

Climate Wise Achievement Awards: A Profile of the Award Winners

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ABSTRACT

Climate Wise is a partnership initiative sponsored by the U.S. Environmental Protection Agency designed to stimulate the voluntary reduction of greenhouse gas emissions among participating manufacturing companies. Because energy use in the manufacturing sectors accounts for nearly 30 percent of total U.S. anthropogenic greenhouse gas emissions, industrial energy-efficiency actions can have a significant effect on reducing these emissions. Climate Wise works with U.S. manufacturers to help them take advantage of the environmental and economic benefits of energy-efficiency improvements. The Climate Wise Partnership, representing 13 percent of total U.S. industrial energy use, currently has more than 500 partners that are saving money and energy by implementing a wide range of efficiency and waste reduction projects.

In November of 1998, Climate Wise held its first annual Partner Achievement Awards, recognizing its leading partners for their exceptional achievements in the areas of Leadership, Innovation, Action Planning, and Results. Fourteen companies were recognized for overall environmental performance, and three others were acknowledged for special achievement in specific areas. This paper summarizes the achievements of the Climate Wise partners recognized for their outstanding accomplishments. These case studies highlight their corporate climate goals and strategies, specific energy-efficiency actions implemented, and the anticipated financial benefits, fuel savings, and environmental impacts of these actions.

Introduction

The Climate Wise Program

Climate Wise is a voluntary government-industry partnership program that helps manufacturing companies identify cost-effective, profitable, energy-efficiency investments. Sponsored by the U.S. Environmental Protection Agency, with support from the U.S. Department of Energy, Climate Wise is designed to stimulate the voluntary reduction of greenhouse gas emissions by encouraging broad goals, providing technical assistance, and aiding organizations in identifying the most cost-effective means of reducing greenhouse gas emissions. Climate Wise Partner companies range from small, single-facility companies, to large, multi-facility corporations, and span the full manufacturing sector (SIC 20-39). Since its inception in 1994, more than 500 companies, representing approximately 13 percent of U.S. industrial energy use, have joined the Program. As part of their Climate Wise commitment, companies throughout the nation are developing comprehensive Action Plans

that provide a thorough analysis of emissions-reduction opportunities and an implementation schedule for bringing cost-saving project ideas to fruition.

Climate Wise Partners follow a well-defined path toward setting goals, achieving emissions reductions, and reporting results. Before joining the program, potential Partners meet with Climate Wise representatives to discuss their emissions reduction opportunities and goals. Six months after signing their "Partnership Agreement," Partners submit an "Action Plan" detailing their Climate Wise commitments. The savings projections provided in Climate Wise Action Plans reflect Partners' preliminary estimates of their projects' outcomes. After a full year of program participation, Climate Wise Partners report their actual achievements in greater detail through the Energy Information Administration's *Voluntary Reporting of Greenhouse Gases Program* (EIA 1605b).

Achievement Award Winners

On November 17th, 1998 Climate Wise held its first annual Partner Achievement Award recognition event. Awards were presented to fourteen companies for excellence in the categories of Leadership, Innovation, Action Planning, and Results. Three companies -- Boeing, Interface, and Lucent Technologies -- received Special Recognition Awards for accomplishments in company-specific areas. The awards winners ranged from small companies and facilities, such as Cargill-Oilseeds Division and Pan American Hospital with less than 50 employees, to the Program's largest multi-facility corporation, General Motors, with over 600,000 employees. Nearly one hundred attendees participated in the conference, representing a broad range of industry sectors. The recognized Climate Wise Partners have distinguished themselves in at least one of four broad classes:

Innovation – These partners have demonstrated technical or management innovation in the reduction of greenhouse gases and waste. Examples of innovation include changes in process operation, development or implementation of advanced technology, use of renewable resources, and management innovations such as the use of a corporate bonus structure to reward energy efficiency.

Leadership – The companies recognized have demonstrated leadership among their peers in promoting energy efficiency and waste reduction. They have done so by participating in peer exchange dialogues, launching public education or awareness programs, sharing information on greenhouse gas reduction opportunities, or otherwise influencing others to adopt energy-saving and emissions-reducing activities. Many of these companies have comprehensive employee education and participation programs that promote efficiency activities in the workplace and at home.

Action Planning Excellence – These partners have demonstrated an emphasis on emissions-reducing actions in the most energy-intensive components of their operations. For industrial or manufacturing processes, these actions may include boiler tune-ups, steam system enhancements, waste heat recovery,

compressed air system optimization, fuel switching, combined heat and power systems, or process optimizations.

Results – These companies have realized and reported significant greenhouse gas emissions reductions. The impacts from their resource conservation programs have been well quantified and documented. Along with completing a detailed Climate Wise Action Plan, many of the award winners have submitted current EIA 1605(b) reports through the *Voluntary Reporting of Greenhouse Gases Program*.

The award winners represent a diverse group of manufacturing sectors including a commercial printer, three food processors, two textile producers, three chemical companies, three electronics and electrical equipment manufacturers, a petroleum refiner, and two transportation manufacturers. These seventeen companies represent more than one quadrillion Btu, or about 5 percent, of U.S. industrial energy use.

Multi-Facility Corporation

- Anheuser-Busch Companies
- BP-America
- General Motors Corporation
- Johnson & Johnson
- Quad/Graphics

Large Facility or Corporation

- Baxter Healthcare Corporation – North Cove Facility
- Malden Mills
- Motorola – Austin
- Gillette Stationary Products – Arrow Park
- TECO – Westinghouse Motor Company

Medium Facility or Corporation

- Cosmair, Inc. – Clark Manufacturing Facility
- Stonyfield Farm, Inc.

Small Facility or Corporation

- Cargill, Inc. – Raleigh Oilseeds Facility
- Pan American Hospital

Special Recognition Award Winners

- The Boeing Company
- Interface, Inc.
- Lucent Technologies

These companies are implementing a broad range of resource conservation and greenhouse gas emissions-reduction measures (see figure 1). About half of the measures target energy use in the manufacturing process, such as boiler and steam system improvements, process optimizations, and motor and compressed air system enhancements. The companies' actions also target lighting and HVAC system improvements, transportation

efficiency and employee trip reductions, pollution prevention, recycling, water conservation, waste reduction, and an impressive array of employee education and public awareness programs.

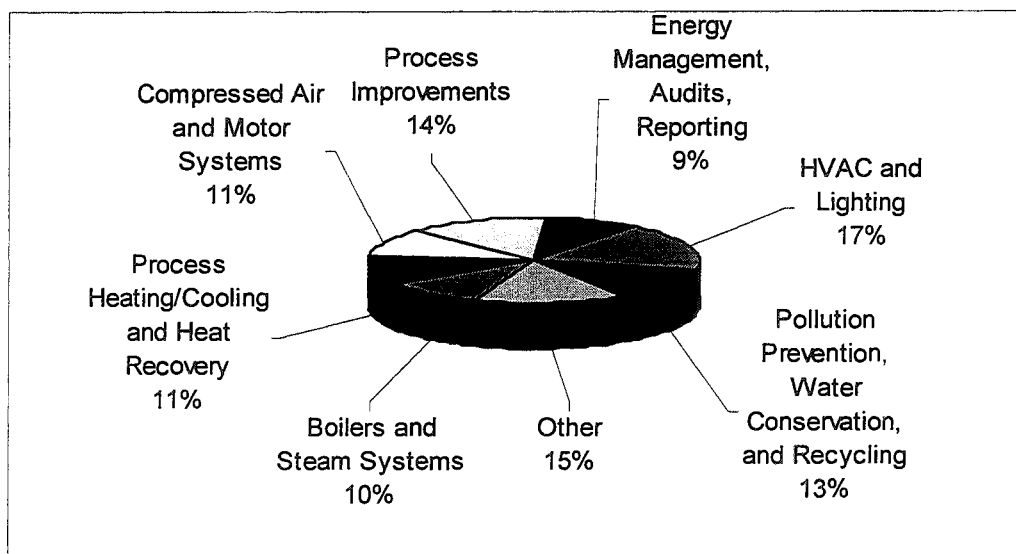


Figure 1. Efficiency Actions by Type

The range of actions and accomplishments for which Partners were recognized demonstrates the value companies have found in improving environmental performance. The remainder of this article highlights the accomplishments of Climate Wise Partners in action planning and results, technology and process solutions, innovative approaches to environmental excellence, and leadership among their peers and in their communities.

Results

Commitments, Action Planning, and Results

These outstanding Climate Wise Partners have made strong commitments to reducing greenhouse gas emissions. Many of these leading companies have announced aggressive corporate goals to improve the efficiency of their corporate-wide energy use. For example, Johnson & Johnson has pledged to reduce its corporate energy use (adjusted for production) by 25 percent from 1991 to 2000. By 1997, it had achieved an 18.2 percent reduction. Overall energy use at U.S. facilities has declined 8 percent over this time period, while production has grown by more than 330 percent. In 1997, Johnson & Johnson saved 270,000 MMBtu, \$2,600,000 and 23,154 metric tons of carbon dioxide.

Anheuser-Busch has determined an objective of maintaining year 2000 utility costs at or below 1995 levels. Its *Utility Challenge 2000* program is an ambitious undertaking, especially when production growth and potential utility rate increases are considered. Stonyfield Farm's Climate Wise Action Plan establishes the goal of reducing energy use by 25 percent per pound of product between 1996 and 1999. They have achieved a 20 percent

reduction as of 1998. Baxter Healthcare Corporation's North Cove Facility Climate Wise Action Plan includes a 25 percent energy reduction per equivalent liter of product, to be accomplished through a variety of energy management system, boiler, process cooling, and compressed air system measures. Baxter's North Cove Facility is currently saving 108,000 MMBtu, \$650,000 and 10,000 metric tons of carbon dioxide per year as a result of its energy-efficiency activities.

As part of their Climate Wise Action Plan, Gillette Stationary Products established a corporate goal of reducing their global energy and water use by 10 percent and 35 percent, respectively, and cutting annual energy consumption at the Arrow Park site by 17 percent – a full 1,000,000 kWh. The Arrow Park facility has conserved electricity by heating buildings with waste heat recovered from two air-cooled air compressors, and by adopting boiler and energy management systems. They have reported increasing production by 35 percent, while increasing electricity use by only 10 percent.

As a necessary element of these commitments, Partners have developed and initiated implementation of comprehensive action plans to bring about significant reductions in energy use. Together, these seventeen companies have identified nearly 500 separate energy efficiency projects that will have the equivalent greenhouse gas emissions impact of removing 700,000 cars from the road. Johnson & Johnson's actions were based on its comprehensive program of implementing a set of Best Management Practices, successfully addressing efficiency in a full range of areas and end uses.

The Boeing Company's first Climate Wise Action Plan involves nearly 150 energy-saving measures in more than 50 facilities across 27 states. These measures encompass a full range of conservation activities, including building consolidations, extensive boiler upgrades, as well as large scale recycling and transportation efficiency programs. Through these programs, Boeing is saving \$15,700,000, over 1,777,000 MMBtu, and avoiding almost 150,000 metric tons of carbon dioxide per year. Savings are expected to reach almost \$19,000,000, over 2,140,000 MMBtu, and 180,000 metric tons of carbon dioxide annually by the year 2000.

TECO-Westinghouse Motor Company has upgraded the most energy-intensive systems in their 30-year-old facility. They have installed efficient lighting systems, replaced electric ovens with new gas models, rescheduled engine testing during non-peak energy usage hours, updated steam systems, and implemented energy management measures. These improvements have resulted in a 55 percent reduction in average electric bills. TECO-Westinghouse Motor Company projects annual savings of \$507,000 and 13,000 metric tons of carbon dioxide. Lucent Technologies' portfolio of 189 implemented energy-efficiency projects includes lighting efficiency, HVAC upgrades, manufacturing process improvements, building automation systems, and energy-efficient motors. They anticipate saving over 900,000 MMBtu and \$13,500,000 annually by the year 2000.

Climate Wise companies are experiencing significant results. On average, Climate Wise estimates that the 17 award winners are reducing their energy use by approximately 15 percent, with the small- and medium-size companies realizing the greatest benefits from their efficiency actions. The combined efforts of these companies are expected to result in annual savings of 32 trillion Btu, 98 million dollars, and reduce carbon dioxide emissions by three million metric tons per year by the year 2000.

Energy Technology Solutions

Many of the award winners have developed or applied new technologies to reduce energy use. Some have reevaluated their production process to identify opportunities for improvement. Quad/Graphics plans to implement a number of process-related efficiency measures that not only reduce energy consumption, but conserve ink and reduce Volatile Organic Compound (VOC) emissions as well. Anheuser-Busch has developed the Bio-Energy Recovery System (BERS) which recovers methane, a greenhouse gas with high global warming potential, from its wastewater. The BERS reduces fuel used to generate electricity and reduces wastewater sludge by 50 percent. Motorola – Austin uses a considerable amount of energy in the costly processing of Ultra Pure Water (UPW), an essential resource for their semiconductor manufacturing process. The company evaluated the origin and fate of its process water, and implemented a number of solar and membrane technologies to reduce UPW use and, thus, the necessary energy for processing. Motorola - Austin anticipates annual savings of \$2,750,000, 277,000 MMBtu, and 52,281 metric tons of carbon dioxide by the year 2000.

Established technologies also continue to reduce energy use. After its facility was destroyed by fire, Malden Mills seized the opportunity to construct a new, energy-efficient facility, equipped with a state of the art cogeneration system that will serve as a demonstration project for future installations. The company has completely redesigned its production process to conserve energy and materials. BP America's action plan includes a significant commitment to the use of solar power. Emissions savings from photovoltaic panels are expected to reduce emissions by 19,000 metric tons of carbon dioxide per year.

TECO-Westinghouse Motor Company has launched a Thermal Storage Project, chilling water during nighttime hours to maximize efficiency and take advantage of lower energy costs. The chilled water is stored in a 1 million-gallon tank for use in process cooling during the day. General Motors' Climate Wise Action Plan includes its Powerhouse Strategy Program, through which the company seeks to reduce energy use by implementing first tier efficiency measures directly related to the acquisition and distribution of energy and resources. In 1997, General Motors Corporation saved 13,000,000 MMBtu and avoided nearly two million metric tons of carbon dioxide emissions.

Energy Measurement, Tracking, and Management

Measuring and tracking energy use is an essential precursor to developing an effective greenhouse gas emissions-reduction strategy, and a growing number of Climate Wise Partners are adopting this practice and realizing its benefits. Tracking energy use of facilities and individual projects lends itself to identifying opportunities, prioritizing investments, and evaluating the success and applicability of efficiency projects to other practices within the corporation.

Large multi-facility corporations find considerable benefits in tracking energy use. In support of its *Utility Challenge 2000*, Anheuser-Busch has developed an extensive Utility Conservation Database that tracks energy use and conservation projects at each location. This database is available to each facility's Utility Coordinator and all environmental

personnel in the company. Disseminating this information allows facilities to compare their performance relative to others and to evaluate the success of other facilities' energy-efficiency investments. The company has also implemented a comprehensive brewery-wide energy and utility survey program. Lucent Technologies also devoted substantial efforts toward developing its Database Tracking System, for which it received one of the Special Recognition Awards. This comprehensive energy database was used as a model by the EPA in developing a tool for assisting Climate Wise Partners in organizing and tracking their own energy information.

Small facilities can also benefit from a tracking system. Cargill, Inc.'s Raleigh Oilseeds facility conducts daily surveys of energy intensive equipment and undertakes comprehensive energy audits on a monthly basis. Pan American Hospital has installed a facility-wide Energy Management System that monitors the consumption of all energy intensive systems in order to optimize their performance and identify potential problems as they occur.

Innovative Approaches to Energy Efficiency and Pollution Prevention

The award winners are not only exploiting established energy-efficiency measures, but are also testing innovative approaches to improving environmental performance. Quad/Graphics' decision to locate their new facility on a brownfield site eliminated the energy and virgin materials necessary for building a new structure. The new location also resulted in the reduction of average employee commutes, thus reducing automobile fuel use and resultant emissions. Interface Research, Inc. was recognized for its continued commitment to sustainability, including the development of what may be the first line of Climate Neutral products. Climate Neutral refers to offsetting greenhouse gases generated during each stage of a product or service's life-cycle, thereby eliminating any net impact on the global climate. Interface's partnership with the Climate Neutral Network has helped to define the scope of Climate Neutral products and services. The company's development and use of EcoMetrics™, a detailed accounting of resources, production, and waste, measured in carbon dioxide equivalents, has helped to establish methods for companies to inventory greenhouse gas emissions associated with the production and use of a product over its lifetime. Interface has also installed a 127 kW photovoltaic array at its Bentley Mills facility. As one of the largest industrial solar systems in the nation, it will displace about 6 percent of the facility's electricity consumption, eliminating the emissions from the fossil fuel generation of this electricity.

BP-America has launched a 10 facility intra-company carbon cap and trading system. Through this system, BP facilities gain first-hand experience in the creation and trading of emissions reductions credits, which they plan to share with interested parties around the world. British Petroleum is also developing an emissions reduction goal for their company that will become part of the company performance review process for all BP employees and managers. In addition, BP is investigating a Climate Neutral gasoline product line, through which BP and participating customers with sizable vehicle fleets would jointly invest in carbon offset projects, entirely accounting for those emissions associated with the fuel's use.

Consistent with the Climate Neutral concept, Stonyfield Farm has invested in a portfolio of projects that offset 100 percent of the CO₂ emissions from their facility energy

use. Stonyfield has adopted multiple process-efficiency measures, including the installation of energy-efficient liquid recirculation systems on ammonia refrigerators, elimination of steam intensive processes, heat exchange optimization, and water use reductions. Stonyfield Farm is also seeking to minimize vehicle fuel use and transportation emissions by modifying milk delivery schedules and promoting employee carpooling.

Leadership among Peers and in the Community

The Climate Wise Achievement Award Winners have not only committed to reducing greenhouse gas emissions, but have taken it upon themselves to share their experiences with others. They are raising awareness of energy efficiency through media campaigns; sharing technology and information through peer exchange activities; and educating their suppliers, customers, and employees about the value of environmental consciousness.

Equipping suppliers with the information necessary for grappling with energy-efficiency issues can benefit both the supplier and the companies it services. As energy and other input costs fall, suppliers grow more competitive, paving the way toward potentially lower product costs. General Motors recognized this principle and developed the Supplier Outreach Program, through which 200 supplier development engineers conduct over 2000 workshops each year, educating supply-chain facilities about reducing waste, improving productivity, conserving resources, preventing pollution, and reducing costs. Sharing efficiency lessons with parent companies and subsidiaries can also prove valuable. Baxter Healthcare's North Cove facility was instrumental in convincing its parent corporation to join the Climate Wise Program, and hosted the Baxter Energy Conference in April 1998 to exchange ideas with other Baxter sites. Perhaps most impressive, however, was their establishment of the McDowell Environmental Exchange, a forum for keeping industries in the McDowell County community abreast of environmental regulations, source reductions, recycling opportunities, new environmental technologies, and common environmental ideas.

Several companies were recognized for sharing insights and experiences with peer companies. Motorola - Austin exemplified leadership in the City of Austin's Climate Wise Partnership. They were the first company to join the partnership, and have since played a key role in recruiting 14 other companies, including some of their suppliers. Cosmair's Clark Manufacturing Facility has demonstrated leadership both in business and in their community. Since joining Climate Wise in 1996, the Clark facility has been instrumental in leading other companies to the program, including other Cosmair facilities and several vendors in their supply chain. Stonyfield Farm's recognition was based upon their leadership in energy efficiency and environmental initiatives. The company's *Environmental Cookbook* is designed to give other companies the "recipe" for calculating their emissions and implementing carbon offset projects. Lucent Technologies played a key role in forming the successful New Jersey Climate Wise Partnership, and has hosted several peer exchange conferences in their region. Johnson & Johnson, a charter partner in Climate Wise, Green Lights, and Energy Star buildings, has made presentations at many conferences and forums throughout the country, highlighting the benefits and results of their participation in these voluntary programs, and encouraging others to follow their lead.

Finally, most of the Program's leading companies extend their educational and outreach efforts to employees, customers, and their communities. Cosmair actively engages

small groups of employees in discussions about expansion of environmental initiatives, and sponsors state and community public education efforts. Stonyfield Farm's "Let's Put a Lid on Global Warming" yogurt lid campaign, co-sponsored by the Union of Concerned Scientists, educated customers on global warming issues and directed them to further informational resources. Gillette Stationary Products has enacted impressive employee involvement and energy-efficiency education programs, publicized their energy conservation activities so that other companies may reap similar benefits, and consequently received the Prevention/Environment/Prosperity Award in 1994 from the State of Wisconsin Department of Natural Resources. General Motors has initiated environmental awareness training for employees, and Malden Mills serves on the Board of Directors of the Northeast Business Environmental Network. Pan American Hospital, in conjunction with the Miami-Dade Department of Environmental Resources Management, sponsors the Environmental Essentials Workshop, an effort to inform local businesses of the environmental opportunities available in their community.

Summary

This inventory of commendable commitments, impressive activities, and substantial results demonstrates the potential value of energy-efficiency projects for companies seeking to assume leadership positions in the environmental arena. The broad variety of case studies illustrates the point that, regardless of the specific type of business conducted, a sizable population of appropriate industrial-efficiency opportunities exists. Despite potentially large initial investments, the majority of examples cited throughout this discussion generate ample savings, fully recovering initial costs over the first few years of operation. These companies successfully demonstrate, through industrial projects and leadership, that energy-efficiency activities contribute to financial prosperity, improve environmental performance, and bolster employee and community relations.

The second annual Climate Wise Achievement Awards event is slated for November 1999, providing another opportunity to examine the efforts of new and established Climate Wise Partners. These Partners will continue to lead the way in successfully turning energy efficiency and environmental performance into a corporate asset.

Acknowledgements

The Climate Wise Program extends its sincere gratitude to the Climate Wise Partners for their commitment to energy-efficiency projects and cooperation in developing this paper.