UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

. . . 5 1999

OFFICE OF
AIR AND RADIATION

Joseph Aldy
Council of Economic Advisors
Old Executive Office of the President
Washington, DC 20501
USA

Dear Mr. Aldy,

I am pleased to share with you the Climate Protection Division's (CPD) 1998 Annual Report, *Driving Investment in Energy Efficiency, ENERGY STAR® and Other Voluntary Programs*. As this report demonstrates, these voluntary programs continue to achieve sizable reductions in greenhouse gas emissions while promoting economic growth.

The opportunity for technology investment to address climate change continues to be large. Most Americans, in their homes and businesses/organizations, can eliminate energy waste. In fact, many homes and workplaces can use 30% less energy through cost-effective investments in technology. ENERGY STAR is helping consumers and businesses choose efficiency, save money and protect the global environment. These voluntary programs have a great track record in making efficiency the easier choice and their impacts are growing tremendously each year.

We now estimate that investment in efficient technologies, such as ENERGY STAR Products, through 1998 have exceeded $4 billion and are:

- preventing more than 160 million metric tons of carbon equivalent, and
- delivering a net increase in economic activity (the difference between cumulative energy bill savings and investment in energy-efficient technologies) of more than $14 billion.

These programs have proven to be a highly cost-effective way for the government to promote superior technologies and to reduce emissions. For every dollar spent by EPA on these programs, more than two tons of carbon dioxide emissions are avoided while reducing the nation's energy bill by $75.

The key to the success of these programs is the continuing shared commitment of the private and public sectors in forging a new way of doing business that protects the environment while enhancing the bottom line. Thank you for your important contribution to these successes. We look forward to working with you in the future.

Sincerely,

Kathleen Hogan
Director, Climate Protection Division

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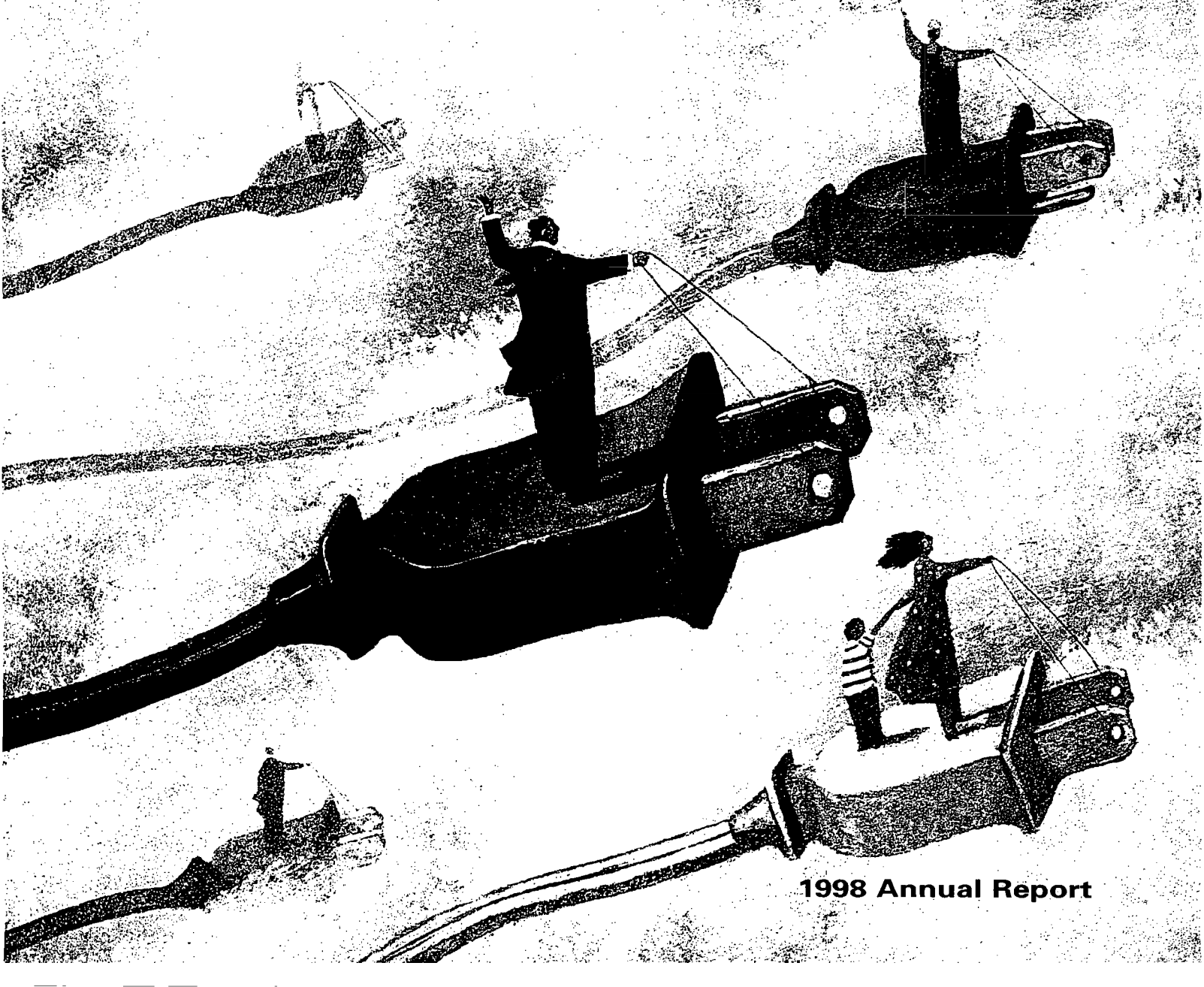
United States Environmental Protection Agency
Air and Radiation
6202J
EPA 430-R-99-005
July 1999

Climate Protection Division

DRIVING INVESTMENT IN ENERGY EFFICIENCY

ENERGY STAR® and Other Voluntary Programs



1998 Annual Report

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United States Environmental Protection Agency

Air and Radiation 6202J

430-R-98-002 March 1998

EPA

Energy Star

EPA DOE

Saving The Earth, Saving Your Money!

Atmospheric Pollution Prevention Division

ENERGY STAR® and Related Programs 1997 Annual Report

DRAFT

EPA - Climate Wise Mtg 5/27/99

Climate Neutral Network - company would attempt to neutralize/offset all emissions (on + off-site)
paper on this

Climate Wise - does not prescribe tech
- focus on industrial actions
- 500 companies - some firm-wide, some just 1 facility
- representative of 14% of industrial energy use
- Comprehensive Action Plan - est.
- project-level, firm-level baseline - pick year (back to 1990)
- do review base + work w/ firms
  estimates can be low
- majority of non-utilities in 1605b are Climate Wise
- tried to discern other CCAP firm Climate Wise
- report actions dating back to 1990
- Evaluation + Tracking Software - to answer a lot of questions - used in a firm's intranet
  - get more + higher quality data

June 22 workshop

Review of Voluntary Programs Working Group
Early Action Credit
324 OEOB, 10:00 - 11:00 am, Tuesday, May 18, 1999

1. Overview of Working Group
   - Relationship of this group with early action credit efforts
   - Goals for working group

2. Brief Summaries of Voluntary Programs
   - EPA
   - DOE

3. Identification of Key Issues
   - How do methodologies vary across programs?
   - What are the advantages and disadvantages of various methodologies?
   - What are the requirements of the private sector in participating?
   - What are the requirements of the agency operating the program?
   - Are there confidentiality concerns regarding some data?
   - How serious is double-counting across programs?

4. Next Steps
   - Identify end-product
   - Identify work necessary to complete product
   - Identify areas where additional resources from agencies are necessary (e.g., input from program staff)

elect
16056
solar + renewables DOE
Climate Challenge (DOE)

bldgs
energy star EPA
green lights + bldgs - Jean Lamontagne
energy conservation DOE
$140m
Building America / Rebuild } DOE

industry
CHP DOE/EPA
IOF DOE
ClimateWise EPA
WasteWise

non-CO2
=> A(. - Eric Dolan

Questions Regarding Voluntary Programs
5/25/99

1. Calculating emissions reductions

- What constitutes participation in the program (what is the voluntary action)?
- What is assumed in the absence of the action (what is the baseline)?
- If the action results in improving energy efficiency or fuel-switching, what is assumed about the carbon content of the avoided fuel use?
- Does the voluntary action reduce a firm's operation costs?
- How is the change in operation costs accounted for in estimating emissions reductions?
- Are reductions estimated based on installing specific technologies and using historic use rates, or based on evaluating actual activity with the technology, or based on direct emissions monitoring?
- Are emissions reductions calculated on an annual basis, or estimated for the life of the technology? If the latter, what is the assumed lifetime of technologies, and what is the distribution about this lifetime estimate?

2. Verifying emissions reductions

- What standards does a private firm have to meet?
- What kind of government or third party auditing is conducted?
- If a firm is found to have emissions reductions less than reported, what is the enforcement mechanism?
- Are there penalties of any form? If so, have any firms been subject to penalties to date?
- Do you have an estimate of the percentage of program participants who would have undertaken the voluntary action in the absence of the government program?
- Are there estimates of technology penetration rates with and without this specific government program?

3. Information requirements

- What kind of information do firms provide to government?
- What is the frequency of data reporting?
- What are the costs of compiling this information?
- Do information requirements create a bias for participation by larger firms (because of economies of scale)?
- Are data provided directly to the government, or through a trade association?
- How are confidential data handled?
- Are data collected on a firm's participation in other voluntary programs, or in a firm's use of various tax credits?

Summary of selected EPA voluntary programs with tracking programs independent of 1605(b)

- **Natural Gas STAR (methane)**
  - Allows retrospective reporting (back to 1990) for gas producers, not transmission & distribution facilities
  - Company-specific data reported to EPA annually - not confidential
  - Detailed data on implementation of specific technologies or practices
  - No independent verification, other than EPA review of reports

- **SF_6 Emission Reduction Partnership for the Magnesium Industry**
  - Launched in fall 1998
  - Partners submit annual tracking form reporting SF_6 stock and flows
  - Memorandum of understanding provides for EPA to independently verify gas measurement instruments and methods (through random evaluations).
  - Individual company data maintained by trade association (International Magnesium Association) but available for review by EPA.

- **Voluntary Aluminum Industrial Partnership (PFC emissions)**
  - Partners represent 94% of US production capacity
  - Data reported to EPA annually
  - Data are treated as confidential business information
  - Emissions reductions based on implementation of technologies and practices

- **SF_6 reduction partnership for Electric Power Systems**
  - Established recently - about 50 partners joined to date
  - Data reported to EPA (about 8 partners also reported to 1605(b))
  - Data are treated as confidential business information
  - Reduction estimates based on SF_6 stock and flow tracking

- **HFC-23 partnership (from HCFC-22 producers)**
  - Detailed data are reported to trade association, aggregate data to EPA
  - Company-specific verification effort conducted by EPA contractor
  - Emissions reductions based on implementation of technologies and practices

- **Semiconductor partnership (high-GWP gases)**
  - Detailed data are reported to industry law firm, aggregate data to EPA (with access to individual data not tied to firm names)
  - Industry group reviews adequacy of data, no independent verification
  - Emissions reductions based on implementation of technologies and practices
  - World Semiconductor Council recently announced that members will reduce PFC emissions by at least 10 percent below 1995 levels by 2010

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

TRANSMISSION NUMBER: 202/395-5836
VERIFICATION NUMBER: 202/395-6827

ENVIRONMENT BRANCH
ROOM 8026
NEW EXECUTIVE OFFICE BLDG.

Name

Fax # 56870

To: Joe Aldy

From: Bob Tuccillo

Message: Nuclear Energy

Number of Pages to Follow: 4

Date: 5/17/99

Time: 4:25 pm

Summary of Federal Climate Change Expenditures
FY 2000 Budget

Table 1. Programs and Tax Policies Related to Climate Change
(Discretionary budget authority and tax incentives; in millions of dollars)

	FY 1998 Actual	FY 1999 Estimate	FY 2000 Proposed	Change 1999-2000
Directly Related Programs & Policies				
Climate Change Technology Initiative				
-- Spending Programs	819	1,021	1,368	+347
-- Tax Incentives 1/	—	—	383	+383
U.S. Global Change Research Program	1,677	1,682	1,787	+105
International Assistance	168	157	163	+6
Other Climate-Related Programs				
EPA -- Clean Air Partnership Fund	—	—	200	+200
DOE -- Weatherization & State Energy Grants	155	166	191	+25
DOE -- Fossil Energy R&D: coal & natural gas combustion and utilization 2/	196	221	209	-12
DOE – Nuclear Energy R&D (NERI)	0	19	25	+6
Treasury – Global Environment Facility 3/	18	75	56	-19
Partnership for a New Generation of Vehicles (PNGV) – non-CCTI funding (DOC, NSF, DOT)	81	77	67	-10
TOTAL	3,114	3,418	4,449	+1,031

Note:
1/ The first year of a proposed five-year, $3.6 billion package of tax incentives.
2/ Funding for natural gas includes turbines, emerging processing technology, and fuel cells.
3/ The total FY 2000 request for the Global Environment Facility (GEF) is $143 million. Approximately 38.8% of total GEF funding from all sources supports climate-related projects. The U.S. does not allocate funds by project type. FY 1999 funding can only be used for arrears.

Table 3. Climate Change Technology Initiative
Details by Agency/Account
(Discretionary budget authority; in millions of dollars)

	FY 1998 Actual	FY 1999 Estimate	FY 2000 Proposed	Change 1999-2000
Department of Energy (DOE)				
Energy Supply	272	336	404	+68
Solar and Renewable Energy R&D	(272)	(336)	(399)	+(63)
Nuclear Energy	(0)	(0)	(5)	+(5)
Energy Conservation R&D	457	526	647	+121
Fossil Energy R&D	0	24	37	+13
Science	0	14	33	+19
Energy Information Agency	0	3	3	0
Subtotal -- DOE	729	902	1,124	+222
Environmental Protection Agency (EPA)				
Environmental Programs & Management	73	72	166	+94
Science and Technology	17	37	50	+13
Subtotal -- EPA	90	109	216	+107
Department of Agriculture (USDA)				
Agriculture Research Service	0	0	7	+7
Natural Resources Conservation Service				
Conservation Operations	0	0	3	+3
Forest Service				
Forest and Rangeland Research	0	0	6	+6
Subtotal -- USDA	0	0	16	+16
Department of Housing & Urban Development (HUD)				
Research and Technology (PATH)	0	10	10	0
Department of Commerce (DOC)				
National Institute of Standards and Technology				
Scientific and Technical Research and Services	0	0	2	+2
TOTAL 1/	819	1,021	1,368	+347

Note:
1/ Total may not add due to rounding.

technologies would allow more electricity to reach the consumer without an increase in fossil fuel input.

Key Performance Goals:

- In 2000, DOE will achieve 1,000 hours of unattended operation of a single dish/Stirling (concentrating solar) system during field testing.

- In 2000, the Million Solar Roofs initiative will have added 26,000 new systems, bringing the total to 51,000 systems.

- In 2000, thin-film photovoltaics module efficiency will reach 13 percent in prototype CIS or CdTe modules.

- In 2000, DOE will demonstrate sustained operation of the complete Vermont gasification system, complete the power-plant retrofit in Chariton Valley (IA) to allow co-firing of coal with switchgrass, and complete a national resource database for biomass crops and residues.

- In 2000, U.S. wind-power generating capacity (using many technologies developed by DOE) will increase from 1,859 megawatts on-line in 1998 to 2,300 megawatts on-line.

- In 2000, DOE will complete a 5 megawatt Kalina Cycle demonstration geothermal plant.

- In 2000, DOE will demonstrate a solar-to-hydrogen conversion efficiency of more than 12 percent using a tandem photoelectrolytic cell (similar to photovoltaic solar cell), and demonstrate a 3-fold increase in hydrogen production at 15 atmospheres using photosynthetic bacteria.

- By 2010, DOE's renewable energy programs are expected to replace up to 1.2 Quads of energy and reduce annual carbon emissions by nearly 24 million metric tons of carbon equivalent.

- **DOE Nuclear Energy Programs.** The budget proposes $5 million, an increase of $5 million over FY 1999 enacted, for DOE's new Nuclear Energy Plant Optimization (NEPO) program. During the next 10-20 years, while efforts continue to reduce the costs of renewable energy alternatives, it will be important to renew licenses and continue to operate nuclear power plants beyond their initial license term in order to avoid pressures to build quick replacement capacity with fossil-fueled plants. R&D under NEPO will investigate materials degradation and how to prevent or repair it, improving nuclear plant capacity factors, and methods of retrofitting current technology into older reactors to improve their reliability and safety.

The FY 2000 budget includes $748 million, an increase of $190 million over FY 1999 enacted, for several programs in which there is, or can be, a significant greenhouse gas co-benefit. This includes programs that exist primarily for another purpose or have multiple environmental benefits, but which have the additional result of reducing fossil fuel use or contribute to improving energy efficiency. These programs are not included under the Climate Change Technology Initiative. The programs include:

- EPA – Clean Air Partnership Fund. The budget proposes $200 million for a new Clean Air Partnership Fund that will provide the opportunity for State, local, and Tribal governments to partner with other parties and the Federal Government to demonstrate the most creative ideas for addressing local air pollution and greenhouse gas emissions. Funding can be used to capitalize revolving funds and other financing mechanisms. The Fund will enable the development of smart multi-pollutant strategies that reduce greenhouse gases, air toxics, soot, and smog to protect our climate and our health. The EPA will administer the Fund using the existing authority provided in Section 103 of the Clean Air Act.

- DOE -- Low Income Weatherization and State Energy Grants. The budget proposes $191 million, an increase of $25 million over FY 1999 enacted, for programs that facilitate energy efficiency investments at the State and local level. DOE's Weatherization Assistance Program provides energy conservation services, such as insulation, to low-income Americans, reducing energy costs for consumers, improving health and safety, and reducing carbon emissions. The State Energy Program provides grants that enable States to tailor energy efficiency programs to local needs and leverage non-Federal resources.

- DOE -- Efficient Combustion and Utilization of Coal and Natural Gas. The budget includes $209 million to support DOE's aggressive R&D effort to develop next-generation technologies for the combustion and use of coal and natural gas. Research and development of two new coal combustion technologies -- integrated gasification combined cycle and pressurized fluidized bed combustion -- could lead to ultra-high efficiency coal plants with dramatically lower greenhouse gas emissions.

- DOE – Nuclear Energy Research Initiative. The budget proposes $25 million, an increase of $6 million over FY 1999 enacted, to fund collaborative partnerships among national laboratories, universities, and industry R&D organizations. Potential areas of research include proliferation-resistant reactors and fuel technologies, new techniques for on-site and surface storage of nuclear waste, and other advanced design applications.

- Department of the Treasury – Global Environment Facility (GEF). See Addendum.

- Partnership for a New Generation of Vehicles (PNGV). The budget proposes $67 million for work related to the PNGV funded by the Departments of Commerce and Transportation, and the National Science Foundation. This is in addition to funding for PNGV provided by DOE and EPA which is included under the Climate Change Technology Initiative. The

Suggested voluntary program sample

TYPE OF VOLUNTARY PROGRAM	INDUSTRY SECTOR	UTILITY SECTOR	TRANSPORTATION SECTOR	BUILDING/RESIDENTIAL SECTOR
"Regulatory and Fiscal Choice" programs	None in the U.S.	None in the U.S.	None in the U.S.	None in the U.S.
Promotional-Oriented programs with defined commitment and verification				
Promotional-Oriented programs/open commitment				
Public Disclosure, Registry-based		Climate Challenge		
Market Transformation, Product-Oriented	Motor Challenge		Clean Cities	Energy Star/Green Lights
Technology Innovation programs			PNGV	

Joseph,

Just a quick summary of the typology study I mentioned at today's meeting, **"A Typology of Voluntary Agreements Used in Energy and Environmental Policy: Implications for the Evolution of Voluntary Agreements Under Changing National Policy Circumstances."**

The "typology" research completed has shown that there are several types of voluntary programs that differ because of their many distinguishing characteristics. We looked at over 20 parameters that characterize voluntary programs and developed an empirical cluster of groupings. This work is probably too abstract for your purposes, but it highlights the need to recognize the voluntary programs are not the same across the board.

Taxonomy

In this study, voluntary programs were examined according to the following new taxonomy (organized into five categories): (1) procedural aspects, (2) participant commitments, (3) reporting and verification approaches, (4) government policy-support instruments, and (5) type of participants and stakeholders. This new taxonomy recognizes a more complete set of factors than is found in the existing literature.

Procedural Aspects

- enforce ability
- extent of regulatory or fiscal threat
- form of the agreement
- individual versus collective character of the agreement
- agreement duration
- extent of negotiation (i.e., the process which precedes the agreement)
- treatment of sanctions

Participant Commitments

- is an inventory of energy consumption or emissions conducted?
- is an action plan developed, and if so, is it a general or detailed plan?
- type of commitments (e.g., a numerical reduction target; the purchase, upgrade, or production of a preferred technology; or an open-ended commitment)
- predominate orientation of the actions encouraged by the voluntary programs (e.g., does the voluntary action primarily focus on "best practice"1 or does it focus on technology innovation?)
- coverage of direct or indirect "own" (e.g, on-site activities) and/or "offset" (e.g., reduction activities not associated with regular business operations) voluntary actions

Reporting and Verification Approaches [NOTE: WE DID NOT GO INTO A LOT OF DETAIL HERE]

- is reporting done at the sector or at the individual company level?
- what information is reported?
- frequency of reporting

- degree of public disclosure of the reported information
- is reporting part of a standardized national or sector-wide reporting system?
- extent to which participants do quantitative impact analysis
- means of verification of emission reductions or energy savings

Government Policy-support Instruments

- type and emphasis of Government policy-support instruments2

Results:

The following types are identified.

"Regulatory and Fiscal Choice" programs • Netherlands LTAs, Denmark CO2 Agreements, Project XL
Promotional-Oriented programs, with defined commitment and verification • New Zealand voluntary agreements, Germany CO2 Accords, CIPEC, Greenhouse Challenge, VAIP Promotional-Oriented programs, with open commitment • Climate Wise Public Disclosure, Registry-based programs • 1605b, 33/50, CE189, Climate Challenge, VCR
Market Transformation, Product-Oriented programs • Green Lights, Motor Challenge, Energy Star Transformers, Rebuild America, Clean Cities, Cool Communities
Technology Innovation programs • IOF, PNGV, Golden Carat SERP

Transportation Partners Overview

1. Brief overview of the program

- The Transportation Partners program is comprised of a team of national, non-governmental organizations, called Principal Partners, who receive EPA funding to foster innovative transportation solutions nationwide. Funds received by these organizations are used to respond to requests by government officials, businesses, communities, and organizations engaged in VMT reduction strategies.
- Transportation Partners has funded nine non-profit organizations since its founding. In turn, the Transportation Partners assist **over 300 nationwide Project Partners** providing technical and networking assistance.

2. What are the goals of the voluntary program in question?

Transportation Partners promotes and supports innovative, local, voluntary efforts to reduce vehicle miles traveled (VMT). Under the Climate Change Action Plan, Transportation Partners is one of the actions responsible for reducing emissions through reducing miles traveled by single occupancy vehicles.

The Transportation Partners program focuses its attention on three broad types of programs which reduce VMT growth:

1. **Community designs** which make it easier to carpool, walk, bike, or take transit, thus making these developments or redevelopments more livable and prosperous;
2. **Market incentives** that reduce VMT and traffic congestion. Examples include: adjusting toll charges by time of day, equalizing commuter subsidies across transportation modes, and encouraging private investment in transit; and
3. **Technology** applications that take advantage of cutting edge-technologies, such as telecommuting and smart cards for transit, and enhance existing transportation choices and services.

3. What mechanisms does the program use to achieve its goals?

Measures used to quantify performance

- The primary measure of performance is vehicle miles reduced as result of the projects supported either directly through seed grants, or indirectly through technical assistance.
- VMT reductions provide the basis to calculate energy and CO_2 savings based on regionally specific coefficients for average fuel consumption by personal vehicles or fleets.
- In some cases the project achieves a shift to a travel mode or fuel type with less associated emissions per passenger or ton mile. In these cases the difference between the national average CO_2 per mile and the CO_2 per mile for the implemented alternative is the imputed emissions savings.

What reporting methodologies are used to quantify reported data?

- First, more than half the local projects, although they are important, do not result in any directly quantifiable reductions in vehicle travel and greenhouse gases. Therefore, no attempt is made to quantify reductions associated with such projects.

- The largest share of reductions are from a network of 25 cities taking part in the Cities for Climate Protection Program. Each cities uses a software developed by ICLEI and Transportation Partners to calculate the emissions reductions from their transportation actions.
- With respect to the remaining projects, project quantification forms are distributed to the project partners. However, due to the wide variation in the size and resources of the project partners, the reporting entities often are not able to estimate the reductions generated by their project. In these cases, based on more basic information reported in the profile, (project type and persons or vehicles affected), reductions in VMT or greenhouse gases is calculated based on results found in previous studies of similar projects
    - e.g. a community implementing a bicycle lane and trail network may have a difficult time measuring how many trips are replacing car trips versus solely recreational trips that would not have been taken by car
- Additionally, the program is currently working with several cities to quantify the travel and emission reduction benefits from the land use measures they have implemented. The cities will use a GIS-based sketch planning model developed by EPA.

Monitoring and verification

- Self-certified with reviews of methodology used to calculate emissions

4. What progress has the program made?

In the two years of reported reductions the program has been able to quantify a reduction of .09 MMTC in 1996 and .19 MMTC in 1997. Reductions reported in 1997 were more than double those from 1996 due to both improved reporting and greater reductions from pilot projects that are achieving more reductions through broader implementation.

Data Issues

1. Reporting parties are asked to agree to release the data
2. A sensitivity range is applied to all reported results to account for uncertainty and ensure that they are in line with results found in studies of similar project types (i.e. % of VMT reducing across affected population).
3. Emissions are reported at the project level

Climate Wise Overview

1. Brief overview of the program

- Climate Wise stimulates cost-effective emission reductions through voluntary public/private sector partnerships. Climate Wise Partners are encouraged to undertake comprehensive cost-effective industrial energy efficiency and pollution prevention actions to reduce energy consumption and GHG emissions.
- Climate Wise has signed over 500 partners since the programs inception. As program participants, partners receive technical assistance in identifying cost-effective actions to reduce their GHG emissions.

2. What are the goals of the voluntary program in question?

Climate Wise focuses its attention on the industrial sector and has four broad objectives:

1. **Encourage** the immediate reduction of greenhouse gas emissions in the industrial sector through a comprehensive set of cost-effective actions;
2. **Change** the way companies view and manage environmental performance by demonstrating the economic and productivity gains associated with more energy efficient manufacturing;
3. **Foster** innovation by allowing participants to identify the actions that make the most sense for their organizations; and
4. **Develop** productive and flexible partnerships within government and between government and industry.

3. What mechanisms does the program use to achieve its goals?

Measures Used to Quantify Performance

- Performance is measured in terms of specific projects (usually energy-efficiency improvements) that reduce energy consumption.
- Reductions in energy consumption provide the basis for estimating reductions in greenhouse gases (based on regional carbon coefficients for utility power, or displaced fossil fuels).

What reporting methodologies are used to quantify reported data?

- Companies submit an action plan detailing their GHG emissions reduction goals over a specified period of time. Companies are requested to update their action plan on an annual basis. Companies are also asked to submit their emissions reductions to the 1605b registry within one year of submitting their action plan.

- Companies estimate their own emissions reductions from specific projects. However, estimates are reviewed by Climate Wise to check for reasonableness. Additionally, Climate Wise attempts to induce companies to use one of two estimation methodologies:
    1. Measure reductions in energy consumption from a base-year (1990)
    2. Measure reductions in energy-intensity from a base-year (1990)

- Companies are not required to report emissions on a per activity basis, but some do. Generally, companies report specific actions and aggregate reductions, but not the reductions associated with each action.

Monitoring and verification

- Action plans are self-certified with some review of the methods used to estimate emissions reductions.

4. What progress has the program made?

According to the action plans submitted to date, by the year 2000, Climate Wise companies will reduce emissions of greenhouse gases by 18 million metric tons of CO2 and save over $300 million.

Data Issues

1. Confidentiality – action plans are not shared with other companies or within EPA (companies require climate wise to do this)
2. No reliability checks – only indication that things are actually happening is that all projects are cost-effective.
3. Company-wide reporting of energy consumption

Voluntary Aluminum Industrial Partnership
Overview

- The Voluntary Aluminum Industrial Partnership began in 1995.
- 11 out of the 12 U.S. primary aluminum producers are partners. They represent 94% of U.S. primary production capacity.
- The partners report annually:
  - operating parameters that affect PFC emissions (e.g., frequency and/or duration of anode effects)

Questions Regarding Voluntary Programs
5/25/99

1. Calculating emissions reductions

- What constitutes participation in the program (what is the voluntary action)?
- What is assumed in the absence of the action (what is the baseline)?
- If the action results in improving energy efficiency or fuel-switching, what is assumed about the carbon content of the avoided fuel use?
- Does the voluntary action reduce a firm's operation costs?
- How is the change in operation costs accounted for in estimating emissions reductions?
- How does the change in operation costs affect a firm's decisions on other operations?
- Are reductions estimated based on installing specific technologies and using historic use rates, or based on evaluating actual activity with the technology, or based on direct emissions monitoring?
- Are emissions reductions calculated on an annual basis, or estimated for the life of the technology? If the latter, what is the assumed lifetime of technologies, and what is the distribution about this lifetime estimate?

2. Verifying emissions reductions

- What standards does a private firm have to meet?
- What kind of government or third party auditing is conducted?
- If a firm is found to have emissions reductions less than reported, what is the enforcement mechanism?
- Are there penalties of any form? If so, have any firms been subject to penalties to date?
- Do you have an estimate of the percentage of program participants who would have undertaken the voluntary action in the absence of the government program?
- Are there estimates of technology penetration rates with and without this specific government program?

3. Information requirements

- What kind of information do firms provide to government?
- What is the frequency of data reporting?
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- Are data provided directly to the government, or through a trade association?
- How are confidential data handled?
- Are data collected on a firm's participation in other voluntary programs, or in a firm's use of various tax credits?

Information Requested for Green Lights Annually

- Facility information: company name, facility name and address, type, floorspace
- Lighting technologies before and after: type, quantity, wattage, hours, controls
- Project costs: including rebates/grants
- Savings: reduced load, kWh, % savings, annual dollar savings, IRR.

Information Requested
Energy Star Buildings Annually

- Facility information: company name, facility name and address, type, floorspace, submit GL report?
- Energy Use before and after: 3 year baseline of energy use and costs; current year energy use and cost
- Project costs: total investment, rebates/grants
- Project status: Upgrade progress according to ESB program stages
- Changes since baseline: occupancy, plug loads, floorspace

Calculating Climate Wise Impacts

Climate Wise program savings for the year 2000 were determined by utilizing submitted information from partners, industrial analysis from the Energy Information Administration, and Climate Wise data and trends that have been established over the 5 year history of Climate Wise.
Climate Wise Partners submit Action Plans that outline their efforts to reduce greenhouse gas emissions through energy and pollution prevention measures. To date Climate Wise partners have committed to over 1,500 individual actions. It is the sub set of these actions, that have been quantified by the partners that is the basis for estimating the year 2000 impact of Climate Wise.

The first step in determining the Climate Wise Program energy and cost savings and emissions reductions is compiling company-reported Year 2000 savings information, as reported in their Climate Wise Action Plans, Form EIA-1605 filings, company communications with Climate Wise, and Climate Wise estimations based on these reported savings. Savings from lighting, HVAC and motor efficiency measures, which may overlap with other CCAP programs, were removed from the totals. If a company specifically identified savings associated with lighting, HVAC, and/or motor efficiency, these measure-specific savings were directly subtracted from the company total. Some company Action Plans included lighting, HVAC, and/or motor measures, but only reported savings on an aggregate basis across all efficiency measures. In such cases, it was necessary to estimate the portion of the energy savings attributable to these measures. The 1994 Manufacturing Energy Consumption Survey (MECS) indicates that lighting accounts for about 7 percent of manufacturing electricity use, HVAC accounts for about 8 percent, and motors (machine drive) account for about 51 percent of manufacturing electricity use. These percentages were used to discount the electricity savings for companies that did not report measure-specific savings. As an example, for a company that reported lighting and motor efficiency measures, their reported electricity savings were discounted by 58 percent. Through this method, Climate Wise Partners' electrical savings were discounted for overlap with CCAP programs an average of 20%.

Climate Wise Reported Savings:
The October 19, 1998 estimation of Climate Wise Partners' savings consists of values from 138 partners or 30% of Climate Wise Partners. These values consist of company-reported year 2000 savings information, as reported in their Climate Wise Action Plans, Form EIA-1605 filings, other company communications, and Climate Wise estimations based on these numbers. For example, if the company only reported MWh savings, Climate Wise estimated their cost and emissions reductions base on average emissions factors and industrial electrical costs. Another example of Climate Wise estimations is that if only current year savings were reported, Year 2000 savings were estimated to be equivalent. Reported savings are not always clear. Partners are often not specific with units of reported savings, or their estimation methods are not explained, or energy and emission savings are lumped for fuel and electric savings. Clarification of reported values and approval of Climate Wise estimates are addressed in the Action Plan review process. Savings and estimation that are reasonable, but have not been approved in the review process, are used in the aggregation of partner reported savings.

These reported savings are used to estimate the savings of the remaining partners. The average energy savings per company from the companies that reported savings, is calculated. This number is divided by 2.6 to reflect the size differential between companies that reported savings and those that did not. This adjusted number is then applied to the existing partners that have not yet submitted quantified Action Plans. The next step is to estimate the impact of partners that will join Climate Wise in 1999 and 2000.

Climate Wise has averaged 90 new partners each year. This value is used to estimate the number of new partners in 1999 and 2000. Savings from these partners are estimated as partners that have not reported savings. These partners will not implement an equivalent number of measures as partners that are presently in the program. To adjust for this, future partners joining in 1999 are discounted by 40 percent and future partners in 2000 by 70 percent.
44 percent of Climate Wise partner actions were initiated prior to joining the program. Of this 44 percent, approximately 44 percent of the measures pertain to motors, HVAC, lighting measures (which were already removed), or waste reduction and pollution prevention measures (which have not been quantified by CW partners). Therefor Climate Wise savings were discounted by 44 percent of 44 percent, or 20 percent.

It is often the case that partners were planning on upgrading equipment or optimizing a system regardless of the influence of Climate Wise. It may also be the case that less efficient equipment is obsolete. These types of circumstances are referred to as "free ridership" and "anyway tons" respectively. This was accounted for based on the approximate 14% of US industrial energy use that Climate Wise partners are estimated to represent in the year 2000. In the year 2000, industrial fuel use is expected to be 19.8 Quads (AEO98, p. 110). Climate Wise partners energy use in the year 2000 are thus expected to be 1.1 Quads. Motors, HVAC, and lighting account for about 25% of industrial CO_2 emissions (based on MECS 94, and AEO98). Excluding motors, HVAC, and lighting, had they not joined Climate Wise, it is assumed that Climate Wise partner energy efficiency and emissions reductions would have improved the same as the U.S. industrial average, or 1.1% per year (AEO 98, p. 110). It is assumed that 60% of this decline in energy intensity is due to energy efficiency and 40% is due to structural shift (based on AEO 98, p. 44). Therefore, it is assumed that Climate Wise partner fuel intensity would have declined by 0.66% per year (1.1% x 60%) due to energy efficiency measures had they not joined Climate Wise. This discount was compounded for each year since the partner joined Climate Wise. Identical discounts were derived for electrical, and emissions savings using appropriate decrease in intensity. "Anyway cost savings" were based on these reductions and estimated energy costs in 2000.

A final consideration was given to free drivership, which accounts for the influence of Climate Wise outside of the Partners, such as non-Climate Wise companies receiving Climate Wise newsletters, attending Climate Wise workshops, and receiving technical assistance from Climate Wise through the Wise Line and other means. This is estimated to be approximately 20% of Climate Wise savings (which is consistent with experience of other EPA voluntary programs).

Table 1: Current Year Climate Wise Impacts

	CO_2 (MMTCe)	Fuel (TBtu)	Electrical (GWh)	Cost Millions $
Company Communicated Savings	2.48	138.7	9,806	873
Updated Scoring Methodology Estimates for current partners	2.27	127.1	8,985	800
Subtract Historic Actions (20%)	-0.95	-53.2	-3,758	-335
Total Climate Wise Impacts in 2000	**3.80**	**212.7**	**15,032**	**1,338**
Subtract Expected Baseline CO2 Savings (Anyway tons)	-0.89	-42.7	-422	-155
Add Free Drivership (20%)	0.76	42.5	3,006	268
Discounted Climate Wise Impacts in 2000 1998	**3.66**	**212.5**	**17,617**	**1,451**
mid-1999	4.3			

Table 2: Projected Year 2000 Climate Wise Impacts

	CO_2 (MMTCe)	Fuel (TBtu)	Electrical (GWh)	Cost Millions $
Company Communicated Savings	3.07	162.1	11,779	1,035
Updated Scoring Methodology Estimates for current partners	2.81	148.5	10,792	948
Updated Scoring Methodology Estimates for future partners	0.70	36.8	2,673	235
Subtract Historic Actions (20%)	-1.32	-69.5	-5,049	-444
Total Climate Wise Impacts in 2000	**5.26**	**278.0**	**20,195**	**1,774**
Subtract Expected Baseline CO2 Savings (Anyway tons)	-1.51	-72.3	-717	-262
Add Free Drivership (20%)	1.05	55.6	4,039	355
Discounted Climate Wise Impacts in 2000	**4.80**	**261.3**	**23,518**	**1,867**

3/26/99 DOE V.I Prog mtg

1605b - EPAct

lists actions that are covered - incl non-vol acts (eg. regulation) + all other actions

then act requires causation in

1) plant closing
2) state/fed reg.
3) vol action

Policy office - published guidelines (industry-specific) - some unresolved accting issues

EIA designed forms - try to clarify what people have done - this could facilitate look-back

75% long, 25% EZ forms

3 kinds of reporting

1) project reporting - action-focused (JI-like) (1200 / 140 entities)
2) entity-wide - corporate emissions (56 entities) → 11 were just entity
3) both

1995 - utilities working w/ Admin on Climate Challenge

→ decided on 1605b as reporting mechanism

→ CEOs sign

→ lg entities hire consultants ($10-30k), sm entities take long time

Reporting in last year

3/4 are utilities (156?)

1200 projects

other vol progs report some to 1605b

160 MMTCO$_2$E/yr reductions last year (comes 2/3 of all utilities)

reductions are highly concentrated in lg utilities

- TVA, Southern, FE Power,

1/2 - 2/3 reductions in 10-15 utilities

big reductions associated w/ (N) plants
- TVA emis now below 1990 bc of (N)
CO_2 emis from utilities - Phase I + II since 95 report (CO_2
database to conform company + plants + emis
- joint ownership
- transportation
- wholesale power (PEPCO generates less now, buys some)

Reporting
- can report on action since 1990 even now that achieved reductions ⇒ thus can only be in past (can't est. future reductions)

baseline - report entity emis, often to a base year (bt 87-90)
modified reference case (counterfactual) for projects
some entities use a projection for the period to compare
- FL Power, TVA - unit of production approach
CO_2/Kwh ⇒ driven by (N) + nat gas FL Power
(N) TVA

in agreements they state base
⇒ if "negative" reductions - these are reported

reporter's call - avoided fuel use
Nezava Mohawk uses system model run to see what would have happened w/o project

No financial info collected; can't estimate how firms

Δ

Guidelines provide guidance on measuring emissions
default tables

CEMs not very accurate for SO_2 - mass balance as accurate; CEMs overestimated SO_2 by 8% for a while; CEMs are best for criteria pollutants, but only give right answer if quality-controlled w/ mass balances

No auditing by govt (no authority to do so)
- reports shall certify accuracy of reports (may audit them)
- statute that reporting false/bad on fed form is a crime
- no generally accepted acctg principles for emissions
  ∴ difficult to audit or difficult to ensure additionality

11 reports marked as preliminary - ∴ some unresolved issues b/t EIA + reporter; others are noted as validated

Spend a lot of time evaluating forms - EIA tracks time/resources spent on each report

Manufacturing corporations - energy data are usually @ facility level, but not reported to corp HQ, ∴ difficult for these corps to est. emissions

Annual reporting

Cost of compiling data - $0.5m + 2 staff (1.5 FTE)

1 or 2 trade assns, rest is direct

there is a bias towards larger companies - resource issue, learning curve

statute requires EIA to provide confidentiality if requested - if it is legit (1 or 2 times/yr)

confidentiality issues - effectively lost forest products industry
- same problem w/ MECS

Ask for vol progs, not tax credits (no timid info)

Standard briefing on accting - Arthur has
in reporting emiss red, reporters note if low, high, medium
due to accuracy of estimating methodology
(most of these are med or high)

Climate Challenge
MOU w/ utility assns
124 signed agreements - boiler plate documents - make pledges
(70% of industry)
48 MMTCE pledged for 2000 rel. to 1990 - incl JI
utilities required to do mid-term review - qualitatively on
track for the pledge
only a few utilities did entity-wide pledges
Restructuring - DSM dropped - negative
heat-rate improvement - positive
ownership Δs - still have reporting
Options workbook for Climate Challenge participants
some tech assistance for utilities

6/3 Mtg Motor Challenge

Paul Scheihing
Ken Davidson

Focus on industrial motor-driven systems
- 70% of ind elect in
- vol, no reporting requirement
- emphasis on dissemination of info, tools, training
- ~20 case studies (showcase demonstrations) - independent validation
  $3m in savings; $25,000 per case study validation
- aim is to expand validation some

Motor Master Plus - software tool to assist in finding motors
- simple payback + life-cycle cost
- 1605b report (not used much) - in calculating, everything held constant
- carbon savings estimated

2500 companies are registered, ____ Allied Partners

Program Evaluation - ongoing - randomly sampled participants

Assessment - See exec sum
  250 firms participated

Motor efficiency std in place now

Need incentives for private sector to replace not repair motors

Questions Regarding Voluntary Programs
5/25/99

1. Calculating emissions reductions

- What constitutes participation in the program (what is the voluntary action)?
- What is assumed in the absence of the action (what is the baseline)?
- If the action results in improving energy efficiency or fuel-switching, what is assumed about the carbon content of the avoided fuel use?
- Does the voluntary action reduce a firm's operation costs?
- How is the change in operation costs accounted for in estimating emissions reductions?
- How does the change in operation costs affect a firm's decisions on other operations?
- Are reductions estimated based on installing specific technologies and using historic use rates, or based on evaluating actual activity with the technology, or based on direct emissions monitoring?
- Are emissions reductions calculated on an annual basis, or estimated for the life of the technology? If the latter, what is the assumed lifetime of technologies, and what is the distribution about this lifetime estimate?

2. Verifying emissions reductions

- What standards does a private firm have to meet?
- What kind of government or third party auditing is conducted?
- If a firm is found to have emissions reductions less than reported, what is the enforcement mechanism?
- Are there penalties of any form? If so, have any firms been subject to penalties to date?
- Do you have an estimate of the percentage of program participants who would have undertaken the voluntary action in the absence of the government program?
- Are there estimates of technology penetration rates with and without this specific government program?

3. Information requirements

- What kind of information do firms provide to government?
- What is the frequency of data reporting?
- What are the costs of compiling this information?
- Do information requirements create a bias for participation by larger firms (because of economies of scale)?
- Are data provided directly to the government, or through a trade association?
- How are confidential data handled?
- Are data collected on a firm's participation in other voluntary programs, or in a firm's use of various tax credits?

Climate Wise Project Evaluation & Tracking System Software

By the year 2000, Climate Wise companies will reduce emissions by 18 million metric tons of carbon dioxide and save $300 million.

The U.S. Environmental Protection Agency's Climate Wise Program, in conjunction with Business for Social Responsibility's Environmental Education Fund, Anheuser-Busch, and Lucent Technology, have developed a new Project Evaluation & Tracking System Software. This software, built on a Microsoft Access Platform, incorporates the latest technological advances in database systems. It allows companies to track progress of their comprehensive environmental projects in real time and quantifies both the environmental and financial benefits.

Identification of Potential Projects

Companies can use the software to stimulate new project ideas. It includes scores of case studies, technical information, and helpful hints. Queries can be developed based on the industry group (Standard Industry Code) or an individual technical area.

CO_2

The software includes CO_2 emissions factors for solid wastes, fuel, and electricity. The program allows you to quantify your CO_2, SO_X, and NO_X emissions from electricity use by providing emissions averages for U.S. states or other countries. It also allows the user to input a coefficient based on more exact data, as available.

Comprehensive Multi-Media Environmental Tracking

The software provides a one-stop service for tracking activities in all major environmental media. It tracks projects dealing with water usage, hazardous waste, other solid wastes, and air emissions.

Financial Information

The program allows the user to rank potential projects based on the return on investment. It also tabulates the total estimated and actual annual savings from each project and combined savings from all the projects. The software prepares a financial analysis of the potential project using the individual company's own financial assumptions and pricing inputs.

CLIMATE WISE

Reporting

The software produces a wide range of reports and can create reports specific to the individual needs of companies. The software is designed to prepare a Voluntary Reporting of Greenhouse Gas Emissions 1605b report at the click of the mouse.

For Large and Small Companies

Each company customizes the structure of the software to fit the unique composition of its corporate structure. From a one facility, mom-and-pop operation to a gigantic multinational corporation, the software adapts to meet the individual needs of the company. For multi-facility companies, the software can be interactive via the Internet, intranets, or even the World Wide Web to allow companies to track multiple projects in multiple facilities worldwide.

For more information on the software or the Climate Wise Program please contact the Climate Wise WiseLine at 1(800) 459-WISE or by E-mail at wiseline@icfkaiser.com.

For more information on Climate Wise, please contact:

Wise Line and Clearinghouse

Phone: 1-800-459-WISE

Fax: 703-934-3968

E-mail: WiseLine@icfkaiser.com

http://www/epa.gov/climatewise

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Washington, D.C. 20220

FAX

Date: 5-13-99
Number of pages including cover sheet: 4

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Remarks: __**URGENT** __For your review __Reply ASAP __Please comment

RE: ATTACHED

Credit for Early Action Working Groups

I have received the following volunteers for the working groups and have asked the first person each list to convene the working group. Time is probably short, so it would be helpful if the working groups could move on a fast track. Tentative timetable: working groups report back to the larger group in about 2 weeks (May 27). The administrative cost group does not need to be on the same timetable. Perhaps that group could wait and begin work after the others report back.

1. Review of Voluntary Programs
Joe Aldy (CEA)
Bob Tuccillo (OMB)
Janice Mazurek (EPA)
Reid Harvey (EPA)
Krishna Chivulkula (EPA)
Bob Cumby (Treasury)
Jeff Dowd (Energy)
Jean Vernet (Energy)

2. Baselines (This group will break up into four subcommittees, one on utilities, one on industrial emitters, one on buildings and end-users, and one on vehicles.)
Mark Friedrichs (Energy)
Quindi Franco (CEA)
Janice Mazurek (EPA) (Utilities)
Martin Ross (EPA) (Utilities)
Jeanne Briskin (EPA) (Industrial emitters)
Kevin James (EPA) (Industrial emitters)
Jean Luppinacci (EPA) (Buildings/end-users)
Krishna Chivulkula (EPA) (Buildings/end-users)
Cindy Jacobs (EPA) (Vehicles)
Martin Ross (EPA) (Vehicles)
Jeff Dowd (Energy) (Vehicles)
Barry McNutt (Energy) (Vehicles)

3. Size of Pools
Janet Anderson (CCTF)
Bob Cumby (Treasury)
Joe Aldy (CEA)

4. Administrative Costs for Early Credit Program
Janice Mazurek (EPA)
Krishna Chivulkula (EPA)

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THE OLD EXECUTIVE OFFICE BUILDING

****

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Rid Harvey

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****

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TEL NUMBER: (202) 395-1455

NO. OF PAGES (inc cover) 4 **DATE:** 6/17/99

SUBJECT: voluntary programs + early action

MESSAGE:

I plan on circulating this at today's meeting. If you have comments or suggested edits that you would like me to incorporate before the meeting, please get them to me by 11am. Thanks.

Lessons from Voluntary Programs for Crediting Early Action

Existing voluntary programs can provide insights for the design of an early action credit system. An evaluation of emissions reducing actions, their measurement, and their reporting can inform an assessment of the value of past and current voluntary actions. Further, lessons can be drawn from the current voluntary programs to inform the design of a prospective crediting system. This memo outlines some of the key issues on both retrospective and prospective crediting.

Retrospective Crediting

In evaluating voluntary actions under existing programs, it becomes clear that the wide array of programs employ different approaches to measuring emissions reductions because of these programs' different sectoral and technology foci. Some programs estimate emissions reductions based on fuel use, while others estimate emissions based on the waste stream, and others estimate emissions based on technology use. Even within these categories, different methodologies are used to calculate emissions reductions. In some programs, there have been a limited number of on-site audits to assess a facility's emissions reductions. The level of accuracy of the various approaches can vary, with the more analytically rigorous and time-intensive approaches appearing to yield more accurate results.

Some experts familiar with these programs have claimed that the nature of reporting voluntary actions can promote misestimation of emissions reductions in some cases. Firm-level emissions reductions could be overestimated because of free-riding and other factors, and some have suggested adjusting the value of these claimed reductions.[1]

Reasons for Adjusting Estimated Emissions Reductions

- Free Riding. In some cases, a firm would have undertaken an action that results in lower emissions regardless of the existence of the voluntary program simply because the action is economic for the firm. These actions do not result in reductions from what emissions would have been without the voluntary program.

- Duration of Additionality of Action. A firm could adopt a technology in an action that is truly additional, however, given a long lifetime of the technology, there may be some point in time when the technology is no longer more efficient than the industry standard. Thus,

[1] However, some counter that a program's emissions reductions could be underestimated if some firms take advantage of available programs without formally reporting participation. Since this overview focuses on firm-level emissions reductions, and not program-level reductions, we do not address this possibility.

the emissions reductions from the early action are not the sum over the lifetime of the new technology, but the time the new technology is used when a less-efficient technology would have been used absent the voluntary program.

- Estimation Methodologies. Since estimation methodologies are not uniform across programs, and indeed, not uniform within some programs, the calculation of emissions reductions may be more rigorous for some actions than for others. The lack of rigor in some approaches could result in under- or over-estimation.

Approaches to Adjusting Emissions Reductions

To address the potential misassessment of reductions, some have proposed adjustments to the claimed emissions reductions. Below is a set of possible adjustments that could be undertaken. These should not necessarily be considered completely mutually exclusive. Further, additional analysis may be warranted to fully evaluate which adjustment approach, or combination of adjustment approaches, would be most appropriate in a retrospective credit system.

- Eliminate credit for actions that are not identified as voluntary. Under the 1605(b) reporting system, firms are asked to identify if the action is: 1) a plant closing; 2) response to state or federal regulation; or 3) a voluntary action. Actions falling under the first two categories could then be removed from the pool of actions receiving credits.

- Adjust across the board based on free rider percentage. In estimating aggregate program effects, some programs attempt to deduct energy-efficiency improvements that would have occurred anyway in the industry based on forecast business-as-usual energy use. This approach could be used to adjust all actions by a specific percentage.

- Adjust across the board based on credit pool size. A decision could be made about the size of the credit pool set aside for retrospective credit, and this could then be the basis for adjusting emissions credits.

- Adjust case-by-case by evaluating methodologies. A review of methodologies across and within programs could be used, and in cases where methodologies were found to misestimate emissions reductions, credits could be appropriately adjusted.

- Adjust case-by-case through site audits. In some programs, a subset of participants have been evaluated through extensive site audits. These could serve as the basis for the credits for those with previous audits, and additional audits could be performed on other participants.

Prospective Crediting

The existing voluntary programs also provide some lessons learned for designing a prospective crediting system.

- Data reporting system is important. Some EPA and DOE programs have computer software to assist program participants calculate, track, and report their data. These could serve as useful prototypes by reducing the burden on participants and thereby promote higher participation rates.

- Firms could benefit from guidance for estimation methodologies. Many voluntary programs provide guidance to participants about how they can calculate their emissions reductions. This is important for transparency and to promote consistency, at least within common industries and technologies.

- Minimizing free-riding may be difficult. Program staff recognize that some free-riding goes on in most programs, but find it very difficult to identify free-riders. This illustrates the importance of designing appropriate baselines for evaluating actions so as to minimize free-riding.

Lessons from Voluntary Programs for Crediting Early Action

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- Minimizing free-riding may be difficult. Program staff recognize that some free-riding goes on in most programs, but find it very difficult to identify free-riders. This illustrates the importance of designing appropriate baselines for evaluating actions so as to minimize free-riding.

Lessons from Voluntary Programs for Crediting Early Action

Existing voluntary programs can provide insights for the design of an early action credit system. An evaluation of emissions reducing actions, their measurement, and their reporting can inform an assessment of the value of past and current voluntary actions. Further, lessons can be drawn from the current voluntary programs to inform the design of a prospective crediting system. This memo outlines some of the key issues on both retrospective and prospective crediting.

Retrospective Crediting

In evaluating voluntary actions under existing programs, it becomes clear that the wide array of programs employ different approaches to measuring emissions reductions because of these programs' different sectoral and technology foci. Some programs estimate emissions reductions based on fuel use, while others estimate emissions based on the waste stream, and others estimate emissions based on technology use. Even within these categories, different methodologies are used to calculate emissions reductions. In some programs, there have been a limited number of on-site audits to assess a facility's emissions reductions. The level of accuracy of the various approaches can vary, with the more analytically rigorous and time-intensive approaches appearing to yield more accurate results.

Some experts familiar with these programs have claimed that the nature of reporting voluntary actions can promote misestimation of emissions reductions in some cases. Firm-level emissions reductions could be overestimated because of free-riding and other factors, and some have suggested adjusting the value of these claimed reductions.[1]

Reasons for Adjusting Estimated Emissions Reductions

- Free Riding. In some cases, a firm would have undertaken an action that results in lower emissions regardless of the existence of the voluntary program simply because the action is economic for the firm. These actions do not result in reductions from what emissions would have been without the voluntary program.

- Duration of Additionality of Action. A firm could adopt a technology in an action that is truly additional, however, given a long lifetime of the technology, there may be some point in time when the technology is no longer more efficient than the industry standard. Thus,

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the emissions reductions from the early action are not the sum over the lifetime of the new technology, but the time the new technology is used when a less-efficient technology would have been used absent the voluntary program.

- Estimation Methodologies. Since estimation methodologies are not uniform across programs, and indeed, not uniform within some programs, the calculation of emissions reductions may be more rigorous for some actions than for others. The lack of rigor in some approaches could result in under- or over-estimation.

Approaches to Adjusting Emissions Reductions

To address the potential misassessment of reductions, some have proposed adjustments to the claimed emissions reductions. Below is a set of possible adjustments that could be undertaken. These should not necessarily be considered completely mutually exclusive. Further, additional analysis may be warranted to fully evaluate which adjustment approach, or combination of adjustment approaches, would be most appropriate in a retrospective credit system.

- Eliminate credit for actions that are not identified as voluntary. Under the 1605(b) reporting system, firms are asked to identify if the action is: 1) a plant closing; 2) response to state or federal regulation; or 3) a voluntary action. Actions falling under the first two categories could then be removed from the pool of actions receiving credits.

- Adjust across the board based on free rider percentage. In estimating aggregate program effects, some programs attempt to deduct energy-efficiency improvements that would have occurred anyway in the industry based on forecast business-as-usual energy use. This approach could be used to adjust all actions by a specific percentage.

- Adjust across the board based on credit pool size. A decision could be made about the size of the credit pool set aside for retrospective credit, and this could then be the basis for adjusting emissions credits.

- Adjust case-by-case by evaluating methodologies. A review of methodologies across and within programs could be used, and in cases where methodologies were found to misestimate emissions reductions, credits could be appropriately adjusted.

- Adjust case-by-case through site audits. In some programs, a subset of participants have been evaluated through extensive site audits. These could serve as the basis for the credits for those with previous audits, and additional audits could be performed on other participants.

Prospective Crediting

The existing voluntary programs also provide some lessons learned for designing a prospective crediting system.

- Data reporting system is important. Some EPA and DOE programs have computer software to assist program participants calculate, track, and report their data. These could serve as useful prototypes by reducing the burden on participants and thereby promote higher participation rates.

- Firms could benefit from guidance for estimation methodologies. Many voluntary programs provide guidance to participants about how they can calculate their emissions reductions. This is important for transparency and to promote consistency, at least within common industries and technologies.

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June 17, 1999

Voluntary Reporting of GHG 1997:

In 1997, the combined or net emissions for the companies in the Voluntary EIA program equaled 410 million metric tons of carbon equivalent, or "23% of all US emissions." In 1998 forty-nine organizations reported estimates of emissions reductions and sixty-five have recorded commitments for future years, mostly by the year 2000 (VRGHG, 1997, p.ix). Since 1994 the number of groups participating in the program has increased by 44%.

VRGHG 1997	**1994**	**1995**	**1996**	**1997**
Reductions from all gases (MmtCe)	19.8 ®	39.5 ®	39.7 ®	42.6
Amount Sequestered (MmtCe)	0.21	0.34 ®	2.4	2.6

® = *Revised. These statistics are taken from the 1997 report.*

Reductions '94-'97 (MmtCe)	142
Net Sequestration '94-'97 (MmtCe)	5.6

Five percent of the US first commitment budget period is **313 MmtCe**. If 1998 reductions are assumed to be 48 MmtCe and one-for-one allocation of credits is used, then reductions through 1998 would use 62% of the five percent cap established for credit for early actions.

1990 as the Baseline Year:

In 1990, the United States emitted approximately 1,346 million metric tons of carbon equivalent. This year serves as the baseline year for the Kyoto Protocol (EGHG in 97). In 1997 the U.S. emissions of carbon have risen to 1,501 MmtCe and according to new reports from the ACEEE, our 1998 emissions were very similar to those produced in '97 (net emissions fell by 0.15% or 2.2 MmtCe in 1998).

Sources:

VRGHG 1997: "Voluntary Reporting of Greenhouse Gases," May 1999, Energy Information Administration; www.eia.doe.gov/oiaf/1605/vr98rpt/front.html.

EGHG in US 1997: "Emissions of Greenhouse Gases in the United States, 1997," Energy Information Administration, October, 1998.

S.547: Early Action Credit
NRDC Concerns with the Bill
April 29, 1999

1. **Determination of Baselines for Awarding Credit.** Baselines set at "business-as-usual" (BAU) levels or static historic levels will award too many credits out of a future emissions budget. A declining baseline is needed to avoid credits for actions that are already included in BAU forecasts (e.g., increased reliance on natural gas for electric generation).

2. **Accounting for Emissions Reductions and Increases from Changes in Output.** A baseline set in terms of total tons of emissions would penalize growing companies and sectors, and reward declining companies for no reason. A performance-based approach (e.g., tons carbon/kWh) can account for underlying changes in output and rewards actual efficiency improvements.

3. **Game-free Accounting and Participation Rules.** The program must require: universal rules for all entities; comprehensive, entity-wide reporting of all sources; participation for the entire duration of the program; and third party verification.

4. **Defer Authority to Award Credit for Past Actions (e.g., 1605b, voluntary programs).** Reporting under the 1605b program and other voluntary programs was not designed to support the awarding of credits, but to maximize participation. Reductions claimed under these programs should be analyzed and evaluated by Congress before any decision is made on appropriate credit policies.

5. **Credit only those Domestic Sinks Projects and International Activities that Increase the US Budget.** Early action credits for sinks projects and activities (of any type) in other countries will make compliance with future international targets more difficult if they do not result in an increase in the US budget. Awarding credit may also prejudge the development of international rules. International activities include USIJI projects, CDM activities, and actions in other Annex I countries.

6. **Limit the Total Number of Early Action Credits.** The early action program is a partial allocation of the US emissions allowance budget. Overly-generous credit awards will foreclose options for allocating allowances in the future. early reservation syst

7. **Nuclear Power.** The environmental community is opposed to providing incentives for new nuclear capacity and the increased use of existing nuclear capacity. Nuclear generation should be excluded from program calculations.

8. **Demand-Side Reductions.** Credits for manufacturers of end-use equipment and entities reducing energy demand must be based on real emission reductions, and avoid double-counting with other program participants.

9. **Program Administration by EPA.** EPA has real-world experience in administering a verifiable emission reduction system under the acid rain program. The program's success depends on careful verification and no other agency has an adequate track record.

need to ae for all years of baseline having early baseline, when can be

5(b) is problem

what % of credits would be allocated long time ... built in? should probably limit

Environmental Defense Fund • Union of Concerned Scientists
Natural Resources Defense Council

To: Dan Delich

Re: Proposed Legislative Language Revisions for S.547

Date: May 20, 1999

You requested at the April 29th meeting with representatives from the environmental community and Congressional staff legislative language that reflected the issues raised by the environmental community on S. 547. We appreciate this opportunity to voice our concerns. As we indicated at the meeting, however, there is not complete consensus within the environmental community on the bill. And of course, the final judgement of the participants will be based on their review of the language in the final bill.

The proposed legislative language revisions provide solutions to most of the concerns discussed at the meeting on the 29th, but again they do not represent a complete consensus position. Moreover, the complex issue of carbon sinks has been addressed in a separate transmittal from some of our organizations.

If you have questions on this language, please feel free to contact any of the participants. We look forward to working with you on these issues.

Sincerely,

Daniel Lashof
Natural Resources Defense Council

Alden Meyer
Union of Concerned Scientists

Steve Cochran
Environmental Defense Fund

Attachments:
1. List of participating organizations
2. Suggested legislative language

List of Participants

Donald Goldberg and Stephen Porter
Center for International Environmental Law

Steve Cochran and Elizabeth Thompson
Environmental Defense Fund

John Stanton
National Environmental Trust

Daniel Lashof and Jeff Fiedler
Natural Resources Defense Council

Karen Hopfl Harris
Physicians for Social Responsiblity

Alden Meyer and Jim Ball
Union of Concerned Scientists

Jennifer Morgan
World Wildlife Fund

Proposed Revisions to the Legislative Language for S.547

These revisions are organized section by section, indicating the subsection to be replaced and presenting the replacement language in quotation marks. In cases where only a minor change is made, the specific revisions are bolded to highlight the difference. In all cases, the rationale for each change is discussed.

Section 2. Purpose.

Replace entire existing language with:

"The purpose of this Act is to encourage voluntary actions to mitigate potential environmental impacts of greenhouse gas emissions by authorizing the **Administrator of the US Environmental Protection Agency** to enter into binding agreements under which entities operating in the United States will receive credit, usable in any future domestic program that requires mitigation of greenhouse gas emissions, for voluntary mitigation actions taken before the end of the credit period."

Rationale: EPA has real-world experience in administering a verifiable emission reduction system under the acid rain program. The program's success depends on careful verification and no other agency has an adequate track record. EPA is also the agency whose mission is most strongly committed to ensuring environmental protection.

Section 3. Definitions.

Replace subsection (3)(A)(ii) with:

"(3)(A) (ii). The end of the **eighth** calendar year that begins after the date of enactment of this Act; or"

Replace subsection (5) with:

"(5) DOMESTIC GREENHOUSE GAS REGULATORY STATUTE- The term 'domestic greenhouse gas regulatory statute' means a Federal statute, enacted after the date of enactment of this Act, that imposes a quantitative limitation **on total** domestic greenhouse gas emissions **with the purpose of ensuring compliance with an applicable international agreement,** or taxes such emissions."

Rationale: The current language might allow early action credits to be used under any legislation that has the effect of lowering greenhouse gas emissions, even if it is for a limited universe of sources, whereas we believe the intent of the bill is clearly to award credits for use only under a comprehensive, mandatory program designed to meet a national cap on all emissions sources. It must be made clear that any entitlement to credit pursuant to this bill could under no circumstances be used for compliance with other environmental programs which may address greenhouse gas emissions on a sector-specific basis.

Section 4. Authority for Early Action Agreements.

Replace existing 4(a)(1) with:

"(a) AUTHORITY-

(1) IN GENERAL- The Administrator of the US Environmental Protection Agency may enter into a legally binding early action agreement with any person under which the United States agrees to provide greenhouse gas reduction credit usable beginning in the compliance period, if the person takes an action described in section 5 that reduces greenhouse gas emissions or sequesters carbon before the end of the credit period."

Delete subsection 4(b). *Rationale*: No longer necessary with revisions to 4(a) above and 4(c) below.

Replace existing 4(c) with:

"**(b)** REGULATIONS- The **Administrator of the US Environmental Protection Agency shall** promulgate such regulations (including guidelines) as are appropriate to carry out this Act."

Rationale: The duty to promulgate regulations should not be discretionary.

Section 5. Entitlement To Greenhouse Gas Reduction Credit For Early Action

Delete 5(b), which awards credit to accepted USIJI projects.

Rationale: USIJI projects should be treated in the same way as all other international projects, i.e., following the requirements of Section 5(a). Specifically, they must increase the US emissions budget under an applicable international agreement in order to gain credit. To do otherwise will prejudge the development of rules in the international arena, and may increase the difficulty of US compliance with international targets by awarding credits for actions that do not contribute to the US budget.

Moreover, we believe that acceptance by the USIJI program would be necessary but in no way sufficient for the award of credit. The USIJI pilot program is designed to test different approaches to joint implementation projects, and both the FCCC rules and the program itself specify that it is not the purpose of the pilot phase to award credits. In any case, acceptance by the USIJI program entails only a review of project proposals, not any monitoring, verification, or analysis of actual project performance.

Renumber remaining subsections accordingly.

Replace the introduction to 5(c)(1) with:

"(b) PROSPECTIVE DOMESTIC ACTIONS-

(1) EMISSION REDUCTIONS- A participant shall receive greenhouse gas reduction credit under an early action agreement if, during the **entire** credit period-"

Rationale: The bill could be interpreted to allow a company to report emissions for only a subset of years for the credit period. For example, a company might enter the program a few years after 1999 and not report emissions for the intervening years. This opens up a potential for gaming to avoid reporting high-emissions years. The suggested changes clarify this point to ensure that emissions must be reported for all years of the credit period, even thought the actual agreement may be entered in to at a date during the credit period.

Section 5(c)(2) currently contains an approach to carbon sinks and reservoirs that raises serious concerns within the environmental community. Potential solutions to these concerns are presented in other submissions.

Delete existing 5(d) and replace with:

"(c) RETROSPECTIVE DOMESTIC ACTIONS-

(1) REPORT TO CONGRESS - The Administrator shall submit to Congress a report analyzing options for crediting domestic actions for the 1991 through 1998 period that are—

(A) reported before January 1, 1999, under section 1605 of the Energy Policy Act of 1992 (42 U.S.C.13385); or

(B) carried out and reported before January 1, 1999, under a Federal agency program to implement the Climate Change Action Plan.

(2) CREDIT - Participants are entitled to receive reduction credits under early action agreements that meet the provisions of sections 6(c)(3) and 6(c)(4)."

Rationale: Reporting under the 1605b program and other voluntary programs was not designed to support the awarding of credits, but to maximize participation. Reductions claimed under these programs should be analyzed and evaluated by Congress before any decision is made on appropriate credit policies. There is no pressing need to resolve crediting issues for these past actions, because they have already occurred. We believe that specifying how to award credit for these activities in the bill would unnecessarily prejudge a complex issue.

The current Section 6(c) language already allows participants to extend their base periods prior to 1999 to cover entity-wide emission reductions that meet the same credibility standards as prospective actions. We believe that this is the only circumstance in which retrospective credits can be awarded – where they clearly meet the same monitoring and verification standards conditions as prospective actions.

Replace Section 5(f) with:[1]

"(c) AWARD OF GREENHOUSE GAS REDUCTION CREDIT-

(1) MAXIMUM NUMBER OF AWARDED CREDITS - The total cumulative credits earned under all early action agreements --

(A) shall not exceed 1,100 million metric tons of carbon dioxide equivalent; and

(B) the portion of the amount in (A) accounted for by carbon reservoirs shall not exceed 275 million metric tons of carbon dioxide equivalent.

(2) PROVISIONAL CREDIT RESERVATION - A participant shall specify in their early action agreement a provisional credit reservation expressed in tons of carbon dioxide equivalent which indicates the maximum final award of credit to the participant for the entire credit period, provided that –

(A) the Administrator finds the provisional credit reservation amount to be reasonably consistent with the early action agreement; and

(B) the provisional credit reservation or portion thereof may not be transferred to another participant.

(3) AWARD OF FINAL CREDIT- Effective at the end of the credit period, a participant shall have a contractual entitlement, to the extent provided in the participant's early action agreement, to receive greenhouse gas reduction credits --

(A) equal to the provisional credit reservation specified in their early action agreement pursuant to section 5(e)(2), if the creditable tons determined by the Administrator under subsections (a) through (d) exceed the provisional credit reservation; or

(B) equal to the creditable tons determined by the Administrator under subsections (a) through (d), less 25 percent of the difference between the creditable tons and the provisional credit reservation, if the creditable tons are less than the provisional credit reservation.

(4) ANNUAL NOTIFICATION OF CUMULATIVE BALANCES- After the end of each calendar year, the **Administrator** shall notify each participant of the cumulative balance (if any) of creditable tons of greenhouse gas reduction credit earned under an early action agreement as of the end of the calendar year."

Rationale: A limit on the total number of credits is important because the early action program is a partial allocation of the US emissions allowance budget. Overly-generous credit awards will foreclose options for allocating allowances in the future, in ways that may make it difficult to enact or implement future legislation.

A limit on total credits introduces the problem of how to allocate this fixed amount among participants. The reservation system in subsections (2) and (3) addresses this. The approach meets many criteria. It resolves the issue of when a claim is established. It provides significant certainty to participating entities, but also places some limited liability on participants for highly

[1] The Environmental Defense Fund does not believe that it is necessary to limit the total number of credits awarded.

inaccurate reservations. In particular, reserving an unrealistically high amount carries a penalty sufficient to deter strategic oversubscription. The rules are clearly stated, and the only uncertainty for participants is in their own projections.

Note that the reservation amount cannot be transferable to other entities as this would reintroduce the incentive for oversubscription.

Section 6(b) currently contains an approach to carbon sinks and reservoirs that raises serious concerns within the environmental community. Potential solutions to these concerns are presented in other submissions.

Replace Section 7(a) with:

"SEC. 7. SOURCES AND CARBON RESERVOIRS COVERED BY EARLY ACTION AGREEMENTS.

(a) SOURCES-

(1) IN GENERAL-

(A) COVERED SOURCES- Except as otherwise provided in this subsection, a participant's early action agreement shall cover all domestic greenhouse gas sources that the participant owns, operates, or controls as of the date on which the early action agreement is entered into.

(B) EXCLUSIONS- The regulations promulgated under section 4(c) (or the terms of an early action agreement) may exclude from coverage under an early action agreement small or diverse sources owned by the participant provided that the aggregate emissions from those sources are not more than one percent of the total emissions of the participant.

(C) JOINT OWNERSHIP - For sources owned by more than one entity or person, a pro rata share shall be included.

(D) NUCLEAR GENERATION - The determination of participant baselines pursuant to section 6(a) and determination of creditable actions pursuant to section 5 shall under no circumstances include nuclear power generation."

Rationale: The existing language excludes "small and diverse sources" which potentially could remove emissions sources which are individually small but that in aggregate are significant. For example, the current language could be argued to exclude vehicle emissions, leaks in the natural gas system, etc.

Excluding jointly owned sources is an unnecessary provision. Participants can and should include their pro rata share of all emissions sources.

The environmental community is opposed to providing incentives for new nuclear capacity and the increased use of existing nuclear capacity. Subsection D excludes nuclear generation from

both baselines and emissions reporting, eliminating the ability of participants to obtain credits for replacing existing or adding new nuclear generation.

Replace Section 7(a)(2) with:

"(2) BASELINE ADJUSTMENT FOR CHANGES IN OUTPUT

(A) IN GENERAL-The regulations promulgated under section 4(c) shall provide for an annual adjustment to a participant's baseline to account for changes in output.

(B) AMOUNT OF ADJUSTMENT FOR INCREASED OUTPUT - In the case that output has increased relative to the base period the participant's baseline may be increased by an amount no greater than the emissions that would result from producing the additional output with the most efficient commercially available technology for producing products of the same type.

(i) In the case of electricity generators, the participant's baseline shall be increased by the increase in the participants net generation relative to the base period (measured in kilowatt-hours) multiplied by the carbon dioxide emissions performance of the most efficient generating unit using fossil fuels in commercial operation in the United States at the time of the calculation of the baseline increase.

(ii) In the case of motor vehicle manufacturers, the participant's baseline shall be increased by the increase in the number of motor vehicles sold by the participant relative to the base period multiplied by the imputed lifetime vehicle emissions of the most efficient gasoline light duty motor vehicle offered for sale in the United States at the time of the calculation of the baseline increase.

(C) AMOUNT OF ADJUSTMENT FOR DECREASED OUTPUT - In the case that output has decreased relative to the base period the participant's baseline shall be reduced by an amount equal to the decrease in output multiplied by the participant's baseline emissions rate (defined as the participant's average emissions rate per unit of output during the base period).

(D) ADJUSTMENT FACTOR FOR ECONOMIC GROWTH - After applying any other baseline adjustments under subsections (B) or (C) above, the baseline for each participant shall be adjusted in the year 2001 and each year thereafter by multiplying the participants baseline for the previous year by a factor of 0.95.

Rationale: The revised language applies the output based approach contained in the original language to all changes in output, not just new sources. This will account for increases in output from existing facilities. Moreover, by adjusting participants' baselines according to output increase and the most efficient technologies available, rather than each participant's baseline emissions performance, it provides an equal incentive and reward for all participants. Existing language could, for the same action, reward higher polluting participants more credit than cleaner participants.

Delete Section 7(b)(1). *Rationale*: Subsection 7(b)(1) is counter to the principle of entity-wide reporting established under the revised subsection 7(a) and must be deleted for internal consistency.

Section 7(b)(2) currently contains an approach to carbon sinks and reservoirs that raises serious concerns within the environmental community. Potential solutions to these concerns are presented in other submissions.

Delete 7(b)(3) - Opt in for Sources and Reservoirs not owned by a participant.

Rationale: This subsection should be deleted because it could allow selective opt-in only of sources reducing their emissions, thereby circumventing the requirement for entity-wide baselines specified in section 7(a). If not deleted, this provision would also allow sources to be transferred among participants in the program. Our interpretation of this provision is that it could undermine the reservation system for implementing the emissions cap, by allowing: (1) an underbidder to accept sources from other participants (because they receive no penalty for these additional emissions), or (2) for overbidders to accept sinks from underbidders.

Replace 7(c)(2):

"(2) DISPLACEMENT OF EMISSIONS- An early action agreement shall contain provisions that ensure that only net emission reductions will be credited under section 5 in circumstances in which emissions are displaced from sources covered by an early action agreement to other sources."

Rationale: This language addresses all activity shifting, not just those outside of early action agreements. This is necessary because activity shifting even among sources covered under early action agreements can result in increased emissions.

Replace 7(c)(3):

"(3) PERIOD OF COVERAGE- Emissions from sources and net carbon sequestration in carbon reservoirs shall be covered by an early action agreement for the entire credit period, except as provided under paragraph (1)."

Rationale: Removes any ambiguity that the program requires participants to be accountable for their cumulative, aggregate emissions over the entire credit period, not just from the date of their early action agreement. Also removes potential for regulations to allow for agreements to alter this requirement.

Replace Section 9 with the following:

"SEC 9. PARTICIPATION BY MANUFACTURERS OF END-USE , CONSUMER AND SIMILAR TECHNOLOGIES.

(a) IN GENERAL - In the case of a participant that manufactures or constructs for sale to end-users equipment or facilities that emit greenhouse gases, the Administrator may enter into an early action agreement.

(b) EMISSIONS BASELINES - For each participant under subsection (a), its emissions baseline shall be established by determining, in aggregate for all product types, the average annual number of units of the same type sold by the participant in the United States during the 1996-1998 baseline period and multiplying that number by the expected useful life of the product and a numerical factor to determine the greenhouse gas emissions resulting from the electricity generated, or fossil fuel consumed in connection, with the operation of the product.

(c) BASELINE ADJUSTMENT FOR CHANGES IN OUTPUT

(1) IN GENERAL-The regulations promulgated under section 4(c) shall provide for an annual adjustment to a participant's baseline to account for changes in output.

(2) AMOUNT OF ADJUSTMENT FOR INCREASED OUTPUT - In the case that output of applicable products has increased relative to the base period the participant's baseline may be increased by an amount no greater than the product of -

(A) the additional products sold;

(B) the expected useful lifetime of the product; and

(C) the annual emissions resulting from operation of the most efficient commercially available technology for products of the same type.

(3) AMOUNT OF ADJUSTMENT FOR DECREASED OUTPUT - In the case that output of applicable products has decreased relative to the base period the participant's baseline shall be reduced by an amount equal to the product of -

(A) the decrease in products sold;

(B) the expected useful lifetime of the product; and

(C) the average annual emissions resulting from operation of the product as determined in subsection (b).

(4) ADJUSTMENT FACTOR FOR ECONOMIC GROWTH - After applying any other baseline adjustments under subsections (B) or (C) above, the baseline for each participant shall be adjusted in the year 2001 and each year thereafter by multiplying the participants baseline for the previous year by a factor of 0.95.

(d) CALCULATION OF CREDITS - Each participant shall be entitled to receive greenhouse gas emissions reduction credits in an amount equal to the difference between -

(1) the sum of its annual baselines for the entire credit period, as calculated pursuant to subsections (b) and (c); and

(2) the aggregate estimated lifetime greenhouse gas emissions from products covered by the early action agreement sold by the participant during the credit period, where emissions for each product are calculated as the product of -

(A) expected life of the product; and

(B) annual emissions resulting from operation of the product.

(e) PREVENTION OF DOUBLE COUNTING -

(1) IN GENERAL - In the event the Administrator determines that the adjustments to participants baselines made pursuant to section 7(a)(2) are not adequate to effect the purposes of this subsection, the regulations promulgated under section 4(c) shall include provisions to ensure that, notwithstanding any other provision of this Act, no more than one credit shall be awarded for each ton of emissions of greenhouse gas emissions reduced pursuant to agreements entered into pursuant to this Act.

(2) CERTAIN DEDUCTIONS - Notwithstanding any other provision of this Act, the regulations promulgated pursuant to section 4(c) and this subsection may provide for the deduction, on a pro rata basis to each participant, from the number of credits awarded to electricity generators pursuant to section 7 of the number of credits awarded under early action agreements entered into under this section."

Rationale: This section provides an incentive for manufacturers to be develop and market more efficient products by receiving credits for the associated energy reductions. At the same time, the double counting provisions are essential to ensure that other upstream participants are not also rewarded for the same actions.

Dear Joe:

Thank you for giving us an opportunity to review your draft memo that examines lessons from voluntary programs for crediting early action. Overall, the memo's substance appears sound. However, the language could benefit from refinements in several places.

Page 1, first paragraph: "if a retrospective crediting system is desirable."

Consider rephrasing: Our understanding is that omitting retrospective programs at this juncture is no longer an option.

Page 1, second paragraph: "nature of reporting voluntary actions..."

Consider refining: The sentence is inconsistent with the tone of the analysis that follows. The sentence appears to suggest that all voluntary programs are inherently flawed, when your analysis suggests that results are uneven.

Page 1, credit value adjustment subsection:

Ideally, a next iteration would provide short examples of how one would adjust the value of credits and compare the relative strengths and weaknesses of each option (e.g., free rider percentage adjustment appears less straightforward than adjustment based on credit pool size).

Page 1, subheading (e.g., reasons for adjusting value of credits) is imprecise.

The memo's first subheading appears out-of-context. Introduction lacks discussion of "credit value." Either introduce the concept or refine the subhead.

Comments on 6/9/99 Draft "Lessons from Voluntary Programs for Early Crediting Action"

Most, if not all, of the major issues are covered at least indirectly in the short paper. However, there are important nuances in the attributes of these programs that are not apparent from the the text.

While it may just be the unfortunate consequence of condensing into a short two pages text on a wide variety of voluntary programs with some thoughts on evaluative criteria for both retrospective and prospective early action credit programs, the overall impression provided of these programs is overwhelmingly, and unnecessarily, negative. As these programs were either developed or enhanced under this Administration, and form the basis of the Administration's CCAP and current treaty obligations (USG National Action Plan to the Framework Convention), a more objective discussion in "Lessons" from these programs would be appropriate. We would be pleased to work with you in drafting substitute text.

The text begins with a conclusion which is premature – without further study – of the need to adjust the value of credits in any retrospective crediting program. This oversimplifies complex issues, and does not identify distinctions among programs that may warrant differing treatment should adjustment be appropriate. A more in-depth examination of specific methodologies used for estimation, reporting and/or verification is necessary before any conclusions on "adjustments" can be drawn. This in-depth examination would also provide needed information for the design of any prospective crediting system

This examination could focus in detail on the alternative approaches/methodologies used for validation, and their pros and cons. Experience under 1605(b) reporting deserves much more attention in the text, with its insights on reporting. In addition, for activity by firms in some industries, notably regulated utilities and Clean Air Act major sources, the availability of independent, historical corroborating data (PUC and State/Federal air quality operating permits) might address some issues in verification.

Specific Comments Absent A Rewrite

page 1, para 2. Delete 2nd and 3rd sentences and footnote. This will help address the presumption that issues in retrospective crediting can be addressed – without further study – merely by "adjusting the value of claimed reductions," without noting alternatives. Possible replacement text would read, *"Examples, of the different approaches programs use to measure (validate) emissions reductions that could be applicable to retrospective crediting are -- estimation methods, on-site auditing, direct measurement: ..."* And then elaborate on these:

- estimation methods -- elaborate for Energy Star and Green Lights which are firm- or site-level, and Motor Challenge at the program level combined with an external peer review process that often results in an adjustment to the estimated energy savings values
- on-site auditing -- For Motor Challenge Showcase Demonstrations, 20 companies out of 2000+ partner companies, exhaustive performance evaluations (motors

systems inventories and load measurements) were undertaken to validate energy

- direct measurement -- E.g., relevant EPA validation examples might include CEM or other fuel/flow measurement

The discussion on free-riding is puzzling. As the text states, entity-level, not program-level, reductions are the focus and with no presumption on the method for baseline determinations (e.g., project-based vs. benchmark vs. ...), then free-riding is not relevant.

Delete the sections "reasons for adjusting the value if credits" and "approaches to adjusting the value of credits" based on its prematurity. This could be replaced with a more detailed discussion of experiences, and what they tell us about possible alternatives approaches/methodologies used for estimation/measurement/validation, and their pros and cons.

Page 2, section on "Prospective Crediting," 1st sentence. Change "guidance" to "lessons learned". The same more thorough evaluation of existing programs necessary for decisions in designing any retrospective program is necessary for developing guidance for prospective crediting.

"Dowd, Jeff" <Jeff.Dowd @ hq.doe.gov>
06/15/99 06:51:39 PM

Record Type: Record

To: Joseph E. Aldy/CEA/EOP, Joseph E. Aldy/CEA/EOP

cc: "Vernet, Jean" <Jean.Vernet @ hq.doe.gov>
Subject: RE: follow-up on today's telephone conversation

Joe,

Before leaving for home, I wanted to share some thoughts on how I believe the story needs to be told at this stage of the assessment effort. In addition to addressing the negative tone in the paper, please consider the following suggestions as constructive input.

I think we agree on the notion of estimation requiring adjustment, but we differ on the question of emphasis. I think a major omission from your paper is "Context." The 1st eight bullets below would help set a proper context for a discussion of the estimation with adjustment concept. The last 2 bullets offer additional observations that I believe the AS/DAS folks deserve to know.

1) Start by acknowledging that there are various methods that can be used to measure/validate savings, such as direct measurement, on-site auditing, etc WHICH CAN YIELD HIGH RELATIVE LEVELS OF ACCURACY THAT "REAL" REDUCTIONS HAVE BEEN ACHIEVED
2) "estimation" is but one alternative method, widely used in our existing voluntary programs
3) for these the three methods noted above, discuss the relevant experience with EPA & DOE voluntary programs
4) one can then note the limited application of direct measurement and on-site approaches (ARE APPLIED ONLY IN SPECIAL CASES ; HAVE HIGH TRANSACTION COSTS, ETC.)
5) this leaves the estimation approach, but that approach also has inherit weaknesses, such as being subject to "gaming"
6) since the estimation method is most widely used in our existing programs, it makes since to focus on it to see what can be done (WITHIN REASON)
7) possibly, what could be done is to make adjustments to account for non-additionality and gaming that is a great weakness of this approach; however, the adjustment approach is itself somewhat subjective and subject to gaming
8) the adjustment approach is an alternative to consider ONLY IF IT CAN BE DONE IN A CREDIABLE WAY
9) [ONLY AFTER THE CONTEXT IS DEVELOPED FROM THE ABOVE 8 BULLETS SHOULD one elaborate on the adjustment factors and issues
10) even if the adjustment approach is applied, it might not be wise to apply it across the board, because firms that are able to demonstrate "real" reductions at a high level of accuracy (e.g., via direct or on-site measurement), should not be placed at a disadvantage; This suggests that perhaps a tiered-system of reporting/validation -- that recognizes differing degrees of accuracy in verification of "real" - would be necessary
11) finally, please note that further careful assessment of the estimation adjustment approach to retroactive crediting is necessary before one can reach a conclusion about its feasibility.

[A personal note: Joe, I am only concerned about the Administration repeating the limited success CCAP 2000 experience of many (not all) of our Federal voluntary programs, by side-stepping the

accountable issues. We must minimize gaming (wherever it occurs, either at the program or the firm level) if we truly want the retrospective crediting to produce a meaningful outcome. Although I agree with you and others that the estimation approach with adjustment is a logical path to explore, the evidence is not yet out there to prove that the estimation approach with adjustment is feasible; we simply don't know enough yet; further assessment is necessary]

Jeff

EPA 5/28

Energy Star Bldgs
- whole bldg upgrades only now (green lights are only current participants no new ones)
- energy efficiency barriers - MOU designed to ensure commitment
- once in MOU - provide tech support for upgrades
  - CFOs don't traditionally see profit in bldg investments
- Energy Star Bldg plaque - top 25% get plaque
  - Statement of Energy Performance - provided to EPA, confirmed by PE, submit years worth of energy bills - info can provide benchmark for eval. upgrades
- use EIA CBECS data for evaluating energy use by bldg type
  - > 8 bldg types
- size of bldgs - originally targeted to lg companies
  - mkt various types
  - small business focus
- don't ask @ other val progs, just ask e reductions/state grants within division, keep track of firms participation in programs
- Cents - what is on margin in region
- energy/cents est. annually - w/ firm, no forecast is made
- no audits, but conduct data quality checks

EPA 5/28

Aluminum

11 of 12

modify process - PFC generated when smelting AL in "electric bath" - modify electricity usage in bath

- invest in automated systems

(MIT-Plain - AL cost curves)

don't track expenses

program goal: 40% red (@ 2mmTCE)

AL firm provides anode effects data to EPA, EPA calculates PFC emis (some already collected data)

did joint R+D on anode effects + PFCs

anode effect data not confidential

Semiconductors + PFCs

HFC program - HCFC-23

- thru trade assn + 3rd party verification

Jean 564-9135

Voluntary Programs 5/18

confidentiality
- run thru trade association

linkages b+ existing programs + early action credit
- see DOE (Dan L)

Reid Harvey
- non-CO_2 (very little on N_2O)
- have tracking programs independent of 1605b
- what is baseline for calculating Δ stocks

Krishna
- climate wise
- emissions reduced energy use based on 1990 baseline

Jeff
- Industrial Assessment Center - audit program since 1976
  actual/estimated cost-savings ≈ 1:0 - engineering approach on-target
- motor challenge - mkt transformation program w/o much verification
  - focus on systems
  - encouraged to report thru 1605, but few do
  - savings aren't verified except for those in showcase demonstrations (3rd party verification) (2S/2000)

Jean
- Climate Challenge - all thru 1605
- no verification, no audits

Voluntary programs 5/18

- 171 1605b reports this year
- check for internal consistency + comparability by EIA

Samples across gases, sources
- non-CO_2 - Reid
- 1605b
- Climate wise
- climate challenge
- energy star
- green lights
- mkt transformation
  - also see community-based - Clean Cities

focus on special situations for retrospective assessment
- these may be more suitable for verification
- available data records
  small # participants, utilities, multi-tiered participation (where highest has highest std of verification)

Do paper outlining info we need
Call mtg participants today or tomorrow