim Jeffords (I-VT), S. 366 included a goal of reducing emissions of sulfur dioxide, nitrogen oxides, carbon dioxide, and mercury from electric power plants. Annual carbon dioxide emissions at plants with a nameplate capacity of 15 megawatts or more would have been capped at 2.05 billion tons¹⁹ beginning in 2009. Generators covered by the legislation would have been allocated emissions allowances for the covered gases and would have been able to trade their unused allowances for emissions of carbon dioxide and the other pollutants, except mercury.

S. 843, Clean Air Planning Act of 2003. Senators Tom Carper (D-DE), Lincoln Chafee (R-RI), and Judd Gregg (R-NH) introduced S. 843 on April 9, 2003. The bill included provisions for market-based programs to reduce emissions of carbon dioxide, sulfur dioxide, nitrogen oxides, and mercury. It would have capped carbon dioxide emissions from covered electric power plants at projected 2006 levels in the years 2009 through 2012 and at 2001 levels in 2013 and subsequent years. On September 16, 2003, S. 843 was introduced in the U.S. House of Representatives by Rep. Charlie Bass (R-NH) as H.R. 3093.

¹⁶Energy Information Administration, *Analysis of S.139, the Climate Stewardship Act of 2003*, SR/OIAF/2003-02 (Washington, DC, June 2003), p. 1.

¹⁷Reuters News Service, "Senate Rejects Bipartisan Plan to Cap Greenhouse Gases" (November 3, 2003).

¹⁸On January 17, 2003, Senators Corzine, Jeffords, and Lieberman also separately introduced the National Greenhouse Gas Emissions Inventory and Registry Act of 2003 (S. 194), which was almost identical to Title II of S. 17. On March 12, 2003, Representative John Olver (D-MA) and 28 others introduced H.R. 1245, the National Greenhouse Gas Emissions Inventory Act of 2003, in the U.S. House of Representatives. H.R. 1245 was nearly identical to S. 194.

¹⁹Equivalent to 1.86 billion metric tons carbon dioxide. Total carbon dioxide emissions from the electric power sector in 2000 are estimated by EIA at 2.25 billion metric tons. See Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2002*, DOE/EIA-0573(2002) (Washington, DC, October 2003), Table 10, p. 30, web site www.eia.doe.gov/oiaf/1605/1605a.html.