

10. Voluntary Programs

An important new trend in environmental management is the use of voluntary programs to accomplish the goals of environmental protection. This trend involves implementing methods to cut waste, conserve materials, and improve efficiency—outcomes that increase the value added by business, improve competitiveness, and reduce pollution. Voluntary programs are an important addition to the more market-based incentive measures discussed elsewhere in this report. While the market-based programs offer financial and other closely related incentives to encourage firms and individuals to reduce pollution, voluntary programs offer less tangible rewards such as public recognition and access to information on ways to reduce pollution at low or no cost. Governments promote voluntary initiatives for a variety of reasons, including the pilot testing of new approaches and the absence of legislative authority to establish mandatory programs. As such, many voluntary programs offer unique approaches to environmental management.

Two major federal initiatives are responsible for many of the federal voluntary programs. One is pollution prevention, particularly as articulated in the Pollution Prevention Act of 1990.²⁵⁸ The second is the reduction of greenhouse gas emissions called for in the Clinton administration’s 1993 Climate Change Action Plan (CCAP).²⁵⁹ A variety of private-sector and state-led initiatives also are noteworthy.

Without other legislative authorities, the objectives of pollution prevention in the United States are pursued largely through voluntary actions by firms or agreements negotiated between government agencies and individual firms. The objective of pollution prevention is to reduce the pollution intensity of production through changes in input use, technologies, processes, management, and other parameters. Because the full range and effectiveness of these parameters cannot be well-known to regulatory agencies, governments pursue the goals of pollution prevention by providing information to firms and encouraging the firms to use production methods that are less pollution-intensive. Similarly, the Climate Change Action Plan relies on a series of voluntary initiatives that are supplemented by modest subsidy programs to induce meaningful reductions in greenhouse gas emissions.

10.1 Background

Because voluntary programs are relatively new and involve intangibles that are difficult to quantify (e.g., what would have been done anyway without the program), they are difficult to evaluate quantitatively. However, the Oak Ridge National Laboratory recently completed an initial assessment of about a dozen energy-related programs for EPA’s Office of Atmospheric Programs (OAP). This assessment was conducted to support a forthcoming DOE study entitled *Scenarios for a Clean Energy Future*.²⁶⁰ In addition, the proceedings from the American Council for an Energy Efficient Economy (ACEEE) have a number of peer-reviewed papers that review and evaluate a wide variety of voluntary energy conservation programs. These papers can be found in ACEEE’s *Energy Efficiency Summer Studies* (1994, 1996, 1998, 2000).



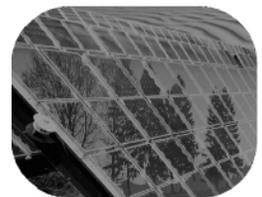
Pollution Charges, Fees, Taxes



Deposit-Refund Systems



Trading Programs



Subsidies for Pollution Control



Liability Approaches



Information Disclosure



Voluntary Programs

One incentive for businesses to take part in these voluntary programs appears to be favorable public relations (PR). Favorable PR could result in less public pressure to regulate participants, better relations with employees and the community, and increased market share at the expense of competitors perceived to be less environmentally friendly. For example, polls have shown that consumers are willing to pay a premium for products that have environmental advantages.²⁶¹ Henriques and Sadorsky (1996) found that pressure from shareholders and customers significantly influenced Canadian firms' decisions to formulate environmental plans. In this respect, voluntary programs could have effects similar to the information approaches discussed in Chapter 9.

Another reason for corporate participation in voluntary programs is that the sponsoring regulatory authority may provide technical assistance to participants. Such assistance could be regarded as a subsidy, as discussed in Chapter 8. As noted in subsequent paragraphs, several companies have saved money by implementing the activities associated with voluntary programs such as Green Lights and WasteWise.

Moreover, voluntary programs sometimes are structured to limit potentially high litigation, monitoring, and enforcement costs that otherwise could be incurred by regulators and businesses. Some voluntary programs offer participating companies the opportunity to identify and address environmental problems in the present, problems that could subject them to regulatory sanctions in the near future. On occasion, these programs also give companies the flexibility to improve their environmental performance at less cost.

A Resources for the Future (RFF) study of EPA's 33/50 program cited several reasons other than publicity benefits and added flexibility to explain why firms might voluntarily exceed the standards set in environmental regulations. (The 33/50 program is discussed in 10.3.1, 33/50 Program.) In some industries, firms might improve their performance in the hope of leading the government to make such performance mandatory, thereby creating barriers to the entry of potential competitors. It has also been suggested that firms over-comply to forestall additional mandatory regulation. Another possibility is that the "lumpiness" of pollution abatement investments means that large investments offer significantly more abatement per dollar than a series of small investments made to comply with progressively tighter restrictions.²⁶²

Most voluntary environmental programs in the United States have been designed and implemented by the U.S. EPA. Industry also is involved in the oversight of a number of voluntary programs. The programs that have been created and managed solely by the federal government are classified as "public voluntary" programs. Acting independently or with other federal agencies, EPA oversees programs directed at climate change and pollution prevention. Programs developed by industry trade organizations for their member companies are termed "unilateral" programs in this report. Finally, there are voluntary programs that involve significant negotiation between government regulators and participants. These programs are called "negotiated agreements." The following sections review many of these programs.

10.2 Federal Initiatives: Climate Change

The great majority of voluntary programs are concerned with reducing the emissions of greenhouse gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFC), hydrofluorocarbons (HFC), and sulfur hexafluoride (SF₆). The 1993 Climate Change Action Plan responded to the 1992 Earth Summit's call for reducing greenhouse gas emissions

by developing innovative public- and private-sector voluntary initiatives. Partnerships between the Environmental Protection Agency (EPA); the Departments of Energy (DOE), Agriculture (USDA), and Transportation (DOT); state and local governments; industry; farmers; nonprofit organizations; trade associations; and professional societies have focused on the low-cost and profitable opportunities for reducing greenhouse emissions. This collaboration has resulted in the development of more than 40 programs. The principal climate change programs are summarized in Table 10-1 and described in more detail in the following sections.

Table 10-1. Federal Voluntary Programs for Greenhouse Gases

PARTNERSHIP PROGRAMS (year program launched)	ENVIRONMENTAL GOAL
Green Lights (1991) www.epa.gov/energystar	Reduce energy consumption of lighting through cost-effective, energy-efficient lighting technologies.
WasteWise (1992) www.epa.gov/wastewise	Reduce municipal solid waste through waste prevention and the purchase/manufacture of products with recycled content. at business, government, and institutional partners
AgStar (1993) www.epa.gov/agstar	Promote cost-effective methods for reducing methane emissions at dairy and swine operations through improved manure management.
Climate Wise (1993) www.epa.gov/climatewise	Reduce industrial greenhouse gas emissions and energy costs through comprehensive pollution prevention and energy efficiency programs.
Commuter Choice (1993) www.epa.gov/ooaujeag/livability/com_choi.htm	Promote employer-provided commuting options designed to reduce traffic congestion, improve air quality, and allow employers to tailor transportation benefits to the needs of individual employees.
Natural Gas Star (1993) www.epa.gov/gasstar	Encourage natural gas industries to reduce methane emissions through cost-effective technologies and best management practices.
Ruminant Livestock Efficiency (1993) www.epa.gov/rlep	Reduce methane emissions from ruminant livestock operations.
Seasonal Gas Use to Control NO _x (1993)	Promote seasonal switching toward the use of low-carbon natural gas, particularly in the summer, in utility coal and oil plants and in industrial facilities.
State and Local Outreach (1993) www.epa.gov/globalwarming	Reduce greenhouse gas emissions from states and local communities by empowering officials with information and technical assistance.
The U.S. Initiative/Joint Implementation (1993) www.ij.org	Encourage private-sector investment and innovation in developing and disseminating technologies to reduce greenhouse gas emissions.
Environmental Leadership (1994) es.epa.gov/elp	Recognize and provide incentives to facilities that are willing to develop and demonstrate accountability for compliance with existing laws.
Energy Star (1994) www.epa.gov/energystar	Maximize energy efficiency in commercial, industrial, and residential settings by promoting new building and product design and practices.
Environmental Stewardship (1994)	Limit emissions of perfluorocarbons and hydrofluorocarbons in three industrial applications: electrical transmission and distribution systems, magnesium casting, and semiconductor production.
Coalbed Methane Outreach Program (1994) yosemite.epa.gov/methane/cmophome.nsf	Identify and remove obstacles to investment in coalbed methane recovery projects, which increases awareness of investment opportunities.
Landfill Methane Outreach Program (1994) www.epa.gov/lmop	Encourage profitable recovery of methane released from landfills by identifying viable technologies, markets, and financing sources.
Transportation Partners (1995) www.epa.gov/tp	Reduce the growth in vehicular travel through the voluntary adoption of local and regional transportation strategies that provide better, cheaper, transportation choices for citizens. Program was discontinued due to funding reductions at the U.S. DOT.
Voluntary Aluminum Industrial Partnership (1995) www.epa.gov/vaip	Reduce perfluorocarbon gas emissions from aluminum smelting.

10.2.1 Green Lights

One of the early voluntary partnerships between EPA and industry was the Green Lights Program. The primary purpose of the program was to encourage the use of energy-efficient lighting to prevent air emissions (CO₂, SO₂, and NO_x) and other emissions from the generation of electricity. By December 1994, Green Lights investments in energy-efficient lighting had resulted in annual energy savings of 1 billion kWh, translating into annual energy cost savings of about \$92 million. By May 1996, the program had 1,316 Partners (corporations, industry groups, nonprofit organizations, hospitals, governments, and universities); 585 Allies (electric utilities, lighting manufacturers and distributors, and lighting management companies); and 286 Endorsers (professional and trade associations). In 1997, EPA consolidated Green Lights activities within the Energy Star Buildings program to encourage a more comprehensive approach to energy-efficiency investments.

Table 10-2 illustrates the energy savings achieved by three companies—Staples, the Atlanta Journal-Constitution (Cox Newspapers), and Mobil Corp—as a result of their participation in the Green Lights Program. More information on these and other success stories is available at the EPA Energy Star web site.²⁶³

Table 10-2. Energy Savings from Green Lights/Energy Star Program

PROJECT INFORMATION	STAPLES	ATLANTA JOURNAL-CONSTITUTION	MOBIL
Project costs (\$)			
• Total expenditures	\$3.1 million	\$1.007 million	\$1.182 million
• Costs per sq. ft.	\$0.91	\$0.53	\$3.95
Cost savings (\$)			
• Annual savings	\$985,425	\$447,564	\$224,500
• \$ saved/sq. ft.	\$0.29	\$0.53	\$0.75
Internal rate of return	29.3%	51%	19%
kWh savings	6.3 million	6.8 million	7.2 million
CO ₂ savings (lbs.)	6.37 million	11.9 million	103 million

Source: <http://www.epa.gov/buildings/esbhome>

10.2.2 Energy Star Partnership Program

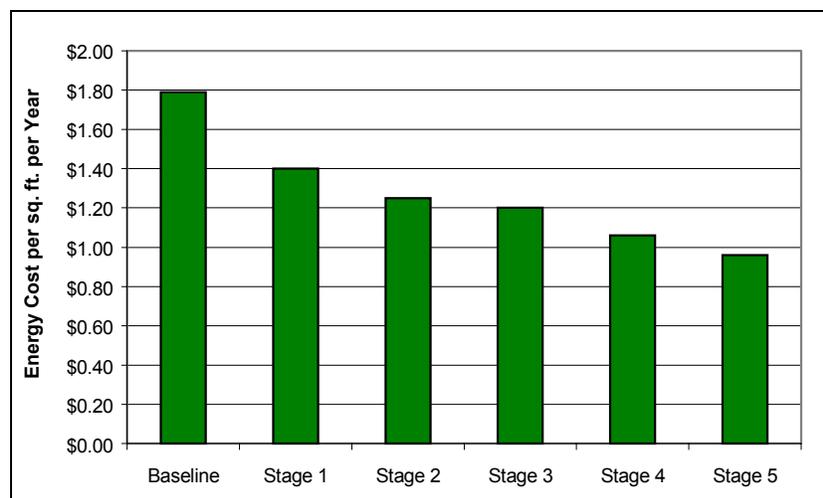
The Energy Star Partnership Program is designed to raise the level of public consciousness and action regarding energy conservation. Programs focus on fostering energy efficiency and reducing transaction costs for consumers and businesses. Three Energy Star programs discussed in this subsection have been especially successful in reducing annual carbon-equivalent pollution while maximizing energy cost savings.²⁶⁴

10.2.2.1 Energy Star Buildings

EPA asks participants in the Energy Star Buildings program to perform energy-efficiency upgrades in buildings where profitable. After installing energy-efficient lighting, participants tune up building systems, invest in upgrades to reduce heating and cooling loads, improve fans and air handling systems, and improve the heating and cooling plant. This five-stage upgrade process is part of an integrated approach to whole-building energy efficiency. Participants that follow this approach are often able to reduce their energy use by 30% while achieving an internal

rate of return (IRR) of 20% or greater on their investment. As shown in Figure 10-1, EPA predicted that energy costs at Energy Star Showcase Buildings could fall by nearly 50%.²⁶⁵

Figure 10-1. Energy Savings in Showcase Buildings



Source: EPA. 1994h.

and money and prevent pollution. It provides valuable input into business transactions involving the buying, selling, appraising, leasing, and insuring of the building as well as the contracting for energy, operations, and maintenance services.

Energy Star Buildings and Green Lights have over 5,500 participants. Partners have cumulatively invested more than \$3.6 billion on energy-efficiency improvements. From 1995 to 1999, these upgrades have resulted in an estimated reduction in energy use of more than 108 billion kilowatt hours (kWh), with a corresponding reduction of over 23 million metric tons of carbon-equivalent (MMTCE). (See Table 10-2.)

10.2.2.2 Energy Star Products

Working with equipment manufacturers, the U.S. Department of Energy (DOE) and EPA are using Energy Star labels to promote highly energy-efficient products. Collaborations formed with DOE are also facilitating the development of initial markets for advanced technologies, for example, by encouraging large-volume purchases. These purchases help reduce manufacturing costs through economies of scale in initial production. More than 1,200 manufacturers now offer Energy Star products in over 30 commercial and residential product categories such as air conditioners, heating systems, and exit lights. These products are featured in over 4,000 retail stores. In 1999 alone, consumers purchased more than 100 million EPA-labeled Energy Star products, saving over 25 billion kWh of energy.²⁶⁶

10.2.2.3 Energy Star Homes

Jointly sponsored by DOE and EPA, Energy Star Homes promotes voluntary partnerships with homebuilders to construct homes that are 30% more energy-efficient than the guidelines of the Model Energy Code. (The Model Energy Code is a model national standard for residential construction.) The program also encourages lenders to provide Energy-Efficient Mortgages, which offer lower interest rates than conventional home loans, lower closing costs, up to a 4% extension of the maximum debt-to-income ratio, and a free home energy rating. (For more

information on Energy-Efficient Mortgages, see Chapter 7, Section 7.8) Fannie Mae and Freddie Mac encourage lenders to offer energy-efficient mortgages by providing incentives and specific criteria for the purchase of such mortgages.

10.2.3 Climate Wise

Climate Wise is helping companies realize environmental and economic benefits through cost-effective industrial energy-efficiency and pollution-prevention actions. Designed to reduce greenhouse gas emissions across all sectors, Climate Wise challenges participants to devise and implement innovative ways of limiting, reducing, or mitigating greenhouse gases. Methods include process modifications, use of alternative raw materials, carbon sequestration, and other measures that abate emissions.

The program is a partnership between EPA and the DOE. Collaborative initiatives with industry include AT&T, British Petroleum, DuPont, General Motors, and Weyerhaeuser, as well as 30 states and local governments. Partnerships number more than 550 and represent more than 13% of U.S. industrial energy use.

Most recently, EPA has partnered with the United States Agency for International Development (USAID). This partnership will now extend technical assistance to local municipalities and companies who seek energy savings and emission reductions in Brazil, Central America, India, Mexico, and the Philippines.

10.2.4 WasteWise

Created in 1994, WasteWise is a voluntary program intended to reduce the solid waste generated by businesses. The program's source-reduction and recycling efforts are intended to reduce greenhouse gas emissions by (1) reducing methane emissions from the decay of waste in landfills, (2) increasing carbon sequestered by forests, and (3) reducing emissions resulting from extracting and processing virgin materials and manufacturing products. There are many additional benefits of WasteWise, including the following: reduced extraction and processing of virgin materials; reduced waste disposal; reduction in air, water, noise, and other pollution associated with waste disposal and manufacturing; reduced costs of managing municipal solid waste; and new jobs and income created by new recycling enterprises.

To participate, partners are required to implement three significant waste prevention activities, improve collection programs for recyclables on company premises, and increase either their purchases of recycled products or the recycled content of the products they manufacture. In the first year of the program alone, participating companies conserved over 240,000 tons of solid waste, mostly transportation packaging. They also recycled about 1 million tons of waste and purchased 20 different kinds of recycled-content products.

With more than 1,000 participating companies, members have saved a significant amount of money through the program. WasteWise partners reduced a total of 7.8 millions tons of solid waste in 1998. The cost savings they achieved by not having to dispose of these wastes increased from \$38 million in 1994 to \$280 million in 1998.²⁶⁷

10.2.5 Methane Reduction Programs

Methane, a potent greenhouse gas, can be recovered for energy use. To promote methane recovery, EPA has launched at least three voluntary programs: the Coalbed Methane Outreach

Program, the Landfill Methane Outreach Program, and Natural Gas Star. In addition, joint efforts of EPA and the U.S. Department of Agriculture (USDA) have encouraged the profitable collection and reuse of methane in two agriculture-based programs. These programs are the AgStar Program and the Ruminant Livestock Efficiency Program.

10.2.6 Coalbed Methane Outreach Program

In 1990, methane emissions associated with coal mining operations accounted for approximately 18% of human-related U.S. methane emissions. Launched in spring 1994, the Coalbed Methane Outreach Program disseminates information that addresses a number of obstacles to mine methane recovery and development, including the lack of information on recovery technology, difficulties in obtaining financing for recovery investments, the lack of markets for recovered methane, and the uncertainty concerning ownership of mine methane. EPA has also developed guides for state, local, and federal assistance programs that pinpoint sources of loans, grants, and technical assistance for profitable coal mine methane projects as well as a comprehensive guide for private-sector financing of coal mine methane projects.

Under this program and as a result of the Energy Policy Act of 1992, methane recovery by the coal industry has more than doubled since 1993. Partners increased the quantity of methane recovered to nearly 2.0 million tons of carbon equivalent (MMCTE), which is equivalent to eliminating the emissions from about 1.5 million cars per year.²⁶⁸

10.2.7 Natural Gas Star Program

Initiated in March 1993, the Natural Gas Star Program encourages natural gas companies to adopt cost-effective technologies and practices that reduce emissions of methane from natural gas transmission and distribution systems. Methane emissions can be decreased by up to one-third by improving inspection and maintenance practices to reduce fugitive emissions, replacing equipment that normally vents gas with low-emission technologies, and repairing or replacing leaking service lines.

More than 70 natural gas transmission and distribution companies have joined the program since it was expanded in the summer of 1995 to include gas producers. By working with the natural gas industry, the program has identified more than 50 cost-effective best management practices for methane-reduction.

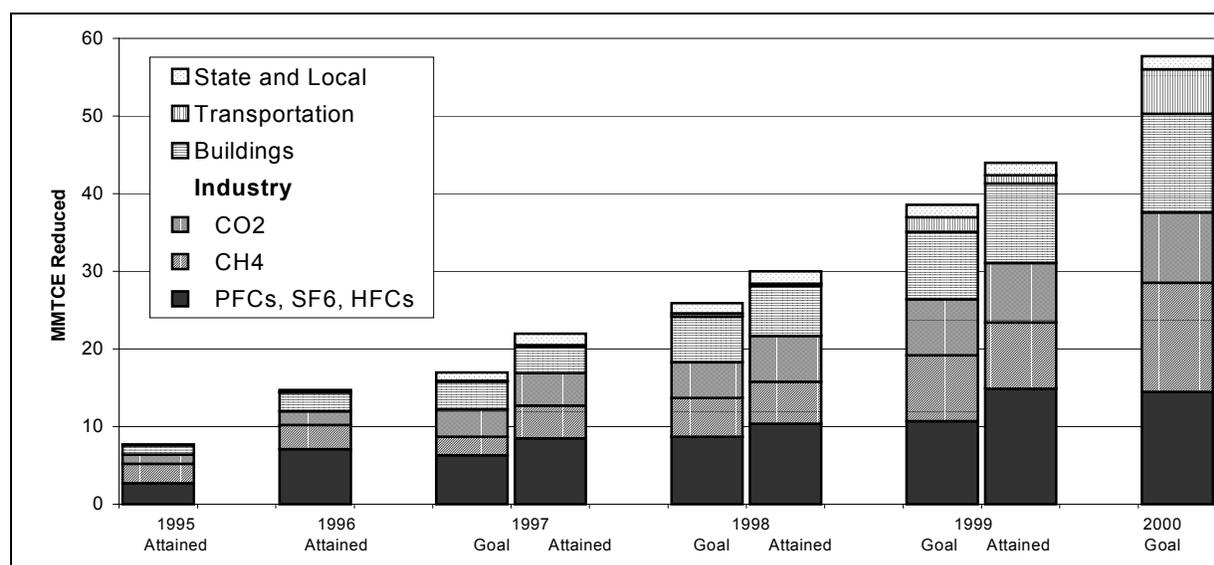
10.2.8 Agstar Program

The AgStar Program was launched in the summer of 1993. Under the program, EPA works with the Departments of Energy and Agriculture to encourage swine and dairy producers to recover methane from their animal waste management systems. Participants commit themselves to conducting three activities: (1) surveying their facilities, (2) installing AgStar-selected technology wherever profitable, and (3) appointing managers to oversee their participation in the program. EPA helps partners optimize systems and recoup some of their investments through energy recovery. More than 500 farms are currently AgStar Partners. The program also has 50 Allies, which represent system and equipment manufacturers, educational institutions, and state and local governments.

10.2.9 Assessment of Climate Change Programs

EPA reported to the U.S. Senate Appropriations Committee in February 2000 that the Agency's climate change programs have continued to meet their greenhouse gas reduction goal since 1995, as shown in Figure 10-2. Cumulatively, greenhouse gas emissions have been reduced by 118.2 MMTCE from 1995 to 1999, with 88.1 MMTCE of the reductions coming from the industrial sector. Within the industrial sector, carbon dioxide (CO₂) emissions have been reduced by 20.8 MMTCE; methane (CH₄) by 23.7 MMTCE; and perfluorocarbon (PFC), hydrofluorocarbon (HFC), and sulfur hexafluoride (SF₆) by 43.6 MMTCE. The baseline for evaluating program performance through 1999 has been a forecast of U.S. greenhouse gas emissions in the absence of the Climate Change Action Plan programs. This baseline was developed and updated as part of an interagency evaluation of the Climate Change Action Plan in 1997, which built on a similar baseline forecast that was developed in 1993 for the Climate Change Action Plan.

Figure 10-2. Goals and Accomplishments of EPA's Climate Change Programs: 1995-2000



Source: EPA. 2000c

Note: 1999 attained values are estimated.

EPA's own evaluation of climate change activities recognizes the difficulties of measuring effectiveness.

Prior studies have focused on estimating the localized energy savings that could be attributed to products and services that were purchased by eligible utility customers, with the incentives of rebates and subsidies. Participant micro data specifically, customer billing data and customer measure installation data, were used to estimate changes in customer energy consumption due to participation in the program.

Recently, the market transformation programs operated by the federal government have shifted program emphasis away from energy savings and towards promoting market growth for energy-efficient products and services. This shift in program paradigms requires a parallel shift in program evaluation designs. Energy-efficiency program evaluation concepts such as free riders and

free drivers have only indirect use for evaluating whether, and to which degree, a program has quickened the overall pace of market movement. For these reasons, the paradigm for evaluating market transformation programs cannot center on estimating changes in participant energy use and inferring participant intentions. Rather, it must focus on the dynamics and the determinants of market outcomes.

EPA is now moving to new methods of program evaluation that are more appropriate for the types of programs that EPA operates. These evaluations will assess the market transformation impacts success in promoting market growth for energy-efficient products and services, as well as the reductions in greenhouse gas emissions and energy consumption. With the programs now producing sizable results in the market place, EPA can use market-based assessments to evaluate its programs, as opposed to requiring an analysis of program participant micro data as a means of inferring market impact.²⁶⁹

10.3 Public Voluntary Initiatives: Pollution Prevention

EPA's first major voluntary program, 33/50, was designed to promote pollution prevention. Most prevention programs seek to reduce a subset of toxic chemicals released and transferred by manufacturers. Before the 33/50 Program ended in 1995, it encouraged manufacturers to voluntarily reduce emissions of 17 target chemicals by 50%. Other prevention programs, such as Design for the Environment and Green Chemistry, are designed to promote the development of cleaner products and industrial processes. This section reviews several of the public voluntary programs for pollution prevention identified in Table 10-3. Information on other programs not discussed here can be found on the web site of EPA's Office of Policy, Economy and Innovation and in various EPA publications.²⁷⁰

10.3.1 33/50 Program

The 33/50 Program, introduced by EPA Administrator Riley in 1991, encouraged industry participation through a challenge to the more than 16,000 facilities releasing any of 17 priority toxic chemicals. The challenge: Reduce your emissions (reported as TRI releases and transfers) by 33% by 1992 and by 50% by 1995, relative to a 1988 baseline for the facility.

EPA first issued invitations to take part in the 33/50 Program in February 1991, focusing initially on 555 primarily large companies that had the highest releases of the 17 chemicals targeted by the 33/50 Program. As of March 1994, EPA had invited more than 8,000 companies to join, and almost 1,200 had said they would participate.

Of the largest 600 emitters, approximately 60% agreed, ultimately, to participate. In the aggregate, the actual emissions reduced by these companies exceeded EPA's expectations and occurred ahead of schedule. From those perspectives, the program may be viewed as a considerable success. Zatz and Harbour (1999) cite six factors as key to the success of the 33/50 Program:

- voluntary participation
- flexibility in the goals and the methods used to reduce emissions
- no additional reporting requirements

- public recognition for participants and their successes
- finite life of program
- an economic benefit for companies

Table 10-3. Federal Voluntary Pollution Prevention Programs

FEDERAL VOLUNTARY PROGRAMS (year program launched)	ENVIRONMENTAL GOAL
33/50 Program (1991)	Reduce total releases and transfers of 17 priority chemicals by 33% by 1992 and by 50% by 1995, relative to a 1988 baseline. Program ended in 1995.
Environmental Accounting (1992) www.epa.gov/oppintra/acctr	Increase corporate understanding of environmental costs and how to incorporate these costs into routine business operations.
Design for the Environment (1992) www.epa.gov/dfe	Help business incorporate environmental considerations into the design of products, processes, and technical systems.
Green Chemistry (1992) www.epa.gov/dfe/greenchem	Promote the design of chemical products and processes that reduce or eliminate the generation of hazardous substances.
Water Alliances for Voluntary Efficiency (1992) www.epa.gov/owm/genwave	Promote water efficiency in hotels, schools, universities, and office buildings.
Pesticide Environmental Stewardship (1993) www.pesp.org	Promote integrated pest management and pesticide risk reduction in agricultural and nonagricultural settings.
Waste Minimization National Plan (1994) www.epa.gov/wastemin	Reduce the presence of persistent, bioaccumulative, and toxic chemicals in hazardous waste.
Indoor Air Quality (1995) www.epa.gov/iaq	Promote simple, low-cost methods for reducing risks to indoor air quality.
Community-Based Environmental Protection (1998) www.epa.gov/ecocommunity	Integrate environmental management with human needs, consider long-term ecosystem health, and highlight the positive correlation between economic prosperity and environmental well-being.
Adopt Your Watershed (1994) www.epa.gov/adopt	Encourage and facilitate citizen involvement in local watershed protection activities.
Environmental Technology Verification (1995) www.epa.gov/etv	Verify the performance of innovative technologies to accelerate their entrance into the marketplace.
Voluntary Mobile Source Emission Reduction Program (1997) www.epa.gov/oms/transp/traqvola.htm	Provide flexibility to states in meeting federal air quality goals.
Pesticide Environmental Stewardship Program (1994) www.epa.gov/oppbpd1/PESP	Reduce risk from pesticides through improved pesticide stewardship.
Commuter Choice Leadership Initiative (2000)	Promote the reshaping of employee benefits packages to include commuting benefits.

EPA data, shown in Figure 10-3, demonstrate that the program goals for 33/50 were achieved 1 year ahead of schedule and that the reductions were greater than anticipated. While some have criticized the methods by which EPA made these calculations, the program clearly seems to have been a success.

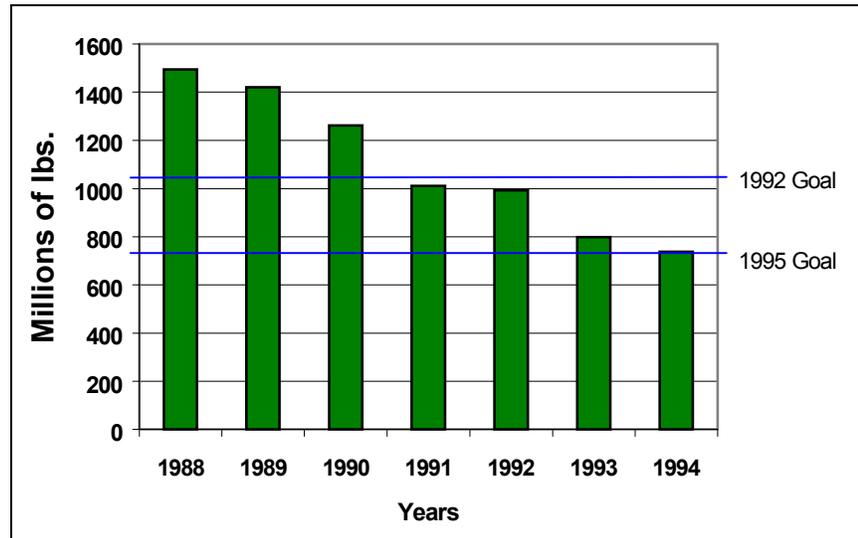
Aurora and Cason (1995) found that the 33/50 Program had a significant incentive effect. Although the willingness to participate varied greatly across industries and firms, and a relatively small percentage of any industry's firms participated, those that did participate were responsible for most of the toxic emissions within their respective industries. In the case of petroleum and chemicals, for example, participating companies were responsible for over 80% of their

industries' total emissions. The participation of large polluters allowed the program to be effective in targeting the main sources of pollution.

Aurora and Cason also found that participation rates were higher for industries that were less concentrated (those having many firms) and that participants in Green Lights were significantly more likely to participate in 33/50 as well. This “suggests that ‘environmentally conscious’ firms seek to improve their reputation by participating in several voluntary pollution reduction programs at the same time.”

Some reviewers assert that the proclaimed benefits have been overstated. The baseline data and the date the program was initiated allowed participants who had already achieved the reductions to join the program after the fact. Indeed, some participants had achieved more than a 50% reduction before they

Figure 10-3. Releases of TRI Chemicals (1988–1994)



Source: EPA. 1996c.

joined 33/50 in 1991. Aurora and Cason (1995) found that one of the main determinants of participation in the program was a desire by the firm to achieve favorable publicity. Overall, the program achieved real reductions. GAO (1997b) estimated them to be on the order of 20%, and participants, in general, realized cost savings. Khanna and Damon estimated that participation in the program also resulted in a reduction of 28% in future TRI releases.²⁷¹

10.3.2 Design for the Environment (DfE)

EPA’s Design for the Environment (DfE) Program helps businesses incorporate environmental considerations into the design and redesign of products, processes, and technical and management systems. Initiated by EPA’s Office of Pollution Prevention and Toxics (OPPT) in 1992, DfE forms voluntary partnerships with industry, universities, research institutions, public interest groups, and other government agencies.

Activities of Project Partners include broad institutional efforts aimed at changing general business practices as well as cooperative projects with trade associations and businesses in specific industries. The DfE Program ensures that the information developed through this voluntary effort reaches the people who make decisions—from managers to industrial design engineers to those who specify materials to buyers. By disseminating the information to these individuals, the program encourages its Partners to incorporate environmental considerations into their traditional decision-making process.

DfE works with entire industrial sectors, typically through trade associations and industry leaders. Several of the current DfE partnerships are highlighted below.

- The Printing Sector: DfE works with the screen printing, lithography, and flexography sectors to improve their environmental performance, principally through solvent use and reclamation technologies.
- The Printed Wire Board Sector: Traditional methods for making printed wire boards require the use of substantial amounts of water, energy, and certain toxic chemicals. DfE has collaborated with this sector to evaluate alternative methods and processes.
- The Computer Manufacturing Sector: DfE is collaborating with this sector to perform life-cycle cost assessments of cathode ray tubes and flat panel displays in computers, assessments that include environmental impacts.
- Garment and Textile Industries: DfE is working with this sector to reduce the public's exposure to perchloroethylene, a chemical used in dry cleaning. DfE is also exploring alternatives in the dyes and finishes used in textile processing or in clothing design (or in both) to reduce the need for dry cleaning.
- Industrial Cleaning Sector: Through partnerships with detergent formulators, DfE is trying to encourage the development and adoption of safer, more cost-effective effective industrial cleaning agents.
- Auto Refinishing Sector: DfE is working with auto refinishers to identify and adopt cleaner, safer, and more cost-effective practices that reduce the use of harmful chemicals and solvents.
- Manufacturers of foam Furniture and Bedding Adhesives: The adhesives used in these products can contain chlorinated and flammable solvents, and these solvents are increasingly coming under environmental regulation. DfE is working with manufacturers to develop adhesives that are more environmentally friendly.

10.3.3 Environmental Accounting Project (EAP)

EPA initiated the Environmental Accounting Project (EAP) in 1992 out of concern that pollution prevention would not be used to manage the environment until managerial accounting practices were modified to account for environmental costs. In cooperation with the Institute for Management Accountants, the American Institute for Certified Public Accountants, the U.S. Chamber of Commerce, the Business Roundtable, and the American Association of Cost Engineers, EPA developed agendas for 10 different stakeholder groups. The goal of the EAP is to help business understand the full range of environmental costs they incur and how to incorporate these costs into their decision-making.

The EAP encourages businesses to focus on energy costs, capital and operating costs of equipment that controls pollution, remediation efforts, salaries of environmental managers, public relations outlays, and other costs associated with the environment. Closer tracking of these costs enables businesses to identify opportunities to reduce or eliminate various elements of these costs. Companies can improve their environmental performance, gain a competitive advantage, and achieve cost savings or increased revenues.

EPA maintains a network of over 800 members of the EAP who share information and ideas. EAP has prepared several guidebooks for implementing these concepts, and it has developed a

number of case studies that illustrate the gains that can be achieved. Much of this information is available on EPA's web site.

10.3.4 Environmental Leadership Program (ELP)

ELP uses innovative approaches to environmental protection by focusing on flexible laws and regulations. In addition, ELP seeks ways in which to use the greater availability of environmental information to empower citizens and communities. EPA launched the pilot phase of ELP in June 1994. In April 1995, ELP formally selected 12 projects from a pool of 40 proposals. The projects, which included 10 companies and two federal facilities, centered on compliance management systems, verification procedures, management accountability systems, and community access and participation in compliance. EPA indicated that participants would be allowed a limited period of time in which to correct minor violations that were discovered in their audits, without the application of penalties. Two conditions, however, were attached to this offer: The violations could not be criminal in nature; and they must not present an imminent and substantial risk to public health or the environment. Participants receive public recognition for their efforts.

One ELP participant, Gillette Co., is working with EPA and state authorities on auditing and certifying their environmental management system. The company's ELP project involves the following four steps: (1) developing criteria for compliance audits; (2) preparing detailed instructions for conducting such audits; (3) preparing guidelines for third-party verification of these audits; and (4) using the guidelines when auditing three company facilities.

Gillette officials have cited several reasons for participating in the program. It prepares them for compliance with ISO 14000 environmental management certification standards, which are expected to become important in the years to come. The program also gives the company the chance to monitor itself, which will help the firm to avoid excessive monitoring by EPA.

It is not clear to what extent the results of audits conducted under ELP will be made available to the public. Public interest groups believe that they are entitled to access such information. Businesses, however, maintain that much of the data contained in audits should be kept confidential.

10.3.5 Water Alliances for Voluntary Efficiency (WAVE)

Another EPA initiative, Water Alliances for Voluntary Efficiency (WAVE), encourages businesses and institutions—primarily in the lodging sector—to reduce water use while increasing efficiency, profitability, and competitiveness. EPA says that the program “is designed to focus attention on the value of water and the need for efficient use of this important natural resource.”²⁷²

WAVE participants include partners, supporters, and endorsers. Program Partners agree to equip new facilities with water-efficient equipment and to install such equipment in existing facilities wherever profitable. In exchange, they receive technical support and EPA assistance in publicizing their water efficiency initiatives. Program Supporters publicize the benefits of water use efficiency and assist partners in their conservation efforts. Supporters are also supposed to implement water efficiency measures. Endorsers include “conservation-minded environmental groups, trade and professional associations” who “are invited to review and endorse the WAVE program.”²⁷³

As of April 2000, there were 40 WAVE industry partners, all of which were in the lodging sector. Several of the partners were large chains such as Westin, Hyatt, and Sheraton, with multiple facilities participating in the program. In addition, two hospitals and two educational institutions are counted as Partners. The list of Supporters consisted of more than 50 consulting firms, equipment distributors, manufacturing companies, utilities, and water management companies. The American Hotel & Motel Association, the American Water Works Association, Green Seal, and three other institutions were WAVE Endorsers as well.

EPA has stated that WAVE's measures can result in significant decreases in energy, water, and wastewater management costs. Through the program, the lodging industry potentially could save 32 billion gallons of water and more than 1 trillion Btu per year of related energy use. According to an EPA official, the main incentive for businesses to participate in WAVE is cost savings, but positive publicity is also a factor. Although the program has resulted in water and energy savings, it has not been without problems. The development of water management software has taken longer and has cost more than originally expected. In addition, marketing the program to hotels and motels has been slowed by a reluctance of the lodging industry to embrace change and by significant variations in the ownership and management structures of hotel branches.

10.3.6 Community-Based Environmental Protection (CBEP)

Initiated in 1997, this program integrates environmental management with human needs, considers ecosystem benefits, and emphasizes relationships between economic well-being and environmentally sustainable development. As its name implies, CBEP works with communities to protect and improve their local environment.

EPA has established several core principles for implementing CBEP.

- Focus on a definable geographic area.
- Interact with stakeholders through a range of partnership mechanisms.
- Determine overall environmental conditions in the area.
- Integrate environmental, economic, and social objectives and encourage local stewardship.
- Rely on appropriate public-sector, private-sector, regulatory, and non-regulatory tools.
- Monitor results and adjust programs in light of the results that are observed.

EPA's role in CBEP varies from one situation to another. In communities that cross state boundaries or are nationally important, EPA takes the lead role. In other cases EPA helps to define goals and methods, and provides environmental information, monitoring and scientific analysis to community organizers and stakeholders. Because individual projects are expected to take many years to achieve full success, the agency uses measures of performance that reflect incremental progress toward the goals.

10.3.7 Voluntary Mobile Source Emission Reduction Program (VMEP)

In the area of mobile sources, EPA has developed the Voluntary Mobile Source Emission Reduction Program (VMEP). This policy was initiated on October 23 1997, with the purpose of providing flexibility to states in meeting their federal air quality goals through State Implementation Plans (SIPs). Through this policy, EPA makes it easier for states to obtain SIP

credits for voluntary activities, and it seeks to further encourage innovation and investment in effective programs and actions. Thus, the policy provides an incentive for states, localities, and the public to voluntarily reduce air pollution in their communities.

To obtain these SIP credits, a voluntary program under VMEP must be quantifiable; surplus (i.e., yield reductions in addition to those credited in other parts of the SIP); enforceable, and permanent. The most distinctive difference between a VMEP control measure and a regular SIP control measure is that the VMEP is enforceable against the state for the emission reductions only, as opposed to the regular SIP control measure that is enforceable against the regulated parties for specified actions to reduce emissions.²⁷⁴ This provision encourages industry, community groups, and third parties to voluntarily agree to emission reductions. The state then estimates the reduction in emissions it expects will result from the agreements, and includes this as a control program in their SIP. VMEP submissions are limited to 3% of the emission reductions needed to obtain the National Ambient Air Quality Standards (NAAQS) in the non-attainment area.

The cities of Dallas, Houston, Chicago, Atlanta, and Las Vegas are including, or are planning to include, VMEP programs in their SIP. Programs include ozone action-day programs, technology retrofits, lawnmower buybacks, alternative fuel programs, commuter choice programs, and land use measures as well as many other programs. Support for the policy, in terms of technical and programmatic support, has been conducted through the Regional and State Programs Division of the Office of Transportation and Air Quality.

10.3.8 Pesticide Environmental Stewardship Program (PESP)

Under the Pesticide Environmental Stewardship Program (PESP), EPA works with many different organizations to promote environmentally responsible pesticide stewardship. Membership in PESP requires that organizations develop and adhere to well-defined goals for improving pesticide stewardship. Only those organizations that meet these goals are allowed to publicize their membership in the program in their promotional materials.²⁷⁵

10.3.9 Commuter Choice Leadership Initiative

On October 17, 2000, EPA and several leading U.S. employers launched the Commuter Choice Leadership Initiative. Under a Commuter Choice Leadership agreement, employers commit to working with EPA to develop new commuting benefits and services for their employees. (Employers who have joined this initiative are also known as “Commuter Choice Leaders.”) This initiative is part of an effort to redefine the “comprehensive employee benefits package” to include commuting benefits alongside other standard employee benefits, such as health plans and retirement packages. New Commuter Choice benefits will help American employees get to and from work in ways that cut air pollution and greenhouse gas emissions, improve public health, increase worker productivity, and cut taxes and other expenses for employers and employees.

This initiative is the first step in a national effort to provide employers across the country with the opportunity to partner with EPA in providing new commuting choices and services to their employees. If one-half of all U.S. employers offered the same commuting benefits as those promised by Commuter Choice Leaders, air pollution in the United States would be cut by the equivalent of about 15 million cars.

The commuting options promoted through the Commuter Choice Leader Initiative include the following: parking cashout (allowing employees to trade their free parking space for cash), transit fare subsidies, telecommuting, compressed work schedules, flexible work schedules, carpools, vanpools, bicycling to work, walking to work, environmentally-friendly vehicles, and others.

Because of recent changes in the U.S. tax code, employees frequently enjoy a reduced tax burden when taking advantage of these commuting options. Likewise, U.S. employers enjoy a reduced tax burden when providing commuting benefits that encourage these commuting options. The initial Commuter Choice Leaders include The Calvert Group, GEICO DIRECT, Intel, Kaiser Permanente, Nike, Pitney Bowes, and The Walt Disney Company.

EPA has committed itself to helping Commuter Choice Leaders and their employees in several ways: (1) by providing public recognition to Commuter Choice Leaders; (2) by providing technical assistance on commuting options and services; (3) by providing communications and analytical tools; (4) by helping employers and employees identify federal, state, and local commuting options, benefits, and services; and (5) by providing a forum for exchanging ideas and experiences with other leading employers.

10.4 Industry Initiatives

In contrast to EPA programs, which primarily seek to reduce pollution, unilateral industry-led strategies are designed first and foremost to improve public opinion. They are also designed, however, to accomplish a broad range of worthy objectives. Responsible Care, which began as an initiative of the Chemical Manufacturers Association (CMA), a 190-member industry trade association in the United States, has grown to be truly international in scope. This initiative includes firms in at least 40 nations, firms that represent more than 85% of the global chemicals industry.²⁷⁶ CMA provides its members with general guidance documents that explain how companies may adopt management codes in six areas:

- community awareness and emergency response
- pollution prevention
- process safety
- distribution
- employee health and safety
- product stewardship

For the most part, other industry-sponsored efforts in the United States could be characterized as extending the Responsible Care initiative to other industries. Examples include the American Petroleum Institute's (API) STEP program, "Strategies for Today's Environmental Partnership," and the American Forest and Paper Association's "Sustainable Forestry Initiative." The National Association of Chemical Recyclers has developed a "Responsible Recycling Code," which extends Responsible Care principles to chemical recycling. The Synthetic Organic Chemical Manufacturers Association has adopted the pollution prevention management codes of Responsible Care. The Great Printers Project is a hybrid effort developed by the Printing

Industries of America, the Environmental Defense Fund, and the governors from four states in the Great Lakes Region.

10.5 Federal Negotiated Agreements

Negotiated agreements are voluntary in the sense that firms are free to participate, or not, as they see fit. However, once a firm has signed a negotiated agreement, the firm is committed to fulfilling its part of the agreement. If the firm fails to deliver on agreed-upon actions or fails to achieve the results specified in the agreement, the firm risks adverse publicity and increased scrutiny by EPA. The goals of two negotiated voluntary programs are shown in Table 10-4.

Table 10-4. Federal Negotiated Voluntary Programs

PROGRAMS (year program launched)	ENVIRONMENTAL GOALS
Project XL (1995) www.epa.gov/ProjectXL	Develops innovative strategies to test better and more cost-effective ways of protecting the environment and public health.
Common Sense Initiative (1994) www.epa.gov/commonsense	Addresses environmental management by industrial sector rather than by environmental medium (air, water, land). Now an EPA Sector Program.

A primary goal of negotiated strategies is to improve efficiency by reducing regulatory burden. In practice, most Project XL and CSI (Common Sense Initiative) projects attempt to reduce the administrative costs associated with reporting, monitoring, and permitting.

10.5.1 Project XL

In 1995, EPA launched a portfolio of high-priority initiatives that sought new ways to protect the environment and public health, while demonstrating how EPA, the regulated community, and the public together can improve environmental management to address complex environmental issues. Since then, businesses, communities, and other federal agencies have responded to this challenge by participating in these initiatives, including Project XL (which stands for eXcellence and Leadership). Project XL was developed to accelerate environmental progress through collaboration on environmental problem solving, to modify certain constraints, and to reduce some costs that could be associated with environmental regulations.

Project XL solicits ideas from EPA’s partners: private-sector and public-sector facilities, other government agencies, trade associations, and communities. The project then assesses those ideas that propose solutions to difficult regulatory or technical problems and that explore new approaches to protecting public health and the environment, usually at a lower cost or lessened regulatory burden for the project sponsor. The basic tenet of Project XL can be explained in terms of its three elements: Through prudent experimentation and regulatory flexibility, EPA and its partners can (1) find economic gains for businesses and government, (2) more effectively engage the public in decisions that affect their local environments, and (3) achieve a cleaner environment.

Project XL is providing a forum for companies to test new technologies and alternative regulatory approaches that eventually might be used more widely to boost energy efficiency and achieve greater environmental protection. One criticism of federal efforts to protect the environment is that EPA’s regulatory requirements can be too prescriptive. For years, EPA has heard: “Give us environmental goals to meet, but don’t tell us how to meet them.” For the past

decade, EPA has been building greater flexibility into regulatory programs through the trading of emission “allowances” and other approaches. Through Project XL, EPA is providing companies and other project sponsors with additional opportunities to demonstrate their abilities to find innovative approaches to environmental protection. EPA is finding that a little flexibility can go a long way toward getting better results.

The experiments being conducted under Project XL are in various stages. As of November 2000, 16 projects have been underway for a year or more, and 34 projects have been in progress for less than 1 year. Early evaluation results show benefits to the environment, project sponsors, and the communities. Data from several projects indicate the potential that innovative approaches have for significantly improving current methods for managing the environment.

In fact, Project XL’s greatest opportunity, and its greatest challenge, is taking successful ideas from individual pilot projects and moving these ideas into system-wide practice and into EPA’s everyday way of doing business. Through experimentation and evaluation, Project XL can add to an ever diversifying set of tools for environmental protection by identifying new approaches, discovering the keys to their effective use, and better enabling EPA to match the right tool to the right problem.

Features of Project XL

- Superior Environmental Protection
- Cost Savings and Reduced Paperwork
- Stakeholder Involvement
- Innovative Pollution Prevention
- Transferability
- Feasibility
- Monitoring, Reporting, and Evaluation
- No Shifting of Risk Burden

Under Project XL, project sponsors have gained operational flexibility, such as expediting or consolidating permitting, reducing the amount and frequency of recordkeeping and reporting, creating facility-wide emission caps, and supporting innovative technology. As a result of operational flexibility, project sponsors, in turn, gain additional benefits from improved administrative or technological efficiencies, industry recognition and leadership, better leveraging of employee expertise, better community and stakeholder relations, and improved relationships with regulators. EPA encourages firms to view the flexibility provided by Project XL as an opportunity to create real incentives for environmental improvement, whether they are financial, competitive, technological, community-related, or otherwise.

For example, Intel Corporation has announced that it will take advantage of some these concepts in their business planning. Early this year, Intel announced that it will build its first 300-millimeter, high-volume semiconductor manufacturing facility in Chandler, Arizona. Intel will be able to expand the Chandler facility under an existing air emissions cap that was established under Project XL in 1996. Table 10-5 provides examples of the actual and anticipated economic gains that have been reported by project sponsors.

EPA currently faces important questions regarding the Project XL challenge. As the information on project results expands exponentially, what are the best methods for transforming results into knowledge? As EPA evaluates and learns how these new tools work, how does it match the right tools to the right problems? How does the Agency increase its rate and scale of adopting new ideas into appropriate system-wide practice? How does EPA translate its innovation experience into improved processes that will enhance its ability to test new concepts?

Table 10-5. Economic Benefits for Select Project Sponsors of Project XL

- **Crompton Corporation's Sistersville plant** (formerly known as Witco) saved \$58,000 from waste minimization and pollution prevention (WM/PP) activities in 1998 (\$42,000 in one-time activities and \$16,000 in savings from recurring air emissions reductions and methanol recycling). As of July 2000, 67 WM/PP initiatives have been implemented at the Sistersville plant, resulting in a total cost savings of an additional \$1,010,000 during 1997-1999 and the first half of 2000. Crompton expects future savings of \$800,000 over 5 years as a result of a negotiated deferral under the rules of the Resource Conservation and Recovery Act (RCRA). The company also identified potential, recurring cost savings of \$620,000 per year that will be achieved through WM/PP activities.
- **Department of Defense Elmendorf Air Force Base** (Elmendorf AFB) aims to streamline the application, implementation, management, and renewal process for Elmendorf AFB's Title V permit through reduced monitoring and recordkeeping. EAFB estimates that total monitoring, recordkeeping, reporting, and overall permit management costs will decrease by about 80%, yielding about \$1.5 million in savings over 6 years.
- **Department of Defense Vandenberg Air Force Base** (Vandenberg AFB) negotiated a protocol for source testing and validation with the Santa Barbara County Air Pollution District that is \$2,400 cheaper than the standard EPA test (\$600 per test rather than \$3,000 per test). This protocol complies with administrative requirements to upgrade its infrastructure, pollution prevention programs, innovative technologies, and other approaches that will cost effectively reduce air emissions below mandated levels.
- **HADCO Corporation** has achieved some cost savings by reducing the number of sludge shipments it requires, an action that results from its voluntary installation of a sludge dryer. HADCO expects to see cost savings when it sends its sludge directly to a recycler instead of shipping it to an intermediate processor.
- **Intel Corporation** has avoided millions of dollars in production delays in the competitive quick-to-market semiconductor industry by eliminating 30 to 50 reviews per year. The company operates under a facility-wide permit that allows for equipment changes, process changes, and new construction at the site as long as the site's overall air quality limits are met. Early this year, Intel announced that it will build its first 300-millimeter, high-volume production manufacturing facility in Chandler, Arizona. Intel will be able to expand an existing facility under an air emissions cap that was established under Project XL in 1996.
- **Weyerhaeuser Company** achieved an estimated savings of \$176,000 in reporting costs during the first year of operation as a result of the successful revision and reissue of the facility's air quality and wastewater discharge permits. The company is now saving \$200,000 a year by recovering lime muds and reusing this solid waste in lieu of purchasing new lime for use in the mill's production. (It did incur a one-time cost of \$150,000 in 1998 on related sampling collection and analysis.) Weyerhaeuser foresees avoiding \$10 million in future capital spending. While it expects to spend \$10 million on new water equipment, it will subsequently save \$20 million that would otherwise have been spent on air pollution equipment.

Source: Project XL 1999 Comprehensive Report, and Project XL 2000 Comprehensive Report.
<http://www.epa.gov/projectxl/guidexl.htm>

10.5.2 Common Sense Initiative (CSI)

EPA designed the Common Sense Initiative (CSI) to take environmental protection beyond the command-and-control, pollutant-specific, and media-specific approaches. CSI used a sector approach, which focused on a particular business, service, or industrial sector, to achieve more efficient, effective, and timely environmental results. EPA believes that when industry works collaboratively with government and other stakeholders to consider releases to all environmental media concurrently rather than in piecemeal fashion, industry sees more clearly the environmental and economic value of preventing pollution at the source. Furthermore, incentives can be tailored to meet the specific needs of an industry sector.

CSI was a 4-year (1994–98) pilot program for six large and small industry sectors. EPA worked with industry-sector representatives and other stakeholders in a consensus-based, federal advisory committee forum to find innovative ways to achieve “cleaner, cheaper, smarter”

environmental performance. The sectors involved in CSI were metal finishing, petroleum refining, printing, auto manufacturing, computers and electronics, and iron and steel. This effort produced more than 40 sector projects and one sector-wide stewardship initiative, the Metal Finishing Strategic Goals Program (SGP).

Among the 44 CSI projects, 23 addressed regulations, 20 promoted pollution prevention, 7 sought to reduce recordkeeping and reporting, 9 addressed compliance and enforcement, 6 addressed permitting, and 9 attempted to stimulate new environmental technology. True to its experimental nature, CSI produced expected and unexpected results. Some results are tangible, such as the implementation of many formal recommendations to the EPA Administrator, while others are intangible. It provided learning opportunities on a variety of environmental, economic, and social issues. For example, CSI significantly improved working relationships among stakeholders, many of whom had only interacted as adversaries in the past. In fact, the printing, petroleum, and metal finishing sectors are continuing to address issues in a multi-stakeholder, federal advisory committee forum.

SGP was adopted by the metal finishing industry in October 1997, and the program is still very active. While voluntary in nature, this stakeholder-driven program has led to regulatory and non-regulatory incentives, tools, and actions to improve performance by facilities within this sector. The agreement contains commitments on the part of EPA to change regulations that affect the industry, such as industry-wide goals for full compliance, improved economic payback, and reduced emissions from facilities. The agreement also includes a comprehensive action plan for state and local regulators and other stakeholders. As an indicator of the incentive nature of SGP, more than 400 companies, 21 states, and over 75 municipalities are participating.

With SGP as a model, EPA is developing similar, targeted programs to achieve better environmental performance and lower regulatory burden in the meat processing, shipbuilding/repair, specialty-batch chemical, and metal casting sectors. These programs also benefit from strong industry support. One of many EPA projects is a joint effort with the metal casting sector to produce information for states that will help them to permit safe uses for spent sand from foundries. This action will give the metal casting industry the economic incentive to re-use, rather than dispose of, the spent sand. Hence, millions of tons less waste will be sent to landfills each year, saving millions of dollars in waste disposal expenses for the industry.

With the growing knowledge of how to use sector approaches to tackle tough problems, in 1998 EPA began a process to integrate sector work into the Agency's core functions. Sector Action Plans were developed for FY1999 and FY2000 to guide this effort. EPA's program offices have been encouraged to consider, where appropriate, an integrated cross-Agency, multi-media sector approach as a way of conducting their everyday business. The draft *EPA Sector Program Plan 2001–2005*, which is being reviewed by stakeholders, provides a vision for environmental excellence by U.S. industries. The plan affirms the validity of using all types of sector tools and approaches to protect the environment, whether these tools and approaches are voluntary or regulatory, single-media or multi-media, issue-specific or industry-wide. The sector approach is also being extended to include related economic entities through the supplier-producer-customer chain and other networks that directly impact an industry sector.

Sector approaches are increasingly common. Through the shared experiences of CSI and other sector programs, leaders from government, industry, and other stakeholder groups have become

more willing to sit down together to search for solutions to today's environmental challenges in a non-adversarial way.

10.6 An Assessment of Pollution Prevention Efforts

A 1998 EPA review of all of its Partners for the Environment efforts concluded that the results to date have been impressive. Environmental benefits achieved by EPA's Partners totaled

- 5.2 billion fewer tons of solid waste generated,
- 199 trillion fewer Btus of energy used,
- 24.7 million fewer tons of greenhouse gases emitted, and
- 1.2 billion fewer gallons of water used.

At the same time, these Partners saved \$852 million in 1996.

10.7 Voluntary Programs Developed by EPA Regions

The regional offices of EPA have been active in the development and promotion of voluntary programs. Table 10-6 identifies many of these programs.

Table 10-6. Selected Regional Voluntary Programs of EPA

EPA PROGRAM	EPA REGION	EPA PROGRAM	EPA REGION
Agricultural Initiative	9	Metal Finishing Partnership	9
Air Quality Initiative	8	Osage Nation, Oklahoma, CBEP	6
American Heritage Rivers	8	Pollution Prevention (P2) Awards for Excellence	7
Bay Area Green Business Program	9	P2 Roundtable	7
Beneficial Landscaping	5	Pacific Northwest P2 Research Center	10
Brownfields Initiatives	1-10	Partners for Change	1
Business for the Chesapeake Bay	3	Partnership to Help Foundries Achieve Compliance	6
Center for Industry and Technology	1	PCB Used Oil Sweep	5
Chemical Safety Audit Program	3	Problem Oil Pit Initiatives	8
Chemical Safety Audit Program	4	Small Business Assistance Center	3
Chlor-Alkali Mercury Reduction	5	Southern Application Mountain Initiative	4
Clean Star Texas City	6	StarTrack	1
Community-Based Environmental Protection	8	StarTrack	3
Compliance Leadership	1	Sustainable Challenge Grants	4
Environmental Merit Awards	1	Texas City, Texas, CBEP	6
Evergreen Award	10	U. S. Auto P2 Project	5
Great Printers Project	5	Urban Initiatives	4
Greater Chicago P2 Alliance	5	Urban Initiatives for Sustainable Communities	4
Green Communities	3	Urban Livability	8
Headwaters Waste Mining Initiative	8	Utah 2002 Olympics	8
Henryetta, Oklahoma, CBEP	6	Voluntary Initiative for P2	3
Indoor Quality Initiatives	5	Waste Minimization Assessment	5
Merit Partnership	9		

10.8 State Programs

A comprehensive treatment of the hundreds of state and community voluntary programs for environmental protection is beyond the scope of this paper. However, a few programs are reported in the following paragraphs to illustrate the nature and scope of these activities.

10.8.1 Massachusetts Recycled Newsprint Program

Massachusetts has developed a voluntary newsprint recycling program. (This program can be contrasted to Wisconsin's program, which has recycled content requirements on newspaper publishers, and fees levied on those failing to meet the requirements. See Chapter 6.) Under the terms of a 1992 memorandum of understanding between the Commonwealth of Massachusetts and the Massachusetts Newspaper Publishers Association, the Commonwealth agreed to develop newsprint collection and processing programs within the state, and the Association agreed to increase its use of recycled content. The following targets for increasing the recycled content of newsprint were set: 13% of recycled content by December 1993, 23% by December 1995, 31% by December 1997, and 40% by December 2000.

The publishers agreed to give preference to purchasing newsprint that was recycled within the state. They are exempt from the targets described in the previous paragraph if high-quality recycled newsprint cannot be obtained at prices comparable to those of virgin newsprint.

In return for the publishers' efforts, the Commonwealth agreed to promote de-inking and processing facilities in an attempt to increase the supply of recycled-content newsprint that was available to the publishers. The state also agreed to oppose recycled-content mandates or penalties for the use of virgin newsprint and to facilitate private-sector investment in the publishing industry.

10.8.2 Adopt-a-Highway Programs

In Adopt-a-Highway Programs, volunteers agree to periodically clean up selected stretches of roadside. Although these programs vary from state to state, they typically involve agreements by organizations to clean up a stretch of roadside that is approximately two miles long and to do so two to seven times a year, for 1 to 3 years. The state usually offers trash bags, safety vests, and other gear. Perhaps most important for businesses that participate, the state usually provides at least one sign to be placed on the adopted roadside that indicates the name of the adopting organization. However, a 1994 survey revealed that 10 states did not allow businesses to adopt highways, and 33 states did not allow adopting organizations to contract others to perform the cleanup.

Adopt-a-Highway programs offer advantages both to states and to adopting organizations. They allow states to maintain roadsides at lower state expense, and they generate positive publicity for businesses and other adopting organizations.

Although there is no federal Adopt-a-Highway Program, state programs have spread rapidly since Texas created the first one in 1985. The number of states with programs increased to 41 by 1990. The aforementioned 1994 survey revealed that all states except Maine and Vermont had these programs. According to the same survey, 121,700 adopting groups composed of 1.3 million volunteers were participating in the programs, and over 200,000 miles of roadside had been adopted.

10.8.3 State Voluntary Cleanup Programs

More than 40 states have voluntary cleanup programs that offer a wide range of incentives for cleaning up and reusing brownfields. The voluntary programs vary by funding levels, types of activities funded, and the eligibility of entities. State incentives can include financial support, regulatory streamlining, and liability relief. EPA provides about \$10 million annually to support state voluntary cleanup programs. In addition, 14 state voluntary cleanup programs have signed memoranda of agreement with EPA that clarify state and federal responsibilities and strengthen the role of the state programs.

10.9 Conclusions

Voluntary programs in the United States combine the features of unilateral, negotiated, and public voluntary approaches employed in the European Union (EU). In the United States, voluntary agreements have been crafted under the aegis of the Pollution Prevention Act, through the Climate Change Action Plan, by industry associations, and by state and local governments. Most U.S. voluntary efforts would be characterized as cooperative, non-mandatory strategies. Several authors have claimed that existing legislation impedes the implementation of industry-led voluntary agreements and public-sector projects that employ negotiation (Davies and Mazurek 1996; Kappas 1999; Boyd, Krupnick, and Mazurek 1998). The consequence is that voluntary approaches serve as a supplement to the main thrust of federally mandated air, water, waste, and toxic control programs.

In most of the U.S. voluntary programs, the task of evaluating program effectiveness is hampered by unique program features as well as limited data and monitoring relative to baseline conditions. While there are some data illustrating the administrative costs of developing certain types of voluntary agreements and the environmental effectiveness of a few of the energy conservation measures, a comprehensive cost-effectiveness assessment has not been performed for any of the voluntary programs.

EPA reports and other literature mention a number of desirable effects besides environmental improvement that result from these programs. Participants in Responsible Care, 33/50, CSI, and Project XL all cite enhanced public opinion or goodwill with regulators as significant benefits. In fact, a motivating factor for several Project XL participants was to improve relations with the community (Boyd, Krupnick, and Mazurek 1998). The Chemical Manufacturers Association (CMA) advocated Responsible Care primarily as a means of improving public opinion. CMA convinced its membership that the future of the chemical industry depended on their reversing the negative public perception of the industry. To facilitate the adoption of its program, CMA patterned Responsible Care on its members' ongoing environmental, health, and safety (EHS) programs.

Voluntary agreements appear to contribute to constructive dialogue among groups that normally act as adversaries. Voluntary agreements also provide for more opportunity for stakeholder participation than the status quo does. With improvements in administrative, monitoring, and participatory procedures, voluntary agreements could become an important element of the U.S. strategy for improving the cost effectiveness of environmental management.

Unilateral, industry-led voluntary agreements can suffer from what is termed the "free rider" problem. Such agreements provide benefits in the form of publicity and goodwill for all members. Members of an industry association may join a voluntary agreement, yet take minimal

actions to comply. Members can also choose not to join the voluntary agreement, but they can still benefit from the actions of those who have joined. Understandably, an association would be reluctant to eject members, since it depends on dues from them to survive. Thus, free-riding may be a significant problem from the point of view of truly motivating participants to join unilateral agreements. This problem was evident in the STEP program of the American Petroleum Institute (API). In this case, several API members joined STEP, yet they failed to follow through with all of its provisions.

Implementation of negotiated agreements is slowed because Congress did not give EPA the authority to offer firms relief from existing laws and regulations (Davies and Mazurek 1996). Two consequences follow. The first issue relates to procedure. Whenever government or trade associations have less than strong legal authority for their initiatives, they act through consensus-building processes. This approach gives individual participants potential veto power over such initiatives, and it may result in large transaction costs. Second, reliance on consensus-based methods also tends to result in goals that reflect the basic common denominator on which all parties agree.

While there were difficulties in the initial implementation of CSI, the experiment has demonstrated the value of collaborative, sector-based approaches to environmental protection. Many of the 300 participants in CSI have built positive relationships with former adversaries that have outlasted the program itself. Based on its experiences with CSI, EPA has expanded opportunities for involving stakeholders in the Agency's decision-making processes. EPA is using voluntary collaboration to improve traditional EPA functions such as regulation, permitting, and compliance assistance. By applying the many lessons learned from this unique program, EPA attempts to ensure that the next generation of initiatives for environmental protection is based on common sense and cost effectiveness.

The first few XL projects posed many challenges. EPA had never attempted this type of experiment. As a regulatory agency, EPA was cautious in the early stages. EPA and others had concerns about how to test new approaches and yet still maintain the same level of protection that the current regulatory system provides. The Agency had to learn as Project XL progressed. Project sponsors, regulators, and citizens alike invested significant resources and time in XL's creative and complex experiments. After gaining experience, the Agency had a better idea of what information was important for industry to include in their proposals and how decisions should be made. In 1998, EPA and its partners worked hard to streamline Project XL, so negotiations would go more smoothly, quickly, and predictably. This new process now yields agreements for most projects in six months to a year, compared to 24 months or longer under the old process. For example, the Atlantic Steel project, in Atlanta, Georgia, has already shown results by producing a signed project agreement for Phase One, just eight months after initial pre-proposal discussions with EPA.

The Agency's rapidly growing partnership programs continue to show promise for effecting improved stewardship.²⁷⁷ These programs typically improve efficiency, cut waste, and conserve resources, thus lowering costs and yielding environmental benefits. As such, EPA has used partnership programs to address a variety of issues, including climate change, solid waste, pesticide risks, and to advance new environmental technologies and practices. These experiences have shown that voluntary approaches can be a strong complement to the traditional regulatory system and a tangible means for getting better environmental results.