



ENERGY STAR

# ENERGY STAR® and Other Climate Protection Partnerships

2005 Annual Report



United States  
Environmental Protection  
Agency

# ENERGY STAR® AND OTHER CLIMATE PROTECTION PARTNERSHIPS

## 2005 ANNUAL REPORT

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For additional information, please visit our Web sites at [www.epa.gov/cppd](http://www.epa.gov/cppd), [www.energystar.gov](http://www.energystar.gov), [www.epa.gov/methane](http://www.epa.gov/methane), and [www.epa.gov/highgwp](http://www.epa.gov/highgwp).

October 2006

I am pleased to present this report on EPA's climate change strategies at work. Through the efforts of EPA and our partners, we are successfully implementing the President's aggressive yet practical plan to dramatically reduce our nation's greenhouse gas emissions, while continuing to grow the American economy.

Whether running a business or a household, Americans are realizing that getting the most out of their energy dollars just makes sense. And by making smart energy choices, millions of people are saving billions of dollars each year. In fact, in 2005 alone, Americans, with the help of ENERGY STAR, saved \$12 billion on their energy bills, while preventing the greenhouse gas emissions equivalent to those from 23 million vehicles—the number of all the cars in California and Illinois combined.

As EPA partners with more states, businesses, and public utilities, investments in clean energy also continue to grow. In 2005, more than 600 of our Green Power partners purchased 4 million megawatt-hours of green power, and since 2001, our 170 Combined Heat and Power partners have installed 3,500 megawatts of clean energy capacity—demonstrating that the market for clean and renewable energy has never been stronger.

In addition, through our Climate Leaders program, EPA is encouraging individual companies to set corporate-wide greenhouse gas reduction goals, develop comprehensive long-term reduction strategies, and inventory their emissions to determine progress. In 2005, Climate Leaders grew to 78 corporate partners whose greenhouse gas emissions represent 8 percent of the U.S. total.

Finally, EPA's partners have significantly reduced their methane and other potent greenhouse gas emissions to well below 1990 levels. The reduction of non-CO<sub>2</sub> gases totaled 26 million metric tons of carbon equivalent in 2005, almost 16 percent of the total non-CO<sub>2</sub> emissions. Even as the economy grows, we expect our partners to continue fulfilling their environmental commitments by reducing their climate footprints in cost-effective ways.

Through ENERGY STAR and our other voluntary programs, EPA is encouraging consumers and businesses to reduce their greenhouse gas emissions, while contributing to a growing economy. By working with our partners, EPA is helping deliver America a brighter, healthier, and more prosperous future.

Sincerely,



Stephen L. Johnson  
Administrator  
U.S. Environmental Protection Agency

# EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency's (EPA's) climate protection partnership programs continue to play an important role in reducing emissions of greenhouse gases (GHGs) that contribute to global climate change. EPA's programs are well-designed efforts that address identified market barriers, accelerate the adoption of proven technologies and practices, and deliver substantial emissions reductions. Greater investments in energy efficiency, clean energy supply, and other climate-friendly technologies provide cost-effective, near-term means for protecting our global environment, in addition to combating higher utility bills and hedging against volatility in electricity and natural gas markets.

By 2005, these programs had more than a decade of success delivering environmental and economic results (see Table 1 and Figure 1). A diverse and growing set of partner organizations have delivered sizeable emissions reductions and made significant progress towards meeting the President's greenhouse gas intensity<sup>1</sup> reduction goal for 2012.

## Highlights of 2005

- The Administration's corporate leadership program, Climate Leaders, grew to 78 companies; about half of them have announced aggressive GHG reduction targets for the future; and five companies announced they had achieved previously set goals.
- Americans, with the help of ENERGY STAR, prevented greenhouse gas emissions equivalent to those from about 23 million vehicles and saved more than \$12 billion on their energy bills (see Figure 2), more than double the savings in 2000. The program is on track to more than double these benefits again in 10 years.
- Some 600 partners in the Green Power Partnership purchased more than 4 billion kilowatt-hours (kWh) of renewable energy as a strategy for demonstrating environmental leadership.
- EPA joined with 11 states in a new partnership to help state decisionmakers explore clean energy policies that can best meet state environmental and economic objectives.

- Utility regulators—together with utilities, EPA and DOE, and other key stakeholders—kicked off a new initiative, The National Action Plan for Energy Efficiency, to identify approaches to overcome many of the regulatory, policy, and information barriers that have hindered greater investment in energy efficiency.
- The domestic methane (CH<sub>4</sub>) programs exceeded their emissions reductions goals in 2005 and kept national methane emissions to well below 1990 levels.
- The partnerships focusing on high global warming potential (GWP) gases have kept national emissions levels to well below 1990 levels.

The environmental and economic benefits of many of EPA's climate partnership programs<sup>2</sup> as of 2005 are presented below and in Table 1:

- The partnership programs prevented 63 million metric tons (in MMTCE<sup>3</sup>) of greenhouse gas emissions in 2005, equivalent to the annual emissions from 42 million vehicles (see Figure 1).
- More than 800 MMTCE are being avoided through 2015 due to investments and actions already taken by partners in EPA's climate protection partnerships.
- Consumers and businesses have locked in investments in energy-efficient technologies exceeding \$38 billion.
- Net of their investment in energy-efficient technologies, consumers and businesses are saving \$130 billion cumulatively over the next 10 years, having saved about \$13 billion in 2005 alone.

These programs continue to be a cost-effective approach for reducing U.S. GHG emissions. Every federal dollar spent on these partnership programs through 2005 means:

- Reductions in greenhouse gas emissions of 1.0 metric ton of carbon equivalent (3.7 tons of carbon dioxide (CO<sub>2</sub>)).
- Savings for partners and consumers of more than \$75 on their energy bills.
- The creation of more than \$15 in private sector investment.
- A net addition of more than \$60 into the economy.

NOTE: The data source for all figures and tables in this 2005 Annual Report is EPA's Climate Protection Partnership Programs unless otherwise noted.

<sup>1</sup> Greenhouse gas intensity is the ratio of greenhouse gas emissions to economic output (measured by the gross domestic product). For more information on the Administration's goal, see <http://www.whitehouse.gov/news/releases/2002/02/climatechange.html>.

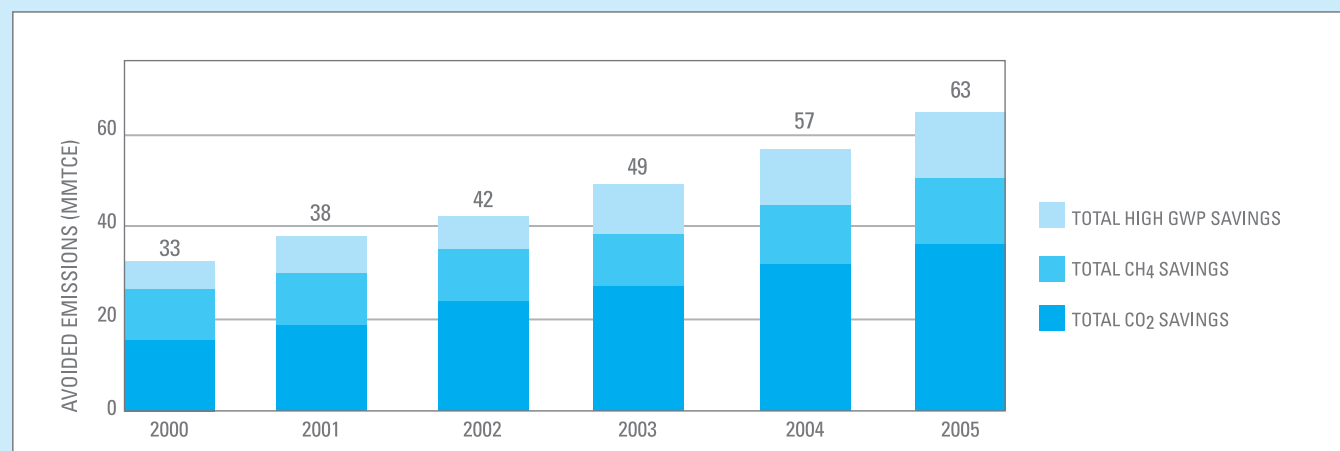
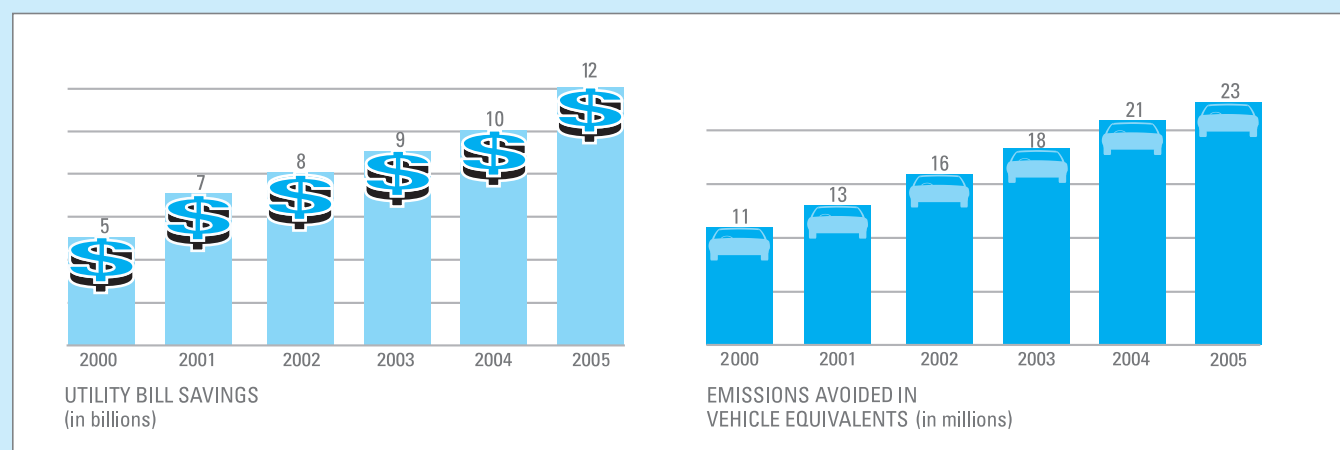
<sup>2</sup> This report provides results for the Climate Protection Partnership Programs operated by the Office of Atmospheric Programs at EPA. It does not include emissions reductions attributable to WasteWise, transportation programs, the Significant New Alternatives Program, or the landfill rule, which are the remaining actions in EPA's comprehensive climate program. EPA estimates the reduction in greenhouse gas emissions across the entire set of climate programs to be more than 86 MMTCE in 2005.

<sup>3</sup> Million metric tons of carbon equivalent (MMTCE). Reductions in annual greenhouse gas emissions for EPA's climate programs, including non-CO<sub>2</sub> gases, are based on "carbon equivalents," which are determined by weighting the reductions in emissions of a gas by its global warming potential for a 100-year time period.

**TABLE 1. BENEFITS FROM PARTNER ACTIONS IN 2005 AND CUMULATIVE BENEFITS THROUGH 2015 FROM PARTNER ACTIONS THROUGH 2005 (IN BILLIONS OF 2005 DOLLARS AND MMTCE)**

BENEFITS FOR 2005			CUMULATIVE BENEFITS 1993–2015			
PROGRAM	NET SAVINGS (BILLION \$)	EMISSIONS AVOIDED (MMTCE)	PV OF BILL SAVINGS (BILLION \$)	PV OF TECHNOLOGY EXPENDITURES (BILLION \$)	PV OF NET SAVINGS (BILLION \$)	EMISSIONS AVOIDED (MMTCE)
<b>ENERGY STAR Total</b>	<b>\$12.6</b>	<b>34.2</b>	<b>\$160.5</b>	<b>\$35.4</b>	<b>\$125.1</b>	<b>399</b>
Qualified Products and Homes	\$6.8	15.2	\$73.6	\$8.7	\$64.9	157
Buildings	\$4.6	14.8	\$69.9	\$24.5	\$45.5	167
Industry	\$1.2	4.2	\$16.9	\$2.3	\$14.7	74
Clean Energy Supply Programs	—	3.1	—	na	—	38
Methane Programs	\$0.4	14.2	\$7.7	\$2.8	\$4.9	209
High GWP Gas Programs	—	11.5	—	na	—	192
<b>TOTAL</b>	<b>\$13.0</b>	<b>63.0</b>	<b>\$168.2</b>	<b>\$38.2</b>	<b>\$130</b>	<b>838</b>

PV: Present Value  
NOTES: Technology Expenditures include O&M expenses for Methane Programs. Bill Savings and Net Savings include revenue from sales of methane and electricity. Totals may not equal sum of components due to independent rounding. For details on cumulative benefits, see page 67.  
—: Not applicable  
na: Not available

**FIGURE 1. MORE GREENHOUSE GAS EMISSIONS AVOIDED EACH YEAR THROUGH PARTNER ACTIONS****FIGURE 2. SINCE 2000, ENERGY STAR BENEFITS HAVE MORE THAN DOUBLED**

## Key Program Accomplishments for 2005

Key 2005 accomplishments for Climate Leaders, ENERGY STAR, Clean Energy Supply Programs, State and Local Programs, Methane Programs, and the High Global Warming Potential Gas Programs are provided below.

**Climate Leaders.** The number of Climate Leaders partners grew to 78, an increase of about 20 percent over 2004. By year end, half of the partners had announced GHG reduction goals; and were recognized in an EPA-sponsored public service announcement (PSA) that ran in 13 publications with a combined circulation of 5.2 million (see p. 5). In addition, five Climate Leaders partners met their initial GHG reduction goals, the first ones to do so since the program launch in 2002.

**ENERGY STAR.** Americans, with the help of ENERGY STAR, saved a significant amount of energy in 2005—150 billion kWh and 28 gigawatts (GW) of peak power, equivalent to the generation capacity of 50 new power plants. This energy savings represents an increase of about 20 percent over the prior year and more than a doubling since 2000. Accomplishments across the residential, commercial, and industrial sectors include:

- EPA, along with the U.S. Department of Energy (DOE) and U.S. Department of Housing and Urban Development (HUD), announced the new Partnerships for Home Energy Efficiency to coordinate and leverage their efforts with a goal of saving homeowners 10 percent on their energy bills by 2015.
- EPA introduced new ENERGY STAR specifications for external power adapters and updated specifications for air source heat pumps, central air conditioners, cordless phones, dehumidifiers, and light fixtures. Participation grew to over 1,500 manufacturers using the ENERGY STAR on a total of 35,000 individual product models across more than 50 different product categories.
- More than 500,000 ENERGY STAR qualified new homes have been constructed by more than 2,500 builder partners to date, locking in annual savings of \$120 million for homeowners. About one in ten new homes now qualify for the ENERGY STAR.
- Home Performance with ENERGY STAR, a new whole home audit and retrofit program offering homeowners significant energy bill savings, has expanded as states and utilities look for additional opportunities to achieve energy savings and reduce peak loads.
- EPA launched the ENERGY STAR Challenge, calling on businesses and institutions to reduce commercial building energy use by 10 percent or more. More than

half of the states and the District of Columbia (D.C.) along with over 20 major associations are participating in the Challenge. In addition, EPA recognized 20 organizations as ENERGY STAR Leaders for improving the energy performance of their building portfolios by 10, 20, or 30 points or more and for sharing how to meet or go beyond the ENERGY STAR Challenge goals. These efforts added to the growing momentum of EPA's whole building energy performance benchmarking system. By late 2005, about 26,000 buildings had been rated for energy performance, and more than 2,500 buildings across the nation had earned the ENERGY STAR label for superior energy performance.

- In the industrial sector, EPA continued to convene Industry Focuses to develop key energy management tools and improve energy efficiency in the automobile, brewing, cement, corn refining, food processing, glass manufacturing, pharmaceutical, petroleum, and water/wastewater industries.

**Clean Energy Supply.** EPA's clean energy supply programs grew in the number of partners involved, in the number of clean energy projects installed, and in emissions avoided.

- The Combined Heat and Power Partnership grew to 170 partners and has helped facilitate CHP projects totaling 3,500 megawatts (MW) of CHP capacity.
- Since its inception in 2001, the number of Green Power partners has increased to over 600 organizations that have made a combined commitment to purchase more than 4 million megawatt-hours (MWh) of green power annually.

**State and Local Government Programs.** EPA initiated new efforts that reflect the needs of state officials and encouraged them to develop and implement clean energy strategies. These efforts include:

- A new Clean Energy-Environment State Partnership rolled out with 11 state charter partners.
- A final draft of a new *Clean Energy and Environment Guide to Action*, which identifies and describes 16 clean energy policies and strategies that states have used to meet their clean energy objectives.
- A new effort, in partnership with DOE, to bring utility regulators together with utilities and other key stakeholders to identify sound business approaches for expanding investment in energy efficiency and to develop a National Action Plan for Energy Efficiency.

**Methane and High Global Warming Potential (GWP) Gas Programs.** EPA's programs for the more potent greenhouse gases continued to grow in the breadth of their partnerships and emissions avoided.

**EPA RECOGNITION FOR CLIMATE LEADERS PARTNERS WITH ANNOUNCED GHG REDUCTION GOALS IN 2005**

Total circulation of 5.2 million in 13 publications

3M

- Advanced Micro Devices, Inc.
- American Electric Power
- Ball Corporation
- Baltimore Aircoil Company
- Bank of America Corporation
- Baxter International
- Calpine
- Caterpillar Inc.
- Cinergy Corp.
- The Collins Companies
- Eastman Kodak Company
- EMC Corporation
- Exelon Corporation
- First Environment, Inc.
- FPL Group, Inc.
- Frito Lay, Inc.
- Gap Inc.
- General Electric Company
- General Motors Corporation
- Green Mountain Energy Company
- Hasbro, Inc.
- Haworth, Inc.
- Holcim (US) Inc.
- IBM Corporation
- Interface, Inc.
- International Paper
- Johnson & Johnson
- Lockheed Martin Corporation
- Mack Trucks, Inc.
- Marriott International, Inc.
- Melaver, Inc.
- Miller Brewing Company
- National Renewable Energy Laboratory
- Oracle Corporation
- Pfizer, Inc.
- PSEG
- Roche Group US Affiliates
- SC Johnson
- Staples, Inc.
- St. Lawrence Cement
- STMicrosystems, Inc.
- Sun Microsystems, Inc.
- United Technologies Corporation
- Volvo Trucks North America
- Xerox Corporation



EPA congratulates these corporate leaders for setting goals to reduce billions of pounds of greenhouse gas emissions. It's the equivalent of eliminating the annual emissions of 5 million cars. Now, that's a healthy diet which can benefit us all. To learn how your company can become a Climate Leader, go to [www.epa.gov/climateleaders](http://www.epa.gov/climateleaders).



- The reduction of non-CO<sub>2</sub> gases totaled nearly 26 MMTCE in 2005. EPA's voluntary methane partnerships, in conjunction with a regulatory program to limit air emissions from the nation's largest landfills, kept national methane emissions to well below 1990 levels. Public-private industry partnerships are also substantially reducing U.S. emissions of the high global warming potential (GWP) gases released as byproducts of industrial operations. High GWP gas emissions and methane emissions are projected to remain well below 1990 levels through the year 2012.

**International Climate Protection Awards.** EPA, working with a team of reviewers from around the world, recognized 13 leading organizations and individuals for their leadership in addressing global climate change issues (see p. 63).

## 2006 AND BEYOND

As EPA expands these programs and partnerships, the resulting environmental benefits are expected to nearly double in the next 10 years, from 63 MMTCE in 2005 to almost 120 MMTCE in 2015 (see Table 2 and Figure 3), with continued funding at current levels. For 2006 and beyond, EPA's near-term plans for the key partnership program areas are summarized below:

**Climate Leaders.** Approach the 100 partner milestone, of which about half will have publicly stated their GHG reduction goals.

**ENERGY STAR.** Make major advancements across the residential, commercial, and industrial sectors including:

- Continuing efforts to maintain the integrity of the ENERGY STAR name and logo, as required under the Energy Policy Act of 2005 among other laws, and providing a new report on these efforts.
- Working with manufacturers, retailers, home builders and raters, utilities, and states in broad education on the benefits of ENERGY STAR qualified products, new homes, and commercial buildings.
- Adding battery chargers to the ENERGY STAR family of products; updating ENERGY STAR specifications for five or more products; and implementing a more stringent specification for ENERGY STAR qualified new homes, the first major revision since the mid 1990s.
- Expanding Home Performance with ENERGY STAR to new regions of the country and developing a new energy service program for quality installation of heating and cooling systems.

- Increasing energy savings in the commercial and industrial sector by engaging more organizations and associations in the ENERGY STAR Challenge, the EPA building benchmarking system, and recognition opportunities; expanding partnerships with the industrial sector by convening more than 10 sector-specific Industry Focuses; developing Energy Performance Indicators (EPIs) and other technical assistance tools; making the ENERGY STAR label available to energy-efficient industrial facilities for which EPIs have been developed; and broadly encouraging energy management as a strategic business issue.

- Renewing the ENERGY STAR agreement with the European Union, through which the revised specifications for computers and imaging equipment would be adopted.

**Clean Energy Supply.** Assist partners of the Combined Heat and Power Partnership with more than 30 new CHP projects, facilitating the development of over 800 MW of new CHP capacity; and engage 50 new organizations in the Green Power Partnership, bringing the total to more than 650 partners and increasing green power purchasing commitments.

**State and Local Government Programs.** Assist state decisionmakers by:

- Releasing the final *Clean Energy and Environment Guide to Action* to help states take advantage of the environmental and economic benefits that clean energy offers.
- Adding two to three new partners to the Clean Energy-Environment State Partnership Program.
- Facilitating the National Action Plan for Energy Efficiency in conjunction with DOE. Key milestones include the development and release of major recommendations and the announcement by the Leadership Group and others of the actions they will take to advance energy efficiency in their areas of business.

**Methane and High Global Warming Potential (GWP) Gas Programs.** Continue:

- Working aggressively with existing partner companies to expand their methane emissions reduction projects within their companies and maintain overall methane emissions below 1990 levels.
- Implementing agreements to reduce greenhouse gas intensity for the aluminum, magnesium, and semiconductor sectors as part of the Climate VISION initiative (see Table 3).

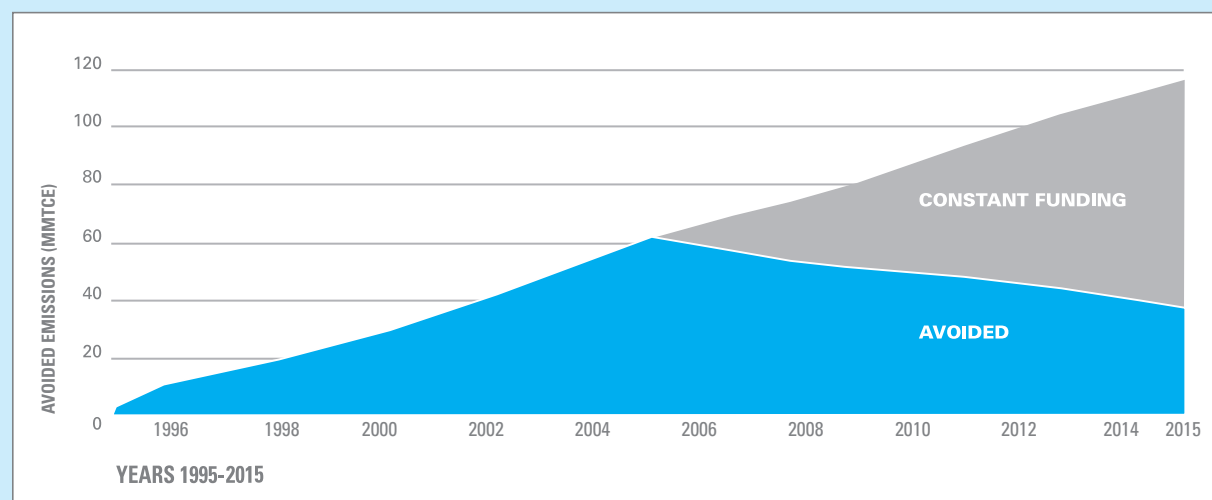


**TABLE 2. GREENHOUSE GAS REDUCTION GOALS FOR EPA CLIMATE PARTNERSHIP PROGRAMS OVER THE NEXT 10 YEARS (MMTCE)**

PROGRAM*	ACCOMPLISHMENTS	GOALS	
		2012	2015
	2005	2012	2015
ENERGY STAR**	34.2	52	64
Clean Energy Supply Programs	3.1	8	12
Methane Programs	14.2	18	20
High GWP Programs	11.5	19	22
<b>TOTAL</b>	<b>63</b>	<b>97</b>	<b>118</b>

\* This report provides results for the Climate Protection Partnership Programs operated by the Office of Atmospheric Programs at EPA. It does not include emissions reductions attributable to WasteWise, transportation programs, the Significant New Alternatives Program, or the landfill rule, which are the remaining actions in EPA's comprehensive climate program. EPA estimates the reduction in greenhouse gas emissions across the entire set of climate programs to be more than 86 MMTCE in 2005.

\*\* Does not include ENERGY STAR products managed by DOE.

**FIGURE 3. EPA CLIMATE PARTNERSHIP PROGRAMS CAN NEARLY DOUBLE EMISSIONS AVOIDED BY 2015**

NOTE: Historical totals updated based on most recent data available.

**TABLE 3. CLIMATE VISION\* GOALS FOR EPA'S HIGH GWP GAS PROGRAMS**

EPA PROGRAM	CLIMATE VISION GOAL
Voluntary Aluminum Industrial Partnership (VAIP)	Has committed to achieving a direct carbon intensity reduction of 53% from 1990 levels by 2010.
The SF <sub>6</sub> Emission Reduction Partnership for the Magnesium Industry	Has committed to eliminating SF <sub>6</sub> emissions by 2010.
The PFC Reduction/Climate Partnership for the Semiconductor Industry	Has committed to reducing absolute perfluorocompound (PFC) emissions by 10% below the 1995 baseline level by the end of 2010.

\* Voluntary Innovative Sector Initiatives: Opportunities Now

# INTRODUCTION

EPA's climate protection partnership programs promote successful strategies and practical solutions to help Americans reduce energy use, save money, and protect the environment. These programs have produced sizeable benefits over more than 10 years throughout the commercial, industrial, and residential sectors due to the efforts of thousands of committed partners. These programs play an important role in efforts to achieve President Bush's goal of an 18-percent reduction in greenhouse gas intensity by 2012 and are more important than ever as rising energy prices become a major concern for U.S. businesses and consumers.

Greater investments in energy efficiency, clean energy, and other climate-friendly technologies provide a cost-effective, near-term means to protect our global environment and, in many cases, to combat higher utility bills and hedge against volatility in electricity and natural gas markets. EPA's suite of climate protection partnership programs is designed to overcome existing market barriers that limit greater investment in these technologies and practices by providing objective information and technical assistance to partners and the public and recognition for environmental leadership to those organizations taking measurable steps to reduce their greenhouse gas (GHG) emissions (see Table 4). The programs summarized in this report<sup>4</sup> focus on the following opportunities:

## Corporate Commitments for Managing GHG Emissions

Climate Leaders—most of which are major corporations and industry leaders—are earning recognition for their environmental stewardship and leadership in helping the country reach its greenhouse gas intensity reduction goal. These companies have committed to aggressively reducing their impact on the global environment by completing a comprehensive inventory of their greenhouse gas emissions, setting ambitious long-term reduction goals, and systematically reporting their progress to EPA. To meet these targets, the Climate Leaders make investments in three areas—energy efficiency, clean energy, and emissions reductions in the non-carbon dioxide (CO<sub>2</sub>) greenhouse gases.



## Energy Efficiency

Energy efficiency—obtaining the identical services or output (e.g., heating, cooling, and lighting) for less energy input—is a proven means of producing immediate and measurable environmental and financial benefits. For more than a decade, EPA has promoted cost-effective investments to improve energy efficiency at work and at home through the ENERGY STAR program. Energy efficiency helps the nation:



- Avoid carbon dioxide (CO<sub>2</sub>) emissions, the primary greenhouse gas (see Figure 4).
- Save on energy bills through cost-effective investments in energy-efficient products and services that offer businesses and households savings of up to 20 to 30 percent.
- Improve electricity reliability and lower the volatility of energy prices.

## Clean Energy Supply

EPA has joined with numerous organizations to promote greater purchase of electricity derived from renewable energy and greater investment in combined heat and power. In each of these efforts, EPA is collaborating with partners to minimize transaction costs, provide technical assistance, and encourage greater use of technologies that significantly reduce greenhouse gas emissions from energy generation.



## State Energy Policies

EPA works with state and local energy policymakers to explore the role that a variety of clean energy policies can play in meeting environmental and economic objectives. EPA provides state and local government agencies with information and resources to support the evaluation and implementation of these policies.



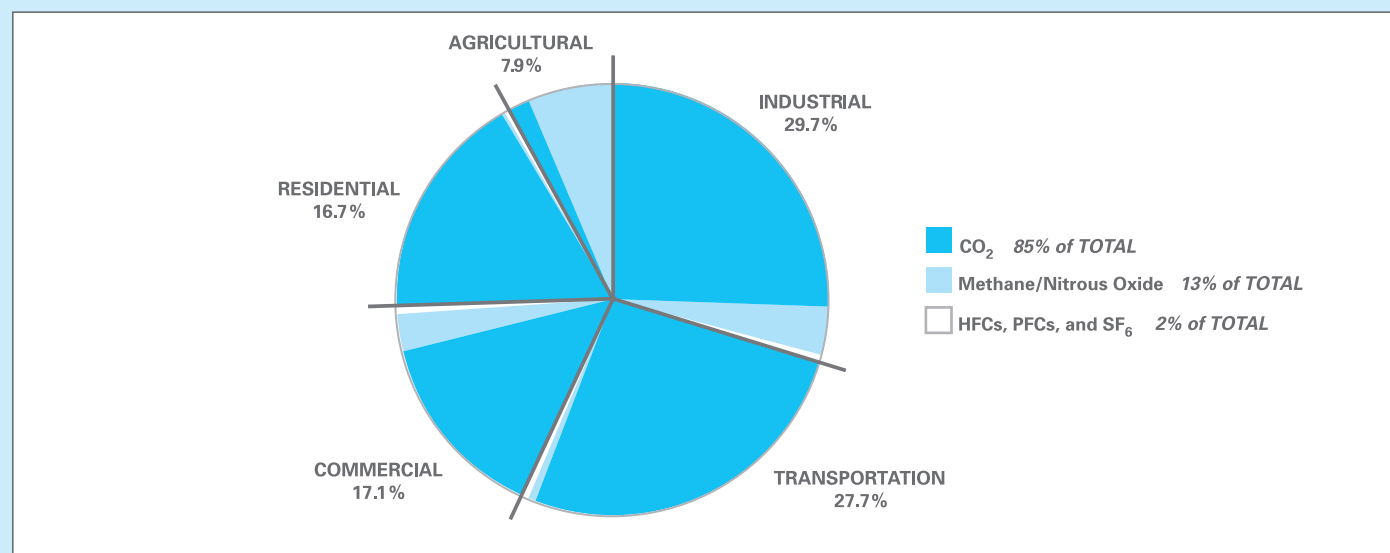
<sup>4</sup> This report provides results for the Climate Protection Partnership Programs operated by the Office of Atmospheric Programs at EPA. It does not include emissions reductions attributable to WasteWise, transportation programs, the Significant New Alternatives Program, or the landfill rule, which are the remaining actions in EPA's comprehensive climate program. EPA estimates the reduction in greenhouse gas emissions across the entire set of climate programs to be more than 86 MMTCE in 2005.

**TABLE 4. MARKET BARRIERS ADDRESSED BY EPA'S CLIMATE PARTNERSHIP PROGRAMS**

AUDIENCE OR TARGET MARKET	MARKET BARRIERS ADDRESSED	CLIMATE PROTECTION PARTNERSHIP PROGRAM			
		CLIMATE LEADERS	ENERGY STAR	GREEN POWER	COMBINED HEAT AND POWER
Energy Consumers	Lack of information about energy efficiency options		●		●
	Competing claims in the marketplace		●	●	
	Accessing objective measurement tools	●	●		
	Minimizing transaction costs	●	●	●	●
	Reliable technical assistance	●	●	●	●
	Peer exchange opportunities	●	●	●	●
	Overcoming split incentives		●		
	Understanding organizational risks	●	●		
	Incentives for action through recognition	●	●	●	●
Utilities	Accessing objective measurement tools	●	●	●	●
	Lack of information about energy efficiency program costs and benefits		●		●
	Disincentives for energy efficiency in existing regulations and energy planning processes				
Industries with Byproduct GHG Emissions *	Reliable technical assistance				
	Peer exchange opportunities				
	Incentives for action through recognition				
State Policy and Decisionmakers	Lack of information about clean energy policies				
	Reliable technical assistance				
	Incentives for action through recognition				

\* Includes utilities.

**FIGURE 4. U.S. GREENHOUSE GAS EMISSIONS BY SECTOR AND GAS**



NOTE: Totals may not add to 100% due to independent rounding.

Source: EPA 2006

## Non-CO<sub>2</sub> GHG Emissions Reductions

EPA's climate partnerships are substantially reducing U.S. emissions of methane and other high global warming potential (GWP) gases released as byproducts of industrial operations.

- Methane (CH<sub>4</sub>) is a much sought-after clean fuel; at the same time, it is a potent greenhouse gas. When methane emissions can be captured cost-effectively, the recovered methane represents a valuable energy source that can be used or sold. EPA works with the natural gas, coal mining, and landfill gas development industries to help them capture and use methane wherever cost-effective.



- Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>) are all potent greenhouse gases; on a molecule per molecule basis they have a greater ability than CO<sub>2</sub> to trap heat in the earth's atmosphere. Various U.S. industries—including aluminum, magnesium, semiconductor, electric utilities, and those engaged in mobile air conditioning—are working with EPA to avoid significant accumulation of these long-lived, high GWP gases in the atmosphere.



## The Benefits of Partnering

The thousands of businesses and organizations that have joined EPA's climate partnership programs are seizing numerous opportunities to reduce the environmental impacts of their own and their customers' activities and thereby serve as environmental leaders. Every year the benefits of these programs grow as a result of partner actions and investments (see Table 5).

This 2005 Annual Report provides detailed information on each of the program areas mentioned in this introduction and summarized at right, including program overviews, environmental and economic benefits achieved in 2005, and goals for the future. EPA makes it a priority to achieve quantifiable program results and uses well-established methods to estimate the environmental and economic benefits of its climate partnership programs. Specific approaches vary by program depending on program strategy, sector, market size and structure, and the availability of data (see pages 42, 43, 46, 59, and 63). For each program, EPA addresses common issues that arise when estimating program benefits, such as data quality, double counting, mitigating free-ridership, and accounting for market effects, among others. The information presented in this report is similar to much of the information used in the U.S. Office of Management and Budget (OMB) Program Assessment Rating Tool (PART) evaluation, which found these EPA programs to be achieving their goals.

**TABLE 5. OVERVIEW OF EPA CLIMATE PARTNERSHIP PROGRAMS REVIEWED IN THIS ANNUAL REPORT WITH GREENHOUSE GAS REDUCTIONS SINCE 2000**

PROGRAM	GHGs ADDRESSED	KEY SECTOR(S)	SCOPE OF PARTNERS AS OF 2005	GHG REDUCTIONS (MMTCE)					
				2000	2001	2002	2003	2004	2005
Climate Leaders	All	Commercial, Industrial	78	Climate Leaders' reductions are reflected in the data shown for other programs.					
ENERGY STAR	CO <sub>2</sub>	Residential, Commercial, Industrial	8,000	15.4	18.6	22.7	26.6	30.5	34.2
Clean Energy-Environment State Partnership	CO <sub>2</sub>	State Government	11	New in 2005					
<b>CLEAN ENERGY SUPPLY</b>									
Green Power	CO <sub>2</sub>	Commercial, Industrial	600	N/A	N/A	0.5	1.0	2.0	3.1
Combined Heat and Power	CO <sub>2</sub>	Commercial, Industrial	170						
<b>METHANE PROGRAMS</b>									
Natural Gas STAR	CH <sub>4</sub>	Natural Gas	56% of industry	4.1	5.0	5.8	5.9	6.7	7.5
Coalbed Methane Outreach Program (CMOP)	CH <sub>4</sub>	Coal Mining	N/A	1.6	1.7	1.9	1.7	1.8	2.2
Landfill Methane Outreach Program (LMOP)	CH <sub>4</sub>	Waste Management	490	3.2	3.7	3.9	4.1	4.4	4.5
<b>HIGH GWP GAS PROGRAMS</b>									
Voluntary Aluminum Industrial Partnership	PFCs	Aluminum Smelting	98% of industry	2.0	2.1	1.8	2.2	2.2	2.3
HFC-23 Partnership	HFCs	Chemical Industry	100% of industry	4.7	5.1	4.5	6.1	6.4	6.2
Stewardship Programs	SF <sub>6</sub> PFCs	Magnesium Production, Semiconductor Manufacturing, Electric Power Systems	50%–100% of industry	0.8	0.8	1.3	1.8	3.1	3.0
Mobile Air Conditioning (MAC) Partnership	CO <sub>2</sub> HFCs	MAC Industry	N/A	Working toward technology improvement goals					

NOTE: Historical totals updated based on most recent data available.  
N/A: Not applicable.

# CLIMATE LEADERS

## Corporate Commitments to Emissions Reductions

Since 2002, the Climate Leaders program has provided valuable guidance



and recognition to leading companies across many industries to help them develop and implement long-term comprehensive climate change strategies. By joining the partnership, these companies commit to completing a comprehensive inventory of their greenhouse gas emissions, setting aggressive long-term reduction goals, and reporting their progress to EPA using clear measurement protocols.

Companies use EPA's tools, expertise, and resources to make informed decisions about cost-effective strategies and practical portfolio investments in energy efficiency, clean energy, and non-CO<sub>2</sub> emissions reductions. EPA continuously tracks progress through a variety of means, and EPA ensures the credibility of reported data through detailed data reviews and site visits.

Climate Leaders partners have made substantial progress in the 4 years since the program was launched (see Table 6). By the end of 2005, five partners had achieved their initial Climate Leaders reduction goals, many companies had established emissions reductions goals, and many new companies had joined.

### Achievements in 2005

- The number of Climate Leaders partners grew to 78, an increase of about 20 percent in just one year, with the addition of 14 new corporate partners. These companies represent approximately 8 percent of U.S. GHG emissions.
- Five partners met their initial Climate Leaders GHG reduction goals, the first ones to do so since the program was launched in 2002 (see Table 7). Once companies reach their initial targets, they will continue working with EPA to establish new goals.

- The total number of corporate GHG goals announced through 2005 grew to 38, including the 13 organizations that announced new GHG reduction goals last year (see Table 8). About half of the companies in the partnership now have publicly announced GHG goals.
- EPA estimates that GHG reductions by Climate Leaders partners will prevent more than 9 million metric tons of carbon equivalent per year relative to typical improvement activities. These reductions are equivalent to the annual emissions of more than 6 million vehicles.
- Sixty partners submitted initial GHG inventories to EPA, a necessary step for many organizations prior to establishing an emissions reduction goal. EPA technical experts performed 30 site visits to review partner GHG inventories and Inventory Management Plans and recommend improvements.
- EPA issued the first edition of the *Climate Leaders Design Principles* and released sector-specific inventory protocols, Inventory Management Plan tools, and draft offset protocols to provide rigorous yet flexible accounting principles and help companies manage their GHG emissions.
- EPA recognized those partners that have set emissions reduction goals through a public service announcement (PSA) that ran in 13 publications with a combined circulation of more than 5.2 million (see p. 5).

### What to Expect in 2006 and Beyond

EPA's Climate Leaders program expects to welcome 20 additional Climate Leaders partners each year, approaching the milestone of 100 Climate Leaders in 2006, and to announce 20 new corporate GHG reduction targets each year. Three more companies are poised to achieve their corporate climate change goals in 2006, and EPA will collaborate with these partners to develop new corporate recognition opportunities for companies that achieve major milestones. EPA technical experts will field-test and finalize inventory guidance for GHG emissions offset projects as well as expand the types of projects for which offset protocols are available.

**TABLE 6. CLIMATE LEADERS KEY PROGRAM INDICATORS FOR 2004 AND 2005**

CLIMATE LEADERS INDICATORS	2004 CUMULATIVE	2005 CUMULATIVE
Partners	64	78
Initial Inventories Submitted	45	60
Site Visits	9	30
Goals Announced	25	38
Goals Accomplished	0	5

**TABLE 7. FIVE CLIMATE LEADERS ACHIEVE THEIR CLIMATE PROTECTION GOALS IN 2005**

PARTNER	GOAL ACHIEVED
Baxter International, Inc.	Met its goal to reduce U.S. greenhouse gas emissions by 16 percent per unit of production value.
General Motors Corporation	Met its goal to reduce total greenhouse gas emissions by 10 percent for all North American facilities.
IBM Corporation	Met its goal to reduce average annual CO <sub>2</sub> emissions associated with global energy use by 4 percent per year through 2005. In addition, IBM Corporation met its goal to reduce total perfluorocompound (PFC) emissions from semiconductor manufacturing processes by 10 percent.
National Renewable Energy Laboratory	Met its goal to reduce U.S. greenhouse gas emissions by 10 percent per square foot.
SC Johnson	Met its goal to reduce U.S. greenhouse gas emissions by 23 percent per pound of product.

**TABLE 8. THIRTEEN MORE CLIMATE LEADERS SET AGGRESSIVE CLIMATE PROTECTION GOALS FOR A TOTAL OF 38**

PARTNER	GOAL ANNOUNCED
Caterpillar Inc.	Reduce global GHG emissions by 20 percent per dollar revenue from 2002 to 2010
Frito-Lay	Reduce U.S. GHG emissions by 14 percent per pound of production from 2002 to 2010
Green Mountain Energy	Achieve net zero U.S. GHG emissions by 2005 and maintain that level through 2009
Melaver	Achieve net zero U.S. GHG emissions by 2006 and maintain that level through 2009
Calpine	Reduce U.S. GHG emissions by 4 percent per megawatt hour from 2003 to 2008
Xerox	Reduce total global GHG emissions by 10 percent from 2002 to 2012
Staples	Reduce total U.S. GHG emissions by 7 percent from 2001 to 2010
Gap, Inc	Reduce U.S. GHG emissions by 11 percent per square foot from 2003 to 2008
Bank of America	Reduce total U.S. GHG emissions by 9 percent from 2004 to 2009
Exelon	Reduce total U.S. GHG emissions by 8 percent from 2001 to 2008
General Electric	Reduce total global GHG emissions by one percent from 2004 to 2012
Sun Microsystems	Reduce total U.S. GHG emissions by 20 percent from 2002 to 2012
Marriott International	Reduce U.S. GHG emissions by 6 percent per available room from 2004 to 2010

# ENERGY STAR OVERVIEW

Investing in energy efficiency is a strategic decision with many benefits—saving money on utility bills, avoiding emissions of criteria air pollutants and greenhouse gases, increasing domestic energy reliability, and ensuring a more balanced energy future. Since it was first introduced by EPA in 1992 for energy-efficient computers, the ENERGY STAR program has grown steadily in terms of the energy efficiency solutions it offers, the breadth of the organizations engaged in the partnership, and the benefits delivered. And since 1996, the U.S. Department of Energy (DOE) has joined with EPA to assume specific ENERGY STAR program responsibilities. In 2005, ENERGY STAR was specifically recognized in the Energy Policy Act of 2005, which provides additional authorizing language beyond Section 103(g) of the Clean Air Act and other existing authorities (see sidebar on p. 16).



ENERGY STAR has made tremendous progress in overcoming informational, institutional, and practical obstacles to greater investment in energy-efficient technologies and practices. Even with the progress made to date, numerous opportunities still exist for cost-effective energy efficiency investments in the residential, commercial, and industrial sectors. Faced with the challenge of rising energy prices, the nation's need for expanding investment in energy efficiency is more critical than ever.

The ENERGY STAR program enables decisionmakers to clearly identify the products, practices, services, homes, and buildings that offer energy savings. ENERGY STAR strategies have already resulted in substantial cost savings for businesses and consumers, while diminishing the market barriers that remain.

## Achievements in 2005

- More than \$12 billion saved by Americans on utility bills across the residential, commercial, and industrial sectors (see Table 1 on 2005 benefits, p. 3)

- 150 billion kilowatt hours (kWh) of energy saved, or about 4 percent of the total 2005 electricity demand, and 28 gigawatts (GW) of peak power avoided, equivalent to the generation capacity of 50 new power plants
  - More than 34 million metric tons of greenhouse gas emissions avoided, equivalent to the GHG emissions from about 23 million vehicles (see Table 9)
  - More than 2 billion ENERGY STAR qualified products purchased,<sup>5</sup> spanning significant numbers of computers, other office equipment, lighting, consumer electronics, and other products (see Figure 5)
  - More than half a million ENERGY STAR qualified new homes built, with about one in ten new homes in 2005 earning the ENERGY STAR
  - Billions of square feet of building space improved
  - More than 60 percent awareness of the ENERGY STAR label among people in the United States
  - More than 4 million visitors to the ENERGY STAR Web site, while media articles mentioning ENERGY STAR qualified products, homes, and buildings had a reach of more than 1.1 billion consumers in 2005 (see Figure 6)
  - 75 leading organizations recognized by EPA and DOE through ENERGY STAR annual awards (see p. 19)
- The ENERGY STAR program now engages more than 8,000 manufacturers, retailers, service providers, home builders, energy consumers, and others to advance energy-efficient products and services that lower energy bills and benefit the environment. These partners include:
- About 1,500 manufacturers using the ENERGY STAR to distinguish the superior energy efficiency of more than 35,000 individual product models across more than 50 product categories, many carrying the brand names that today's consumers prefer. These products offer consumers savings that range from 5 to 90 percent relative to standard models and up to 30 percent savings in total on their household energy bills (see Table 12, p. 18).
  - More than 800 retail partners bringing ENERGY STAR qualified products and educational information to their customers, representing a more than 45 percent increase over 2004.

<sup>5</sup> This cumulative total includes product sales across the entire ENERGY STAR program, including those resulting from the efforts of the Department of Energy. The results for energy saved and the resulting environmental and economic benefits represent EPA efforts alone.



**TABLE 9. ENERGY STAR PROGRAM ACHIEVEMENTS EXCEED GOALS IN 2005**

	2005				2006	
	ENERGY SAVED (BILLION KWH)		EMISSIONS AVOIDED (MMTCE)		ENERGY SAVED (BILLION KWH)	EMISSIONS AVOIDED (MMTCE)
	GOAL	ACHIEVED	GOAL	ACHIEVED	GOAL	GOAL
All Qualified Products <sup>1</sup>	—	68.3	13.0	14.9	—	14.5
Commercial Building Improvements <sup>2</sup>	—	71.7	10.5	14.8	—	11.5
New Homes <sup>3</sup>	—	1.0	0.3	0.3	—	0.5
Industrial Improvements <sup>4</sup>	—	10.2	3.5	4.2	—	3.7
<b>PROGRAM TOTAL for ENERGY STAR</b>	<b>116.8</b>	<b>151.2<sup>5</sup></b>	<b>27.3</b>	<b>34.2</b>	<b>130.0</b>	<b>30.2</b>
<b>ACHIEVEMENTS BY PRODUCT TYPE</b>						
	ENERGY SAVED 2005 (BILLION KWH)			EMISSIONS AVOIDED 2005 (MMTCE)		
Consumer Electronics <sup>6</sup>	9.3			1.9		
Residential Appliances <sup>7</sup>	0.6			0.1		
Residential Office Equipment	9.5			1.9		
Lighting	7.0			1.4		
Heating and Cooling	3.8			1.8		
<b>All Residential Products</b>	<b>30.2</b>			<b>7.2</b>		
Commercial Appliances	0.9			0.2		
Office Equipment	34.6			7.0		
Commercial Lighting	1.5			0.3		
Other	1.1			0.2		
<b>All Commercial Products</b>	<b>38.2</b>			<b>7.7</b>		

<sup>1</sup> Results for qualified products from Webber et al., 2006.

<sup>2</sup> Results from building improvements based on methodology presented in Horowitz, 2004.

<sup>3</sup> Results for qualified homes from CPPD, 2006.

<sup>4</sup> Results from industrial improvements from ICF International, 2006.

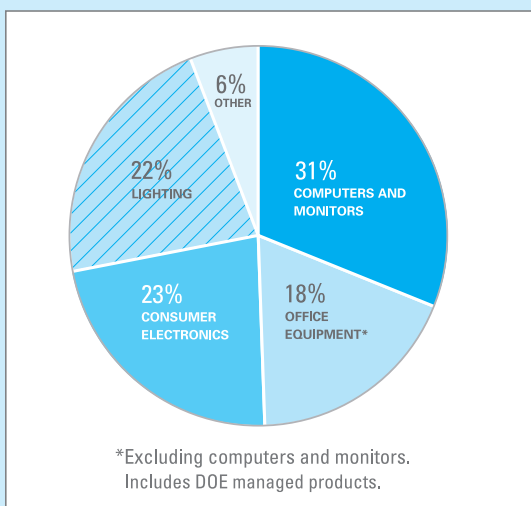
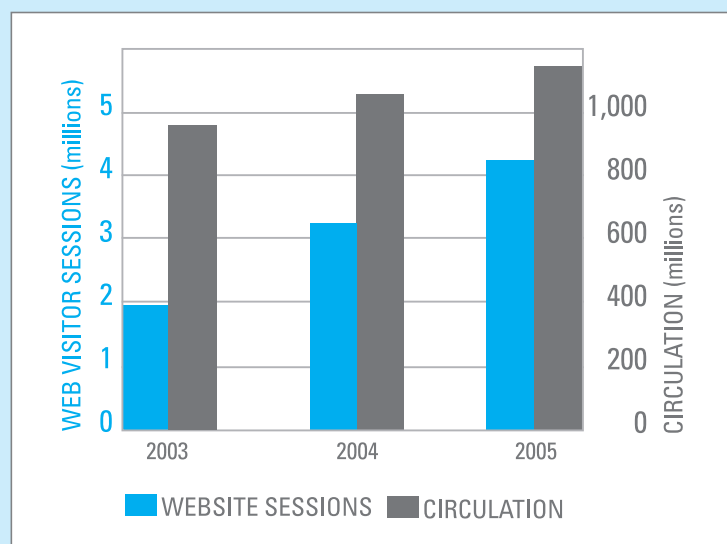
<sup>5</sup> The kWh savings imply peak demand savings of more than 28 gigawatts (GW), based on conservation load factors developed by LBNL (Kooimey et al., 1990).

<sup>6</sup> A small portion of consumer electronics may be used in commercial buildings such as hotels. For reporting purposes, all consumer electronics results are included under Residential Products.

<sup>7</sup> EPA results only, does not include products under the responsibility of DOE.

Totals may not equal sum of components due to independent rounding.

— : Not applicable

**FIGURE 5. OVERVIEW OF THE PRODUCTS CONTRIBUTING TO 2 BILLION PURCHASES OF ENERGY STAR PRODUCTS SINCE 1992****FIGURE 6. REACHING MORE CONSUMERS WITH THE ENERGY STAR MESSAGE THROUGH PRINT MEDIA AND THE WEB**

- More than 2,500 builder partners constructing new homes that qualify for the ENERGY STAR in every state and the District of Columbia—saving homeowners money while maintaining high levels of comfort.
- About 2,500 private businesses and public sector organizations investing in energy efficiency and reducing energy use in their buildings and facilities.
- More than 30 states and more than 450 utilities and other energy efficiency program sponsors leveraging ENERGY STAR to improve the efficiency of government buildings and lower energy use among their customers.
- Hundreds of energy service providers, energy raters, architects and building engineers, and financial lenders partnering with ENERGY STAR to make energy efficiency more widely available to consumers and businesses.

The program is also growing internationally. EPA has engaged with government agencies in a number of countries to promote certain ENERGY STAR qualified products. These partnerships are intended to unify voluntary energy efficiency labeling programs in major global markets and make it easier for partners to participate by providing a single set of energy efficiency qualifications, instead of a patchwork of varying country-specific requirements. The international partners include Australia, Canada, the European Union, Japan, New Zealand, and Taiwan.

The ENERGY STAR program has grown substantially—more products introduced, more specifications revised, additional programs for specific industries, more partners involved, and greater environmental and economic benefits for all. Highlights since the year 2000 are presented on page 17 in Table 10 and Table 11. Additional program achievements within the residential, commercial, and industrial sectors are presented in the sections that follow.

#### ENERGY STAR PROGRAM PROVIDED ADDITIONAL AUTHORITIES UNDER EPACT 2005 (SECTION 131)

- (a) In General- There is established within the Department of Energy and the Environmental Protection Agency a voluntary program to identify and promote energy-efficient products and buildings in order to reduce energy consumption, improve energy security, and reduce pollution through voluntary labeling of, or other forms of communication about, products and buildings that meet the highest energy conservation standards.
- (b) Division of Responsibilities- Responsibilities under the program shall be divided between the Department of Energy and the Environmental Protection Agency in accordance with the terms of applicable agreements between those agencies.
- (c) Duties- The Administrator and the Secretary shall-
  - (1) promote ENERGY STAR compliant technologies as the preferred technologies in the marketplace for--
    - (A) achieving energy efficiency; and
    - (B) reducing pollution;
  - (2) work to enhance public awareness of the ENERGY STAR label, including by providing special outreach to small businesses;
  - (3) preserve the integrity of the ENERGY STAR label;
  - (4) regularly update ENERGY STAR product criteria for product categories;
  - (5) solicit comments from interested parties prior to establishing or revising an ENERGY STAR product category, specification, or criterion (or prior to effective dates for any such product category, specification, or criterion);
  - (6) on adoption of a new or revised product category, specification, or criterion, provide reasonable notice to interested parties of any changes (including effective dates) in product categories, specifications, or criteria, along with-
    - (A) an explanation of the changes; and
    - (B) as appropriate, responses to comments submitted by interested parties; and
  - (7) provide appropriate lead time (which shall be 270 days, unless the Agency or Department specifies otherwise) prior to the applicable effective date for a new or a significant revision to a product category, specification, or criterion, taking into account the timing requirements of the manufacturing, product marketing, and distribution process for the specific product addressed.

**TABLE 10. ENERGY STAR PROGRAM GROWTH SINCE 2000**

The ENERGY STAR Program has been substantially expanded since the end of 2000. Important program efforts include:

<p><b>Adding more than 15 new products to the ENERGY STAR family, with more under development.</b></p> <ul style="list-style-type: none"> <li>• Ceiling fans</li> <li>• Commercial fryers</li> <li>• Commercial hot food holding cabinets</li> <li>• Commercial solid door refrigerators and freezers</li> <li>• Commercial steam cookers</li> <li>• Cordless phones</li> <li>• Dehumidifiers</li> <li>• External power adapters</li> <li>• Geothermal heat pumps</li> <li>• Light commercial HVAC</li> <li>• Room air cleaners</li> <li>• Vending machines</li> <li>• Ventilating fans</li> </ul>	<p><b>Updating ENERGY STAR specifications to more efficient levels for more than 20 products, with more underway.</b></p> <ul style="list-style-type: none"> <li>• Ceiling fans</li> <li>• Central air conditioners and air source heat pumps</li> <li>• Clothes washers*</li> <li>• Compact fluorescent light bulbs*</li> <li>• Cordless phones</li> <li>• Dehumidifiers</li> <li>• Dishwashers*</li> <li>• DVD products</li> <li>• Exit signs</li> <li>• Home audio</li> <li>• Light commercial HVAC</li> <li>• Monitors</li> <li>• Refrigerators and freezers*</li> <li>• Residential light fixtures</li> <li>• TVs</li> <li>• VCRs</li> <li>• Ventilating fans</li> <li>• Windows, doors, and skylights*</li> </ul>	<p><b>Expanding EPA's national building energy performance rating system</b>—through which buildings can be rated on a scale of 1 to 100 and earn the ENERGY STAR for top performance—with 9 new building types.</p> <ul style="list-style-type: none"> <li>• Acute care hospitals</li> <li>• Bank branches</li> <li>• Courthouses</li> <li>• Financial centers</li> <li>• Hotels</li> <li>• Medical offices</li> <li>• Residence halls</li> <li>• Supermarkets and grocery stores</li> <li>• Warehouses</li> </ul> <p><b>Adding commercial new construction</b> Designed to Earn the ENERGY STAR.</p> <p><b>Expanding the ENERGY STAR program into the industrial sector</b> through targeted partnerships with the auto manufacturing, cement, corn refining, food processing, glass manufacturing, petroleum, pharmaceutical, and water/wastewater treatment industries.</p>
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\* DOE managed products

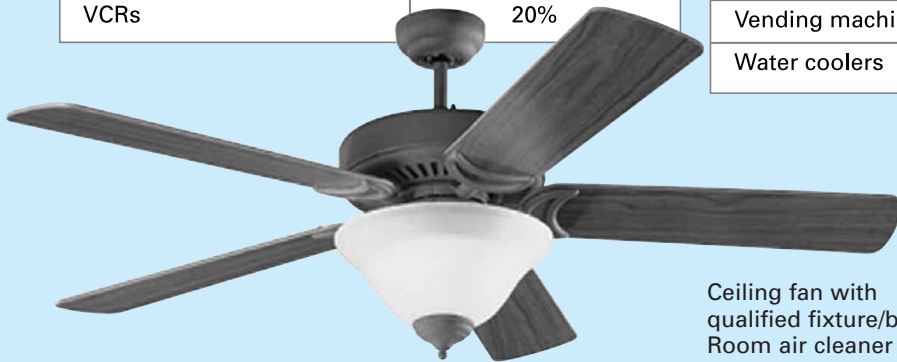
**TABLE 11. ENERGY STAR KEY PROGRAM INDICATORS, 2000 AND 2005**

	INDICATOR	2000	2005
<b>Qualified Products</b>	Products Sold**	600 million	2 billion
	Product Categories	40	56
	Product Models	11,000	35,000
	Public Awareness	40%	60%
	Retailers (Partners)	25	800
<b>New Homes</b>	New Homes Built**	25,000	520,000
	Home Builders (Partners)	1,600	2,500
<b>Commercial Buildings</b>	Buildings Benchmarked**	4,200	26,000
	Buildings Labeled**	545	2,500
	Building Types Eligible for Label	2	11
<b>Industrial Improvements</b>	Industry Focuses	0	8
<b>ANNUAL RESULTS</b>	Energy Saved (kWh)	62 billion	150 billion
	Avoided Emissions (MMTCE)	15.8	34
	Net Savings (\$)	\$5 billion	\$12 billion

\*\* Results are cumulative.

**TABLE 12. ENERGY STAR QUALIFIED PRODUCTS SAVE ENERGY**

ENERGY STAR PRODUCT CATEGORY	AVERAGE ENERGY SAVINGS** ABOVE STANDARD PRODUCT	ENERGY STAR PRODUCT CATEGORY	AVERAGE ENERGY SAVINGS** ABOVE STANDARD PRODUCT
<b>APPLIANCES</b>		<b>HOME ENVELOPE</b>	
Clothes washers*	35%	Insulation and air sealing	N/A
Dehumidifiers	5%	Roof products	N/A
Dishwashers*	25%	Windows, doors, & skylights*	N/A
Refrigerators & freezers*	15%	<b>LIGHTING</b>	
Room air conditioners*	10%	Compact fluorescent light bulbs (CFLs)*	65%
Room air cleaners	45%	Exit signs	9%
<b>HEATING &amp; COOLING</b>		Residential light fixtures	70%
Air source heat pumps	15%	Traffic signals	90%
Boilers	5%	<b>OFFICE EQUIPMENT</b>	
Ceiling fans	45%	Computers	40%-80%
Central air conditioners	25%	Copiers	65%
Furnaces	15%	Fax machines	40%
Geothermal heat pumps	30%	Monitors	40%-85%
Light commercial HVAC	N/A	Printers	70%
Programmable thermostats	N/A	Scanners	75%
Ventilating fans	70%	<b>COMMERCIAL FOOD SERVICE</b>	
<b>HOME ELECTRONICS</b>		Commercial fryers	15%
Cordless phones	30%	Commercial hot food holding cabinets	60%
Combination units	30%	Commercial solid door refrigerators and freezers	35%
DVD products	60%	Commercial steam cookers	55%
External power adapters	35%	<b>OTHER</b>	
Home audio	75%	Transformers	25%
Televisions	25%	Vending machines	25%
VCRs	20%	Water coolers	45%



Ceiling fan with qualified fixture/bulb  
Room air cleaner  
Floor torchiere



\*DOE managed products

\*\*Actual savings will vary by climate region and home characteristics.

## ENERGY STAR AWARD WINNERS

**SUSTAINED EXCELLENCE**

3M  
St. Paul, MN

ASTORIA HOMES  
Las Vegas, NV

CenterPoint Energy  
Houston, TX

David Powers Homes  
Houston, TX

Ence Homes  
St. George, UT

Food Lion, LLC  
Salisbury, NC

GE Consumer and Industrial  
Louisville, KY

Giant Eagle, Inc.  
Pittsburgh, PA

Gorell Enterprises, Inc.  
Indiana, PA

Nevada ENERGY STAR Partners  
Las Vegas, NV

New York State Energy  
Research and Development  
Authority  
Albany, NY

Northeast ENERGY STAR  
Lighting and Appliance  
Initiative  
Lexington, MA

OSRAM SYLVANIA  
Danvers, MA

Pacific Gas and Electric Company  
San Francisco, CA

Pardee Homes  
Los Angeles, CA

Servidyne Systems, LLC  
Atlanta, GA

Southern California Edison  
Rosemead, CA

Southern California Gas  
Company  
Los Angeles, CA

Toyota Motor Manufacturing  
North America, Inc.  
Erlanger, KY

Transwestern Commercial  
Services  
Houston, TX

TXU Electric Delivery ENERGY  
STAR® Homes Program  
Dallas, TX

USAA Real Estate Company  
San Antonio, TX

Veridian Homes  
Madison, WI

Whirlpool Corporation  
Benton Harbor, MI

Wisconsin Focus on Energy  
Madison, WI

**PARTNER OF THE YEAR—  
RETAILER**

The Home Depot  
Atlanta, GA

**PARTNER OF THE YEAR—  
PRODUCT****MANUFACTURER**

Good Earth Lighting  
Wheeling, IL

Lithonia Lighting  
Conyers, GA

Precision Entry, Inc.  
Sugar Creek, OH

Victory Refrigeration  
Cherry Hill, NJ

**EXCELLENCE IN ENERGY  
STAR OUTREACH**

ACME Markets, Inc.  
Malvern, PA

Alliant Energy/MidAmerican  
Energy Company  
Cedar Rapids, IA

Delta-Montrose Electric  
Association (DMEA)  
Montrose, CO

Energy Trust of Oregon, Inc.  
Portland, OR

Governor Robert L. Ehrlich Jr.  
and the Maryland Energy  
Administration  
Annapolis, MD

Kentucky Office of Energy Policy  
Frankfort, KY

Lowe's  
 Mooresville, NC

Maytag Corporation  
Newton, IA

National Grid  
Westborough, MA

Nevada Power Company—  
Sierra Pacific Power Company  
Las Vegas, NV

Sears, Roebuck and Co.  
Hoffman Estates, IL

**PARTNER OF THE YEAR—  
ENERGY MANAGEMENT**

California Portland Cement  
Company  
Glendora, CA

Ford Motor Company  
Dearborn, MI

Frito-Lay  
Plano, TX

Gresham-Barlow School  
District 10Jt  
Gresham, OR

Marriott International, Inc.  
Washington, DC

Merck & Co., Inc.  
Whitehouse Station, NJ

New York-Presbyterian Hospital  
New York, NY

**PARTNER OF THE YEAR—  
SERVICE AND PRODUCT  
PROVIDER**

Avista Advantage  
Spokane, WA

next>edge  
Los Angeles, CA

Save More Resources, Inc.  
Grand Junction, CO

**PARTNER OF THE YEAR—  
ENERGY EFFICIENCY  
PROGRAM DELIVERY**

Austin Energy  
Austin, TX

New Jersey's Clean Energy  
Program, NJBPU  
Newark, NJ

Puget Sound Energy  
Bellevue, WA

**EXCELLENCE IN  
ENERGY-EFFICIENT  
AFFORDABLE HOUSING**

New Jersey Green Homes  
Office—NJ Department of  
Community Affairs  
Trenton, NJ

**PARTNER OF THE YEAR—  
NEW HOMES**

Anderson Homes, Inc.  
Cary, NC

Aspen Homes of Colorado  
Loveland, CO

Bosgraaf Homes  
Holland, MI

Bureau Veritas  
Plano, TX

D. R. Horton, Inc.—Sacramento  
Gold River, CA

Energy Sense  
Houston, TX

Guaranteed Watt Saver  
Systems, Inc.  
Oklahoma City, OK

Haven Properties, Inc.  
Alpharetta, GA

Segal & Morel  
Bridgewater, NJ

Southwest Home Energy Raters  
El Paso, TX

TexEnergy Solutions, Inc.  
Irving, TX

Winton/Flair Custom Homes  
El Paso, TX

**SPECIAL RECOGNITION—  
EXCELLENCE IN  
EFFICIENCY**

Cathedral Square Corporation  
Burlington, VT

Curtis Lumber Company, Inc.  
Ballston Spa, NY

Fort Collins Utilities  
Fort Collins, CO

Innovative Design, Inc.  
Raleigh, NC

McCreary County Community  
Housing Development  
Corporation  
Whitley City, KY

Piedmont Housing Alliance  
Charlottesville, VA

Pinellas County Community  
Development Department  
Clearwater, FL

Power Integrations, Inc.  
San Jose, CA

Highlights of their 2005 Award winning activities may be found at [energystar.gov/awards](http://energystar.gov/awards).

# ENERGY STAR IN THE RESIDENTIAL SECTOR

Households are spending more on energy because of the rising prices for electricity, natural gas, and oil, and a growing number of consumers are seeking ways to control these costs. By looking to ENERGY STAR, households can reduce their energy use and save up to 30 percent, or \$600 annually, on their utility bills. As demonstrated by recent sales figures, more and more consumers are relying on ENERGY STAR to help guide their purchasing decisions, save them money, and prevent greenhouse gas emissions—no matter whether they are replacing an old appliance, making home improvements, or buying a brand new home. EPA, through ENERGY STAR, assists consumers as they tackle decisions in each of these areas. Accomplishments for 2005 are highlighted below.

## ENERGY STAR Products for the Home

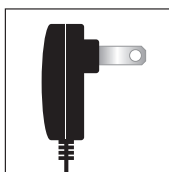
Each year, EPA expands the ENERGY STAR program to new products, updates the requirements for products to earn the ENERGY STAR where appropriate, ensures the ENERGY STAR mark is being used appropriately in the marketplace, and engages program partners in broad outreach efforts that help consumers find these products. Highlights of these activities for 2005 are described below:

**New ENERGY STAR Products.** EPA continued its recent focus on energy efficiency in small household appliances, which is a rapidly growing area of home energy use. In 2005, EPA established a new ENERGY STAR specification for external power adapters, which has the potential to improve the efficiency of millions of electronic products by about 35 percent, and was close to finalizing a specification for battery chargers. Battery charging systems are used to recharge a wide variety of

cordless products such as the power tools and small household appliances found in most homes.

**Raising the Bar for ENERGY STAR.** Responding to important changes in market conditions such as new federal standards, increased market penetration, and lower equipment costs, in 2005 EPA reviewed and revised specifications for six ENERGY STAR residential product categories to make them more stringent: air source heat pumps, central air conditioners, cordless phones, cordless phone/answering machine combination units, dehumidifiers, and residential light fixtures. In 2005, EPA also began revising the specification for imaging equipment (copiers, printers, scanners, and fax machines) and began the specification development process for battery chargers. ENERGY STAR manufacturing partners are also raising the bar, as highlighted in award summaries on page 21.

**Protecting the Integrity of the ENERGY STAR.** EPA continually undertakes efforts to maintain and enhance the integrity of the ENERGY STAR label through a variety of activities—including product testing, retail shelf studies, product literature reviews, and logo-use monitoring (in advertising and on product packaging). In 2005, dehumidifiers were tested, and all models were found to have presented accurate information and met or exceeded the ENERGY STAR performance levels. This brings the number of product categories that have recently undergone off-the-shelf product monitoring to eight. In addition, more than 2,000 pieces of in-store ENERGY STAR focused materials, displays, and signage were examined during the year, and more than 130,000 advertising clips were monitored. EPA reviewed and updated products listed on the ENERGY STAR Web site to ensure that listed models were available in the marketplace.



Powered by an ENERGY STAR® qualified adapter for a better environment

On average, 5 to 10 power adapters are used in the typical U.S. home, and more than 1 billion new adapters are shipped worldwide each year.

External power adapters convert high-voltage AC electricity from the wall outlet to low-voltage DC power that runs popular electronic products.

### PRODUCTS USING EXTERNAL POWER ADAPTERS

cell phones	Internet routers	radios
PDA's	power tools	answering machines
MP3 players	power razors	phones
digital cameras	shavers	and more
camcorders	clippers	
laptops	toothbrushes	

**TABLE 13. ENERGY STAR RESIDENTIAL PRODUCT SPECIFICATIONS ADDED, REVISED, AND IN PROGRESS**

PRODUCT CATEGORY	YEAR INTRODUCED AND (YEAR REVISED)	RESPONSIBLE AGENCY	STATUS OF ACTIVITY IN 2005
<b>2005 NEW SPECIFICATIONS</b>			
External power adapters	2005	EPA	New specification took effect 2005
<b>2005 REVISIONS COMPLETED</b>			
Central air conditioners and air source heat pumps	1995 (2002, 2005)	EPA	Final revised specification to take effect 2006
Clothes washers*	1997 (2005)	DOE	Final revised specification to take effect 2007
Cordless phones	2002 (2005)	EPA	Final revised specification to take effect 2006
Dehumidifiers	2001 (2005)	EPA	Final revised specification to take effect 2006
Residential light fixtures	1997 (2002, 2003, 2005)	EPA	Final revised specification took effect 2005
Windows, doors, and skylights*	1998 (2003, 2005)	DOE	Final revised specification took effect 2005
<b>REVISIONS IN PROGRESS IN 2005</b>			
Computers	1992 (2006)	EPA	Revision starting in 2006
Copiers	1995	EPA	Revision in progress
Dishwashers*	1996 (2006)	DOE	Revision in progress
Furnaces	1995	EPA	Revision starting in 2006
Printers and fax machines	1993, 1994	EPA	Revision in progress
Programmable thermostats	1995	EPA	Revision in progress
Roof products	1999 (2006)	EPA	Revision in progress
Scanners	1997	EPA	Revision in progress
<b>NEW SPECIFICATIONS IN DEVELOPMENT</b>			
Battery charging systems	2006	EPA	New specification to take effect in 2006

\* DOE managed products.

**PARTNER OF THE YEAR—PRODUCT MANUFACTURER****GOOD EARTH LIGHTING  
WHEELING, ILLINOIS**

Good Earth Lighting is recognized for outstanding achievements in advancing energy-efficient light fixtures. In 2005, Good Earth launched the first national ENERGY STAR programs at Lowe's and The Great Indoors, as well as conducting several regional retail torchiere events. One hundred percent of Good Earth's decorative lighting sales are ENERGY STAR qualified. In the past 2 years, Good Earth has achieved 50-percent growth in ENERGY STAR unit shipments and a 90-percent increase in the number of qualified models. Additional accomplishments include introducing millions of Lowe's customers to the ENERGY STAR "Change a Light, Change the World" campaign message and incorporating advanced lamp technologies into its product line and the retail replacement market. For 13 years, Good Earth has steadfastly integrated ENERGY STAR into its overall business planning.

**LITHONIA LIGHTING  
CONYERS, GEORGIA**

Lithonia Lighting, North America's largest manufacturer of lighting equipment, significantly increased its promotion of energy-efficient products in 2005. Sixty-two percent of Lithonia's consumer models are ENERGY STAR qualified, including more than 90 percent of its new models. In 2005, 38 percent of Lithonia's total consumer product sales were ENERGY STAR qualified models. Lithonia also expanded its consumer education by dedicating an entire panel of its new 4-color packaging to the ENERGY STAR message in English, French, and Spanish. The ENERGY STAR qualified *Ferros* fixture family took 1st Place at the American Lighting Association/Consortium for Energy Efficiency (ALA/CEE) design competition in the Indoor Fixture Category. In 2005, Lithonia expanded qualified fixture availability at 1,800 Home Depot stores, 150 Ace Hardware stores, and hundreds of lighting showrooms.



**Public Outreach with Key Partners.** Educating consumers about the environmental and financial benefits of ENERGY STAR qualified products is a core activity of the program. The 2005 ENERGY STAR campaigns and public service announcements (PSAs) reached millions of people through TV, magazine, radio, and other media outlets:

■ **ENERGY STAR *Change a Light, Change the World* Campaign.** EPA, DOE, and more than 30 governors across the country marked October 5, 2005 as “ENERGY STAR Change a Light Day” to highlight the savings from the simple act of changing one light at home. With a total of more than 100 million media impressions, the 2005 outreach campaign experienced unprecedented coverage, with a nearly 500-percent increase in advertising equivalency over the previous year. The 2005 campaign included an on-line “pledge” to change one light that secured more than 70,000 pledges in all 50 states during fall 2005. (For more information, see p. 23.)

■ **The ENERGY STAR Cool Your World Campaign,** promoting energy-efficient cooling for summer, also enjoyed exceptional media coverage in 2005. The campaign reached consumers through placements in *Redbook*, *Southern Living*, and *Newsweek* magazines, in addition to newspaper placements in a number of top markets—Dallas, Chicago, Washington, DC, Baltimore, Charlotte, Detroit, and Cleveland. Cool Your World radio spots and television placements had an overall reach of 58 million consumers.

■ The 2005 **ENERGY STAR First Frost Campaign** presented practical steps consumers could take to prepare for the winter heating season. The campaign garnered more than 800 placements of ENERGY STAR tips, including in *Real Simple*, *US News & World Report*, *House Beautiful*, and *Good Housekeeping*. With the addition of radio spots and television, the First Frost campaign had a reach of more than 35 million Americans.

■ **New Orleans Radio PSA.** In November 2005, Entergy, an ENERGY STAR utility partner that services New Orleans, requested EPA’s assistance with public outreach to promote energy efficiency as residents of New Orleans and other storm-struck areas began rebuilding their homes. EPA developed and distributed a radio PSA urging homeowners to make smart energy decisions and to consider purchasing ENERGY STAR qualified products for their homes and offices as they replaced what was lost to Hurricane Katrina. The PSA drove consumers to ENERGY STAR’s home page, where they found a link to a special “Hurricane Help” page offering information on ENERGY STAR products, home improvement/rebuilding tips, and other helpful information. The radio PSA was released in December 2005. More than 80 radio stations in Louisiana, Texas, Mississippi, and Alabama committed to playing the PSA.

## **PARTNER OF THE YEAR—RETAILER**

### **THE HOME DEPOT ATLANTA, GEORGIA**

In 2005, The Home Depot’s goal was to be the leader in ENERGY STAR marketing, raising its outreach to a level of comprehensiveness and sophistication that would be unparalleled in the marketplace. Not only does The Home Depot carry more ENERGY STAR qualified product models and sell more of these products than any other retailer, but at every opportunity—on store signage, in brochures, in advertising, and on its Web site—The Home Depot links these products with how to save energy with ENERGY STAR. 2005 highlights include a dedicated ENERGY STAR TV ad, comprehensive in-store signage, and several brochures on how to save energy with ENERGY STAR. With impressive sales results of 34 million ENERGY STAR qualified products and billions of consumer impressions through energy savings education, The Home Depot has helped customers save more than \$7.4 million dollars and prevented greenhouse gas emissions equivalent to those from more than 100,000 vehicles, demonstrating that we should all “Follow the STAR for Savings.”





2005 ENERGY STAR *CHANGE A LIGHT, CHANGE THE WORLD* CAMPAIGN PROVES TO BE A BRIGHT IDEA

EPA Administrator Stephen L. Johnson kicked off the 6th annual ENERGY STAR *Change a Light, Change the World* Campaign on October 5, 2005, when he helped launch the ENERGY STAR Change a Light Pledge and called on everyone in the United States to help change the world, one light—one energy-saving step—at a time. EPA, DOE, and more than

30 governors across the country marked October 5 as “ENERGY STAR Change a Light Day.”

The 2005 Campaign capitalized on strong public-private partnerships to educate the public about the environmental and monetary benefits of ENERGY STAR qualified lighting. Nearly 300 participating organizations leveraged the national platform and campaign materials to develop innovative in-store promotions, public events, compact fluorescent light (CFL) fundraisers, and school activities. Through partnerships with the retail, regional energy efficiency program sponsor, manufacturer, government, school, non-profit, and industrial sectors, the 2005 campaign message reached a broader audience than ever before.

With the support of EPA and partner organizations, more than 70,000 people in all 50 states and several U.S. territories participated in the 2005 Change a Light Pledge. All together, the 2005 pledges would prevent the release of 33 million pounds of greenhouse gas emissions into the atmosphere, demonstrating that small changes by individuals really do add up to a significant, positive change for the environment. And at a time of rising energy costs, the 23 million kWh of

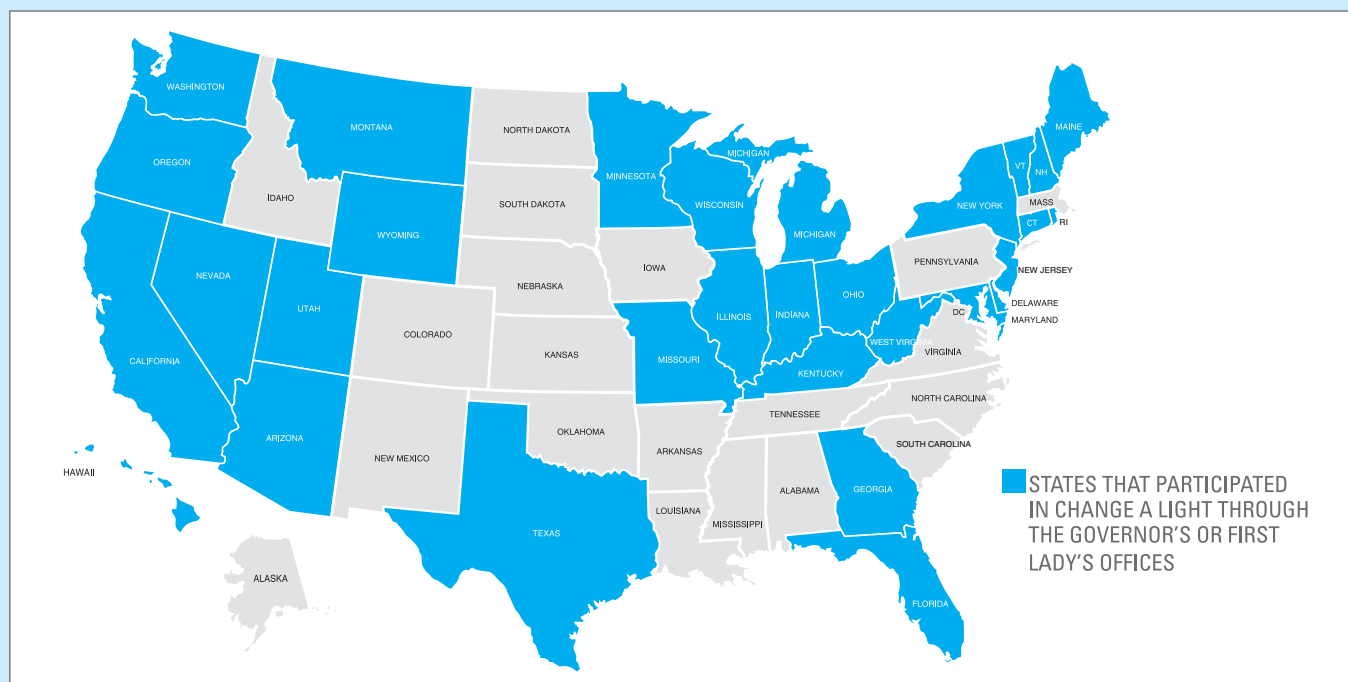
electricity savings also translates into significant utility bill savings for consumers.

The 2005 collaborative campaign also experienced unprecedented media coverage, generating more than 100 million earned media impressions. Articles mentioning the ENERGY STAR *Change a Light, Change the World* Campaign appeared in *Newsweek*, *USA Today*, *The Wall Street Journal*, and *U.S. News and World Report*, while radio listeners heard the campaign message through more than 950 radio spots, including a National Public Radio interview with EPA Administrator Johnson on Change a Light Day. Retail, utility, and manufacturing partners supported the campaign by running print advertisements during October and November.

EPA raised the visibility of the ENERGY STAR *Change a Light, Change the World* Campaign through a print public service announcement (PSA) that ran in a number of major publications, including *Time* and *Discover*. A Spanish version of the PSA ran in 18 publications in New York, Chicago, Texas, New Mexico, and Washington, D.C. Additionally, EPA distributed 240,000 “Go Cards” introducing the campaign to cafés, college student unions, dining halls, retailers, and restaurants in the country’s top college markets.

To build on the success of 2005, EPA intends to expand the Change a Light “community,” with a goal of encouraging at least 500,000 people to take the Pledge starting in October 2006. For the first time, organizations can play a more active role by setting their own Pledge goal and inviting their community to join the ENERGY STAR campaign. One energy-efficient light at a time, the ENERGY STAR *Change a Light, Change the World* Campaign is demonstrating that making a difference can be as simple as replacing a light.

**FIGURE 7. STATES PROMOTE ENERGY STAR *CHANGE A LIGHT, CHANGE THE WORLD* IN 2005**



## Home Improvement Through ENERGY STAR

There are many low-cost steps homeowners can take to increase their comfort and reduce their energy bills that go beyond the purchase of ENERGY STAR qualified products. EPA has been making progress in the following areas:

**Home Performance with ENERGY STAR.** EPA continues to promote Home Performance with ENERGY STAR to homeowners who want to retrofit their homes for improved energy efficiency. Home Performance with ENERGY STAR is a whole house improvement program that emphasizes a home diagnostic evaluation and improvements made by a trained technician, coupled with a strong quality assurance program administered by a regional sponsor.

To accomplish this, EPA, along with DOE, works with organizations that evaluate the credentials and expertise of technicians and contractors who offer third-party home performance verification to homeowners. EPA funds the Building Performance Institute (BPI)—a national technician certification and contractor accreditation organization—jointly with DOE and HUD so that BPI may provide the necessary quality assurance for home performance contracting programs such as Home Performance with ENERGY STAR.

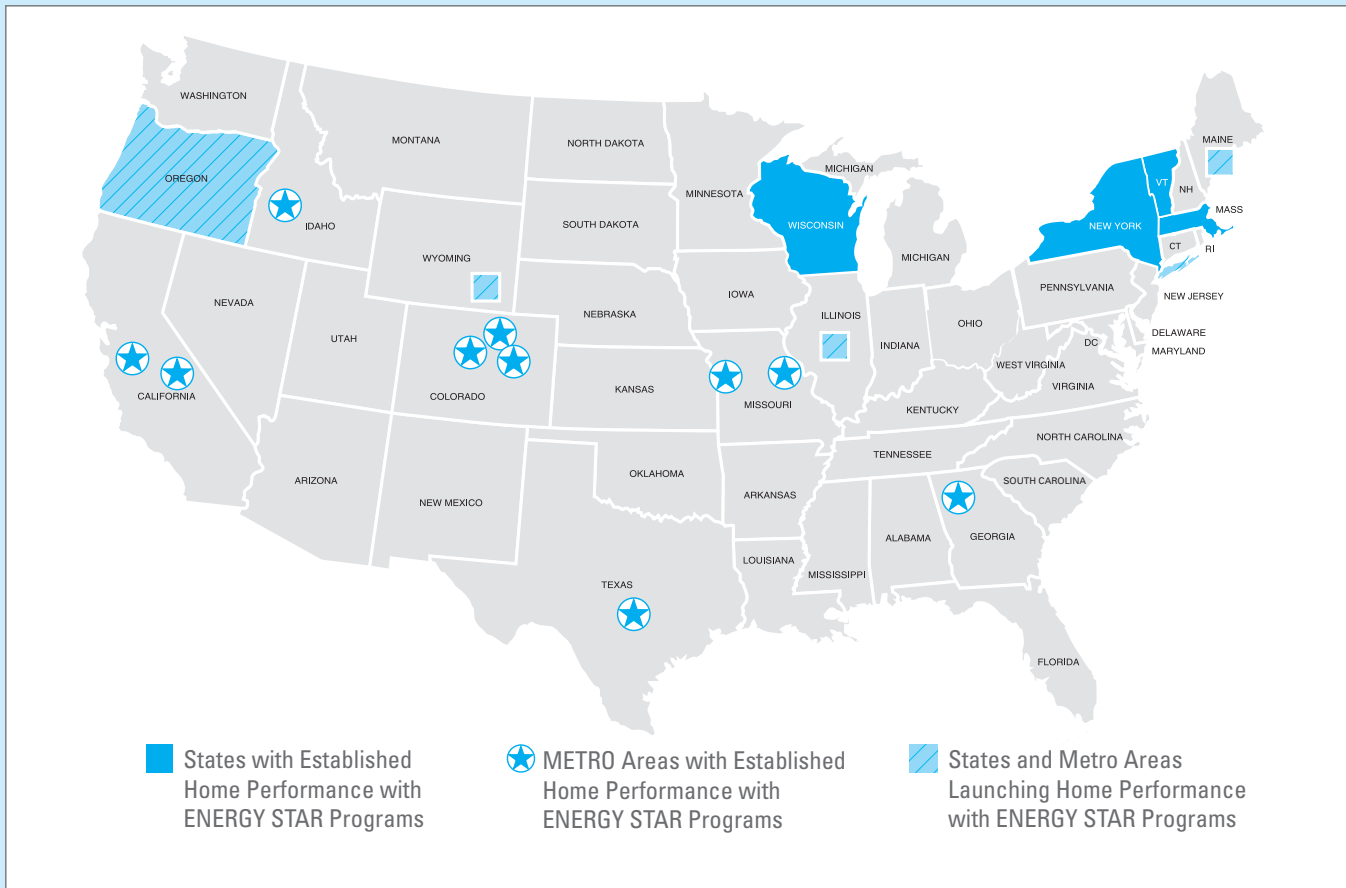
- The number of state and local partners involved in Home Performance with ENERGY STAR grew to 14 sponsors in 2005 (see Figure 8).
- The New York State Energy Research and Development Authority (NYSERDA) and the state of New York lead the way in promoting whole house retrofits under Home Performance with ENERGY STAR.
- By the end of 2005, ENERGY STAR partners had retrofitted almost 16,000 homes. These homes are delivering up to 40 percent savings on energy bills for their owners, as measured by regional implementing programs.

**Proper HVAC Installation.** Without proper installation, HVAC equipment may not perform as well as expected (see Figure 9). Some studies indicate that more than half of all central air conditioners may be installed improperly. During 2005, EPA explored various labeling schemes for ENERGY STAR qualified HVAC systems to promote proper equipment installation. In response to the growing importance of proper installation and maintenance of HVAC equipment, EPA supported and participated in an industry-led effort to define the requirements for proper HVAC installation. The Air Conditioning Contractors of America (ACCA), in conjunction with the Consortium for Energy Efficiency (CEE), led this important effort. These specifications are serving as the basis for an ENERGY STAR proper HVAC installation pilot program in 2006 in California.

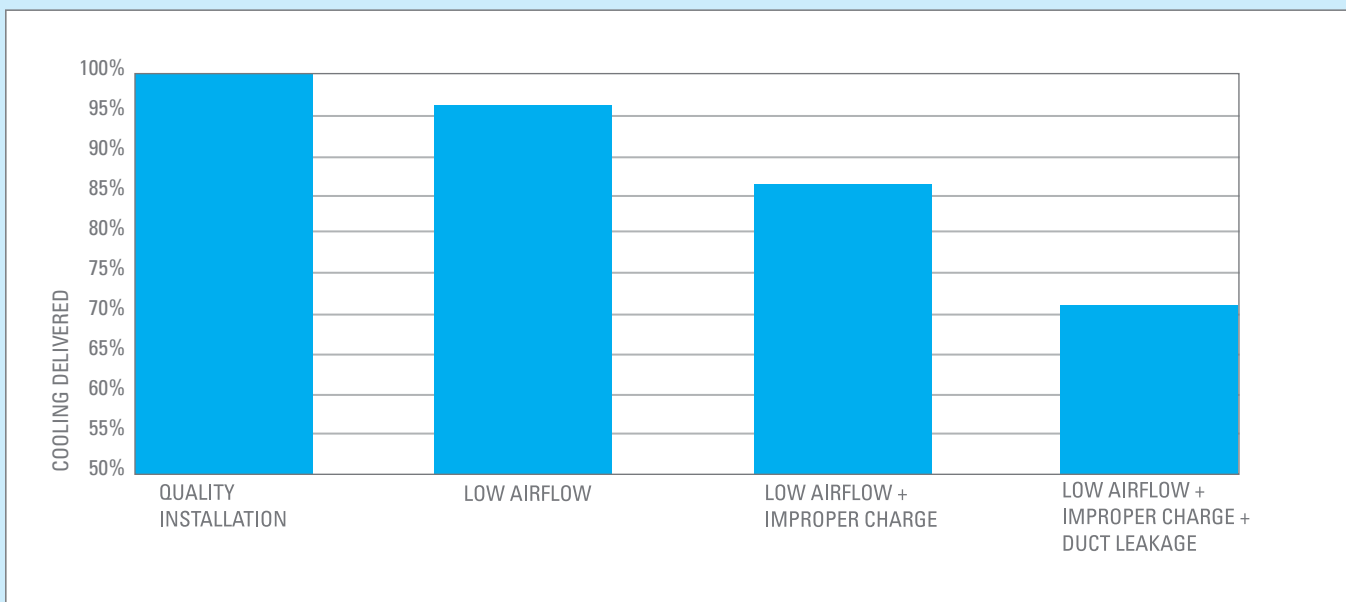
**Home Sealing with Major Retailers.** ENERGY STAR Home Sealing is an effective means to cut energy costs and improve the comfort of homes by properly insulating homes and sealing air leaks within the home's envelope. National retailers Lowe's and The Home Depot aggressively promoted ENERGY STAR Home Sealing during their fall campaigns to help homeowners weatherize their homes for the coming winter. Through in-store clinics, store-wide broadcast announcements, and aisle end-cap promotions, more than 700 million consumer impressions were generated by The Home Depot and Lowe's.

**Teaming up with DOE and HUD.** In 2005, EPA teamed up with DOE and HUD to announce the Partnerships for Home Energy Efficiency (PHEE)—a joint effort to improve the energy efficiency of the nation's housing stock by 10 percent by 2015. A 10-percent savings would total almost \$20 billion a year, help increase the affordability and comfort of homes, and reduce demand for natural gas by more than one quad, among other benefits. This partnership draws upon the strengths of the three agencies across four goals: (1) Expand efforts to promote ENERGY STAR qualified products, (2) Develop new energy efficiency services to provide homeowners with greater savings, (3) Promote energy efficiency in affordable housing, and (4) Continue to invest in innovative research on building science technologies, practices, and policies.

**FIGURE 8. HOME PERFORMANCE WITH ENERGY STAR SPREADS ACROSS THE COUNTRY**



**FIGURE 9. QUALITY INSTALLATION DELIVERS MORE COOLING**



## ENERGY STAR New Homes

2005 was an important year for ENERGY STAR qualified new homes as the program hit major milestones. EPA completed the first revision of the requirements for new homes to earn the ENERGY STAR, enhanced the quality control involved in awarding a home the ENERGY STAR, and coordinated with green building groups. Highlights of these activities are described below:

**Major Program Milestones.** By the end of 2005, more than half a million American households, 40 percent more than the prior year, had purchased ENERGY STAR qualified homes (see Figure 10). These homeowners are saving more than \$120 million annually on their energy bills. Furthermore, about 10 percent of new homes constructed in 2005 earned the ENERGY STAR, with homes now available in every state and the District of Columbia. Fourteen states are seeing more than 10 percent of their new housing starts be ENERGY STAR qualified (see Figure 11). In 2005, Nevada had 42 percent market penetration, New Jersey 36 percent, Texas 31 percent, and California 12 percent. In Las Vegas, market penetration reached 55 percent of the 35,000 new homes constructed in 2005.

**Updated Specification for ENERGY STAR New Homes.** EPA completed the first ever revision of the ENERGY STAR new homes specification in response to the program's progress, increased energy efficiency levels required in the updated national energy code, and adopted more stringent HVAC equipment standards. Under the new guidelines, homes that earn the ENERGY STAR are at least 15 percent more energy efficient than homes built to the 2004 International Residential Code (IRC). By January 2007, all new ENERGY STAR qualified homes must be constructed in accordance with the new guidelines. They include several new energy-saving requirements for ENERGY STAR products and appliances because these products can account for as much as 50 percent of a home's energy consumption. The guidelines also require Home Energy Raters to safeguard against any major gaps in the home's air barrier and perform an inspection of the home's insulation. These areas are common causes of comfort problems and higher than necessary energy bills for homeowners.

**Promoted Additional Opportunities for Energy Savings.** EPA encouraged ENERGY STAR builder partners to offer the Advanced Lighting Package, an upgrade package that more than 170 builders are recommending to home buyers to save energy and money. EPA estimates that in 2005 the Advanced Lighting Package saved more than 100,000 kWh.

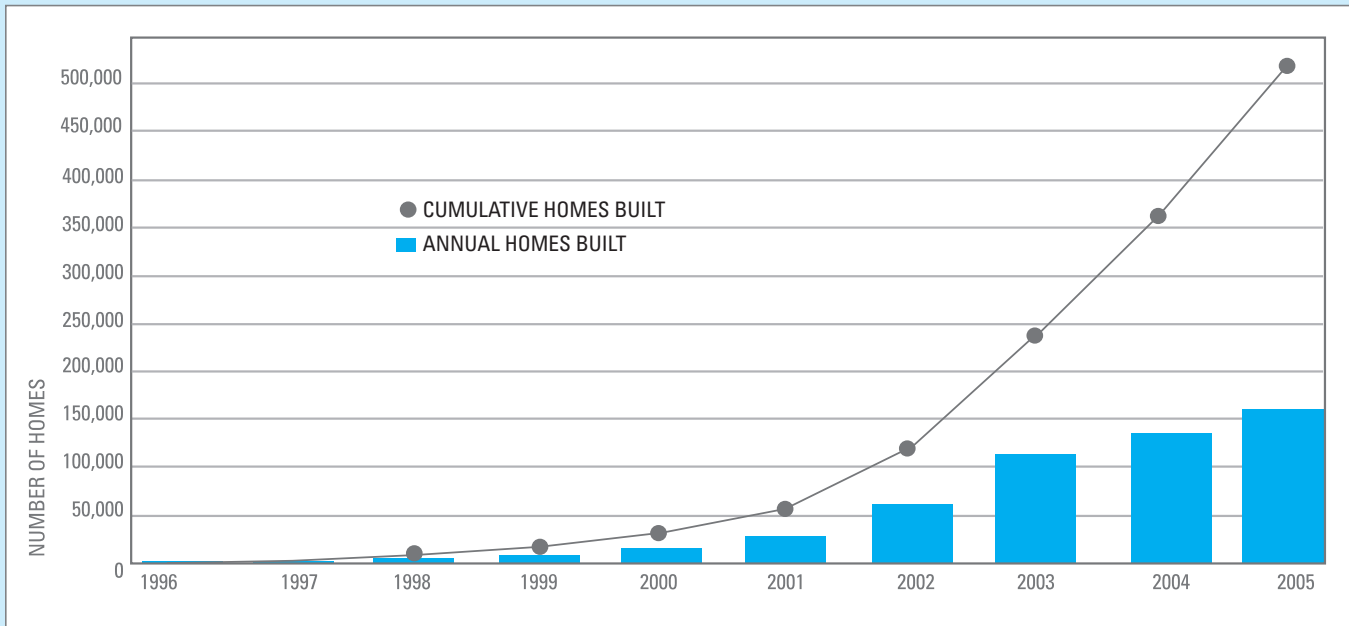
**Quality Control.** EPA continues to work to ensure that homeowners receive the value of ENERGY STAR when purchasing a new home. Under the new specification for new homes developed during 2005, ENERGY STAR will require in 2006 that Home Energy Raters, when qualifying ENERGY STAR new homes, complete a Thermal Bypass Checklist<sup>6</sup> to safeguard against any major gaps in the home's air barrier that are inadvertently missed by the builders. Such gaps can lead to comfort problems for homeowners and could potentially lead to structural problems. Inspection of the installation of insulation is a key component of the Checklist. If insulation is improperly installed with voids between the studs and rafters and compression of batts, the insulation will not adequately insulate up to its stated R-value,<sup>7</sup> a common problem with new homes. This requirement bolsters the ENERGY STAR promise for quality homes.

Third-party verification continues to be an important attribute of ENERGY STAR. For the new homes program, EPA relies on the Home Energy Rater network to inspect new homes to determine whether they meet the ENERGY STAR new homes specification. Over the past year, EPA has worked with the Residential Energy Services Network (RESNET), the accrediting body for the raters, to enhance its oversight of these raters and their rating providers to ensure that they meet the necessary standards and qualifications to evaluate whether a home qualifies as ENERGY STAR.

<sup>6</sup> The Thermal Bypass Checklist is a 16-point list of building details where thermal bypass, or movement of heat around or through insulation, frequently occurs due to missing air barriers or gaps between the air barrier and insulation. Reducing thermal bypasses is important as they can lead to comfort and warranty issues as well as higher utility bills.

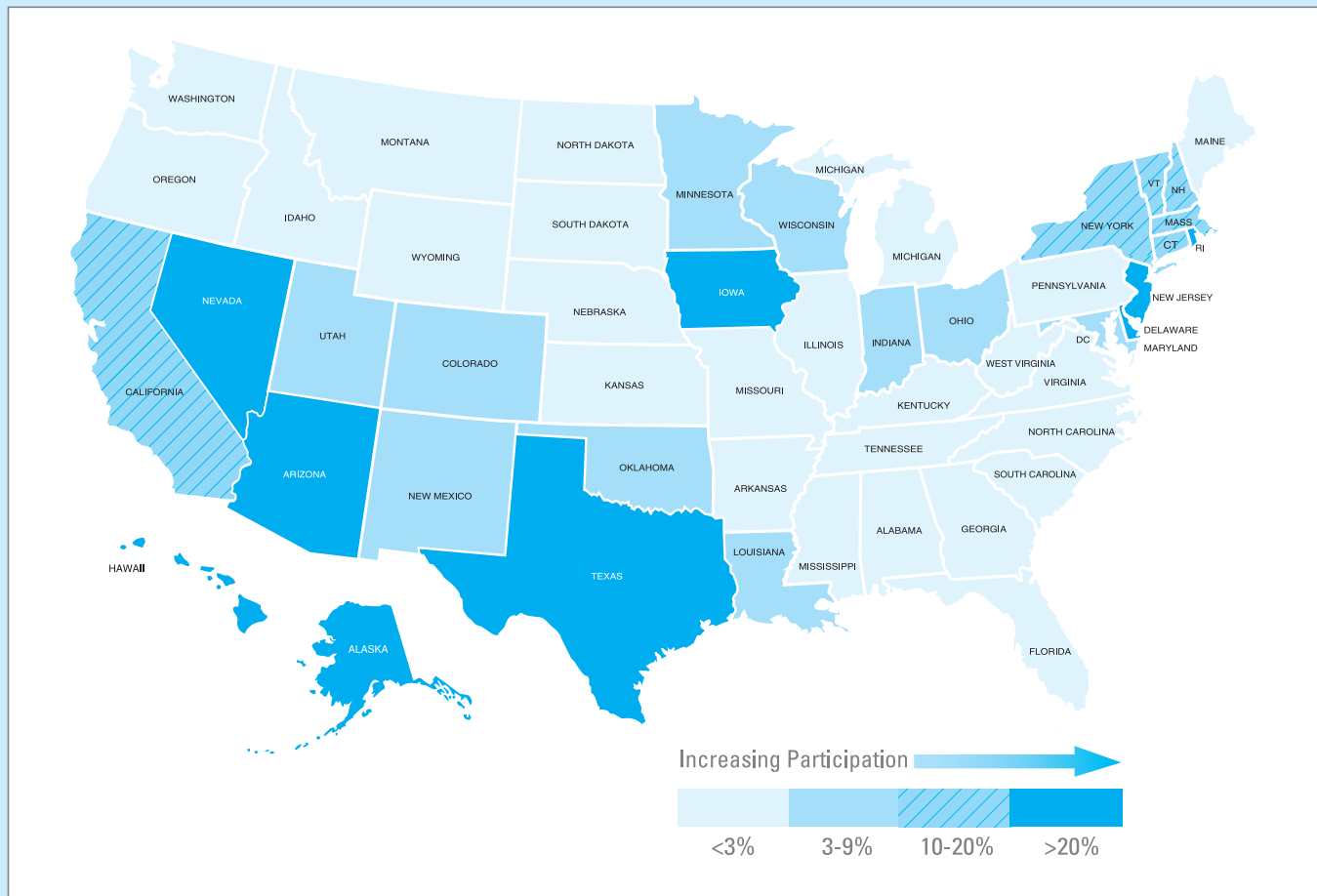
<sup>7</sup> Insulation is rated in terms of thermal resistance, called R-value, which indicates the resistance to heat flow. The higher the R-value, the greater the insulating effectiveness. The R-value of thermal insulation depends on the type of material, its thickness, and density. Installing more insulation in your home increases R-value and the resistance to heat flow.

**FIGURE 10. A DECADE OF GROWTH FOR ENERGY STAR QUALIFIED NEW HOMES**



**FIGURE 11. ENERGY STAR QUALIFIED NEW HOMES GAINING MARKET SHARE**

The state index is a comparison of the number of ENERGY STAR qualified new homes built to the number of privately owned housing units permitted in each state and the District of Columbia. Each state's index is a measurement of ENERGY STAR's presence in the site-built, single-family new homes market for that state. It does not measure other energy efficiency efforts within the state. ENERGY STAR, in partnership with stakeholders, achieved an average national market presence in the new homes sector of nearly 10% in 2005.



## Indoor Air Quality and Green Building Programs.

In 2005, EPA advanced efforts to bring improved indoor air quality into new homes and ensure that green homes are energy-efficient homes. For example, EPA finalized an Indoor Air Package that complements the ENERGY STAR



label for qualified homes. The package includes seven specific construction practices and associated specifications, ranging from moisture control, HVAC system sizing, and combustion system measures to building materials, radon and pest control, and home commissioning. While these new requirements cannot guarantee good indoor air quality, they do provide a path to a better indoor environment. In addition, EPA worked with the U.S. Green Building Council (USGBC) to see that the specification for ENERGY STAR qualified homes would be a requirement for the Leadership in Energy and Environmental Design (LEED) for Homes certification—underscoring the significance of energy efficiency in any green building program. LEED for Homes also incorporated EPA's Indoor Air Package specifications and the ENERGY STAR Advanced Lighting Package into the point system used to qualify LEED homes.

## Recognition for Outstanding Builder Partners.

Builders maintained their strong enthusiasm for ENERGY STAR qualified new homes. In 2005, EPA recognized six builders for their continued excellence and support for ENERGY STAR. ASTORIA HOMES, David Powers Homes, Ence Homes, Pardee Homes, Veridian Homes, and the Nevada ENERGY STAR Partners received EPA's Award for Sustained Excellence (see p. 29). These six partners have won Partner of the Year at least twice before, and some three times. In addition, EPA welcomed Anderson Homes, Aspen Homes, Bosgraaf Homes, Haven Properties, Segal & Morel, and Winton/Flair Custom Homes as first time winners of the ENERGY STAR Partner of the Year for New Homes. EPA also recognized D.R. Horton (Sacramento) for the second year in a row (see p. 19).

## What to Expect in 2006 and Beyond Across the Residential Sector

In 2006, EPA will continue to deliver savings to consumers through ENERGY STAR qualified products, new homes, and home performance. These residential sector programs will:

- Update energy efficiency specifications for more products, including those for imaging equipment (copiers, printers, fax machines, scanners), computers, and furnaces. EPA will add battery chargers to the suite of ENERGY STAR qualified products.
- Continue to build consumer awareness of ENERGY STAR. EPA will continue to coordinate national, seasonal outreach campaigns featuring products of interest in the relevant season (e.g. lighting products in the fall and cooling products in the spring/summer). The goal is to raise awareness of the ENERGY STAR label as the trusted symbol for energy efficiency and environmental protection to more than 70 percent over the next several years.
- Work with manufacturers, retailers, home builders and raters, utilities, and states in broad consumer promotions of ENERGY STAR qualified products and new homes. In 2006, EPA expects 175 million ENERGY STAR qualified products to be sold.
- Complete the transition to the updated ENERGY STAR qualified new home specification that takes effect nationwide starting January 2007. Various workshops are scheduled across the country to help with the changeover.
- Exceed the 2005 market penetration number for new homes and add more than 180,000 qualified homes in 2006.
- Work with partners retrofitting another 10,000 existing homes under Home Performance with ENERGY STAR.
- Roll out and monitor three to five pilot projects that demonstrate a new ENERGY STAR service for proper installation of HVAC equipment.
- Continue efforts to maintain the integrity of the ENERGY STAR name and logo, as required under the Energy Policy Act of 2005 among other laws, and provide a new report on these efforts.

**SUSTAINED EXCELLENCE AWARD WINNERS****ASTORIA HOMES  
LAS VEGAS, NV**

ASTORIA HOMES, winner of the ENERGY STAR Award for the third time, was recognized for its continued, outstanding commitment to delivering and promoting ENERGY STAR qualified homes in the Las Vegas market. In 2005, more than 900 ASTORIA HOMES earned the ENERGY STAR label, bringing its total to more than 3,600 qualified homes. ASTORIA's philosophy is to build the highest quality yet attainable homes in Las Vegas by offering "More for Your Money." Building 100 percent ENERGY STAR qualified homes provides "More Quality and More Savings" for the homebuyer while protecting the environment. ASTORIA HOMES uses the ENERGY STAR logo in all point-of-sale materials and ads, on signs and billboards, on its Web site, and in direct mail pieces. The company also created a homeowner welcome gift basket containing ENERGY STAR qualified lighting and educational pieces. ASTORIA continuously trains its sales agents on the features and benefits of ENERGY STAR qualified homes and has been instrumental in the success of the Nevada ENERGY STAR Partners group.



**DAVID POWERS HOMES  
HOUSTON, TX**

David Powers Homes, an ENERGY STAR Award winner for the third consecutive year, was recognized for its continued, outstanding commitment to ENERGY STAR in the Houston market. David Powers Homes was one of the first builders in Houston to become an ENERGY STAR partner and to commit to building 100 percent of its homes to ENERGY STAR performance levels. In 2005, 511 David Powers homes earned the ENERGY STAR label, bringing its total to more than 1,500 qualified homes. From the corporate level to the consumer, education and awareness of ENERGY STAR remains a strong priority for the company. The result of these efforts means that David Powers Homes enjoys strong consumer awareness among those who view the company as not only a quality builder, but also a true leader in energy efficiency. Since becoming an ENERGY STAR partner in 2000, David Powers Homes has seen a 120-percent increase in new homes sales, a 95-percent increase in traffic into model homes, and a 52-percent increase in realtor co-op sales—proving that energy efficiency is good business.

**ENCE HOMES  
ST. GEORGE, UTAH**

Ence Homes, an ENERGY STAR partner since 1998 and a four-time ENERGY STAR Award winner, was recognized for its continued, outstanding commitment to ENERGY STAR in the Utah market. From the start, Ence has built 100 percent of its homes to ENERGY STAR performance levels and actively promoted the program. In 2005, 400 Ence Homes earned the ENERGY STAR label, bringing its total to nearly 1,800 qualified homes. All of the company's collateral material carries the ENERGY STAR logo, including newspaper and magazine ads, in-house flyers, inventory booklets, price sheets, maps, brochures, banners, construction signs, and billboards. Ence Homes places a brass plaque with the ENERGY STAR logo on all new homes and includes information on ENERGY STAR in the homeowner's manual. Ence Homes is "on the Utah map" thanks to its advertising and promotional efforts; its dedication to energy-efficient, quality building standards; and the awards bestowed by EPA. In 2005, Ence Homes received the 2-10 Home Builder's Warranty Award, which is the highest award given for superior customer service and home warranty performance in the nation. Ence's home sales in 2005 surpassed all other years.



Highlights of more 2005 Award winners may be found at [energystar.gov/awards](http://energystar.gov/awards).

# ENERGY STAR IN THE COMMERCIAL SECTOR

Since the early 1990s, EPA has promoted energy efficiency in commercial buildings. Through their ENERGY STAR partnership, businesses and organizations of all sizes benefit from energy efficiency resources and guidance that help inform their decisions, enabling them to make cost-effective investments and reduce their energy use by as much as 30 percent. Central elements of EPA's efforts include promoting energy management as a strategic business objective and promoting performance benchmarking of building energy use to help energy users target their investments. In 2005, EPA made great progress in partnering with national organizations, states, and others to encourage these practices, in recognizing excellence in energy management, and in encouraging service providers to offer building energy benchmarking as a part of their services.

## Achievements in 2005

**Growing the Partnership.** In 2005, more businesses and organizations partnered with EPA to pursue superior energy management approaches. They include:

- More than 1,500 commercial, public, and industrial organizations that have committed to adopting an energy management approach by partnering with ENERGY STAR; school districts represented the largest number of new partners in 2005.
- ENERGY STAR partners representing about 11 billion square feet of building space across the country and approximately 16 percent of the commercial building market.
- More than 900 Service and Product Providers (SPPs) and nearly 70 utility and energy efficiency program administrators partnering with EPA to offer energy efficiency services to users working toward energy savings goals and public programs linked to ENERGY STAR.
- Over 1,100 small businesses and congregations in the ENERGY STAR network and about 11,000 monthly Web site visitors finding tailored energy efficiency guidance and solutions.

**Challenging Building Owners to Save 10 Percent or More.** In 2005, EPA announced a new national ENERGY STAR campaign in coordination with key professional associations and states. The ENERGY STAR Challenge is a call to action for building owners and operators to implement energy efficiency measures and reduce energy use by 10 percent or more. EPA estimates that if each building owner met this challenge, by 2015 Americans would reduce greenhouse gas emissions by more than 20 MMTCE—equivalent to the emissions from 15 million vehicles—while saving about \$10 billion.

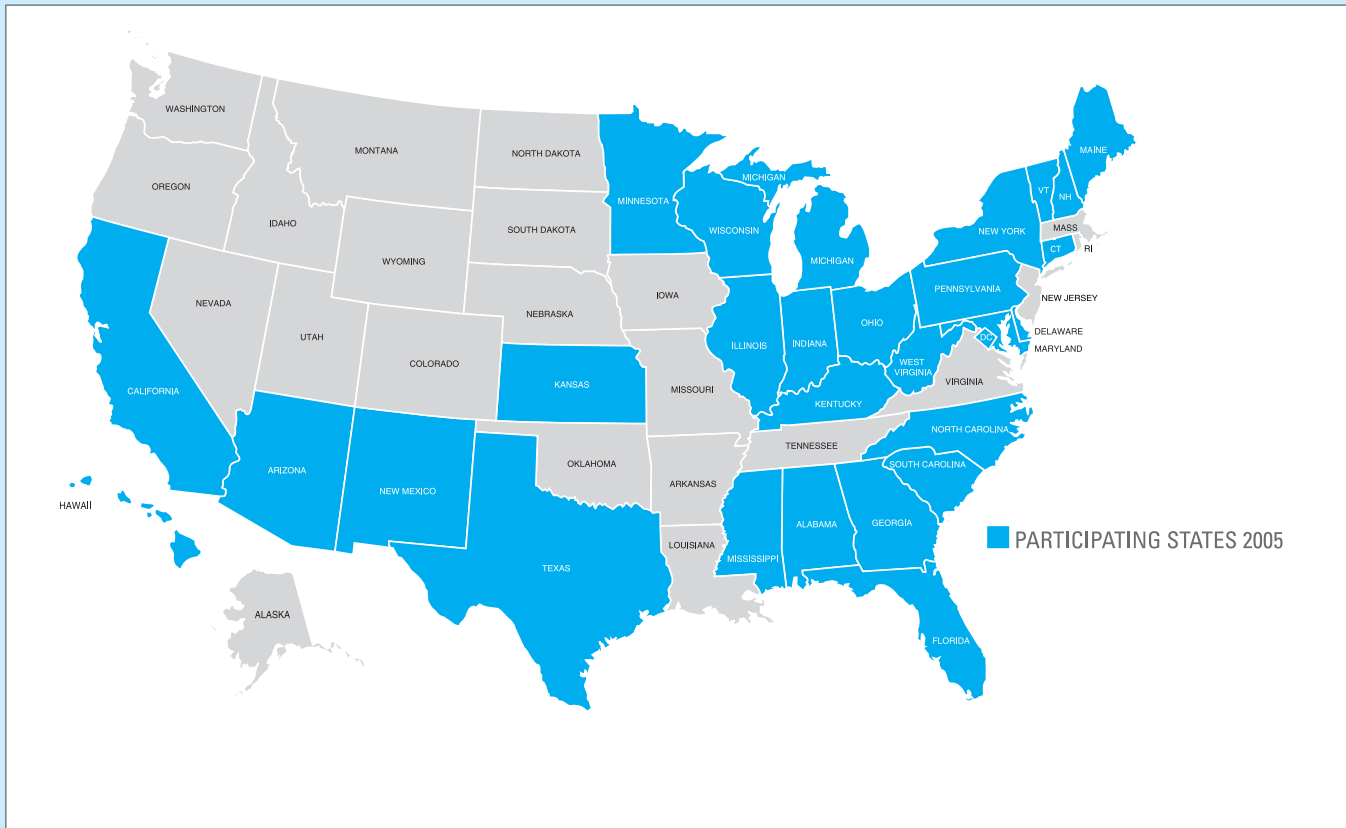
By year end, more than half of the states and the District of Columbia—along with more than 20 major associations whose members manage many of the nation's office buildings, schools, hospitals, and other commercial facilities—were participating in the Challenge (see Figure 12 and Table 14). These associations and states are encouraging their members to benchmark the energy use of their buildings, set an energy savings target of 10 percent or more, and make the investments necessary to achieve this goal. In addition, many of them are undertaking efforts, in conjunction with EPA, to train their members on how to achieve their goals. For example:

- BOMA (the Building Owners and Managers Association International)—which represents 9 billion square feet of office space across the country—launched its Building Energy Efficiency Program (BEEP) and offered Web-based benchmarking training that is expected to reach thousands of building managers with significant benchmark activity in most states.
- Ten leading associations representing state school boards, superintendents, principals, facility planners, parents, and teachers joined with EPA to address critical energy issues in our nation's K-12 schools. Through the ENERGY STAR Challenge, these groups are helping school decisionmakers assess how much energy school districts currently use, establish efficiency improvement goals of 10 percent or greater district wide, and make efficiency improvements wherever cost-effective.

These association-led outreach and training efforts are producing the tools and information that building owners and managers need to control their energy costs.



**FIGURE 12. STATES COMMITTED TO THE ENERGY STAR CHALLENGE THROUGH 2005**



**TABLE 14. KEY ASSOCIATIONS COMMITTED TO THE ENERGY STAR CHALLENGE THROUGH 2005**

Alliance to Save Energy (ASE)	The National Association of Energy Service Companies (NAESCO)
The American Hotel & Lodging Association (AH&LA)	The National Association of Secondary School Principals (NASSP)
The American Society for Healthcare Engineering of the American Hospital Association (ASHE)	The National Association of State Energy Officials (NASEO)
The American Solar Energy Society (ASES)—Legacy Schools Program	The National Energy Education Development (NEED) Project
The Association of Energy Engineers (AEE)	The National Energy Foundation (NEF)
Association of School Business Officials (ASBO) International	National Parent Teacher Association (PTA)
Building Owners & Managers Association International (BOMA)	The National School Boards Association (NSBA)
The Business Council of Fairfield County, Connecticut (SACIA)	North East Sustainable Energy Association (NESEA)
Council of Educational Facility Planners International (CEFPI)	Public Technology Institute (PTI)
Council of the Great City Schools	The Real Estate Roundtable
Food Marketing Institute (FMI)	Sustainable Buildings Industry Council (SBIC)
National Association of Counties (NACo)	United States Telecom Association (USTA)
The National Association of Elementary School Principals (NAESP)	

## **Recognizing Excellence in Efficient Buildings and Energy Management.**

As a critical element of its commercial building program, EPA offers ENERGY STAR recognition for leadership in energy efficiency. This recognition is available for individual buildings that are energy efficient, for organizations that demonstrate superior energy management by meeting energy saving milestones across their entire portfolio of buildings, and for a select number of organizations each year that stand out within their sector.

Businesses and public institutions can earn the ENERGY STAR to distinguish highly efficient buildings based on EPA's building energy performance rating system, which also meet industry standards for indoor air quality. These buildings consume about 35 percent less energy than typical buildings while providing comparable comfort and services. 2005 highlights are described below:

- More than 2,500 buildings (representing 480 million square feet) earned the ENERGY STAR for superior energy and environmental performance, saving their owners an estimated \$350 million annually on energy relative to typical buildings (see Figure 13).
- More than 400 buildings, double the number from the previous year, have demonstrated sustained energy performance by qualifying for the ENERGY STAR for 2 years or more.
- Food Lion was recognized as the first organization to earn its 400th ENERGY STAR label, representing the single largest number of labels earned by any one partner.
- More than 200 schools earned labels in 2005, with the San Diego City Schools qualifying for over 100 labels.
- The hotel sector was strongly represented by Marriott International, which earned almost 150 ENERGY STAR labels.

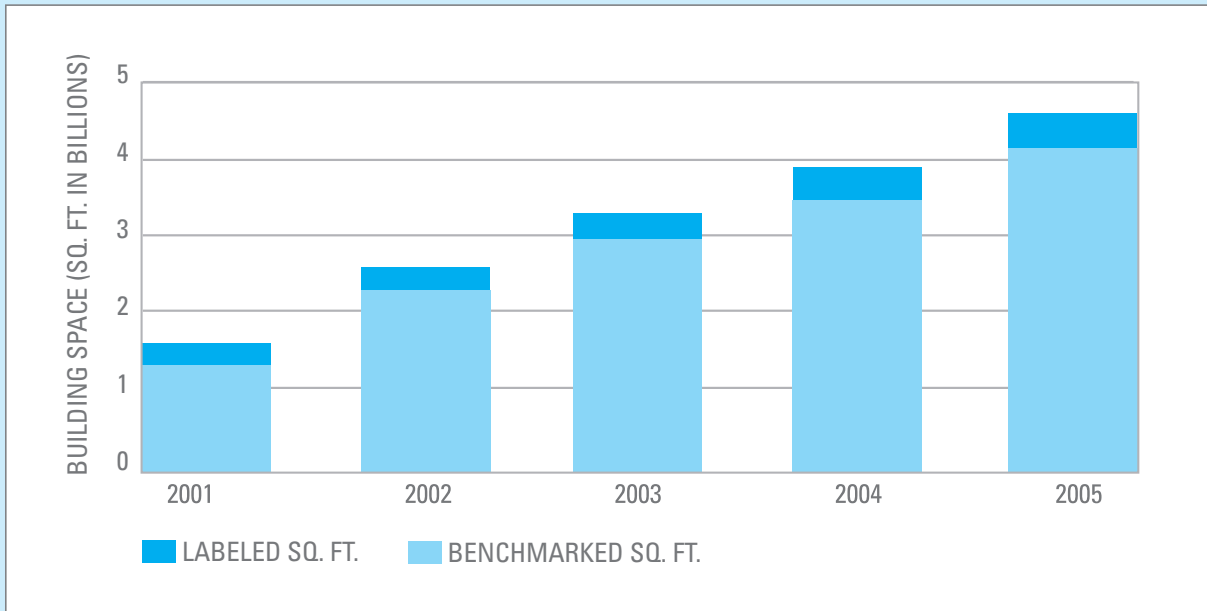
In addition, more organizations were recognized as ENERGY STAR Leaders in 2005 bringing the total to 20. These organizations achieved a 10, 20, or 30 percent improvement across all their buildings or an average portfolio-wide rating of 75 or better. They include school districts, hospitals, supermarkets, hotels, banks, and commercial real estate companies and are leading examples of how to meet or better the ENERGY STAR Challenge (see Table 15).

EPA also recognized 10 organizations for their efforts in 2005 with the ENERGY STAR Partner of the Year Award for energy management (see p. 19 and p. 37). These organizations included a school district, hospital, and hotelier, as well as service and product providers. Seven more organizations were recognized for Sustained Excellence for demonstrating continued significant energy reductions, building upon prior achievements, and going beyond "program maintenance."

## **Building Benchmarking Gaining Momentum.**

Knowing "you cannot manage what you cannot measure," EPA released an energy performance rating system for commercial buildings in 1999. This system compares the energy use of individual buildings against the national stock of similar buildings using a 1 to 100 point rating scale, and it shows building owners and managers whether a building is operating at an efficient level or if it may be a strong candidate for cost-effective efficiency improvements. Highlights for 2005 are described below:

- The number of buildings whose energy use has been assessed using EPA's energy performance rating system continued to grow, increasing by about 20 percent over 2004 (see Figure 13). The rating system has been used to evaluate about 26,000 buildings, including 38% of hospital space across the country, 25% of office building space, 24% of supermarket space, 15% of school space, and 14% of hotel space, with significant benchmark activity in most states (see Figure 14, p. 35).
- EPA launched a new feature to make energy benchmarking easier for owners of large building portfolios. The ENERGY STAR Exchange Services is designed to integrate EPA's energy performance rating system into energy billing services offered by third parties. This new feature provides automated benchmarks of customers' facilities within Web-based energy tracking software. More than 3,000 benchmarked buildings were associated with the nine companies that hosted the system.
- EPA also offered training, including benchmarking sessions, to several hundred SPP partners. They assisted with more than 5,000 benchmarks and helped label 45 percent of the buildings qualifying for the ENERGY STAR during the year.

**FIGURE 13. BUILDING BENCHMARKING AND ENERGY STAR BUILDING LABELING GAIN MOMENTUM****TABLE 15. 2005 ENERGY STAR LEADERS**

<p><b>ACHIEVING A 10-POINT IMPROVEMENT PORTFOLIO WIDE</b></p> <p>Colorado Springs School District 11 <i>Colorado Springs, CO</i></p> <p>Independent School District 197 <i>Mendota Heights, MN</i></p> <p>New York-Presbyterian Hospital <i>New York, NY</i></p> <p>Rochester City School District <i>Rochester, NY</i></p> <p>South Colonie Central School District <i>Albany, NY</i></p> <p>South Washington County School District 833 <i>Cottage Grove, MN</i></p> <p>The Vanguard Group <i>Valley Forge, PA</i></p> <p>York County School Division <i>Yorktown, VA</i></p>	<p><b>ACHIEVING AN AVERAGE PORTFOLIO-WIDE RATING OF 75 OR BETTER</b></p> <p>Buehler Food Markets <i>Wooster, OH</i></p> <p>Cambridge Savings Bank <i>Cambridge, MA</i></p> <p>Columbus Hospitality <i>Columbus, OH</i></p> <p>Douglas, Emmett &amp; Company <i>Santa Monica, CA</i></p> <p>Food Lion, LLC <i>Salisbury, NC</i></p> <p>Giant Eagle <i>Pittsburgh, PA</i></p> <p>Granite Properties <i>Plano, TX</i></p> <p>Gresham-Barlow School District <i>Gresham, OR</i></p> <p>H.E. Butt Grocery Company <i>San Antonio, TX</i></p> <p>San Diego City Schools <i>San Diego, CA</i></p> <p>The Saunders Hotel Group <i>Boston, MA</i></p> <p>USAA Real Estate Company <i>San Antonio, TX</i></p>
<p><b>ACHIEVING A 20-POINT IMPROVEMENT PORTFOLIO WIDE</b></p> <p>Cambridge Savings Bank <i>Cambridge, MA</i></p>	
<p><b>ACHIEVING A 30-POINT IMPROVEMENT PORTFOLIO WIDE</b></p> <p>Gresham-Barlow School District <i>Gresham, OR</i></p>	

## Integrating ENERGY STAR and New Building

**Design.** EPA has expanded ENERGY STAR to include new building design because it is important to integrate energy efficiency into the design process as early as possible. EPA promotes energy efficiency as both a stand-alone goal and a critical element of green

buildings. In 2005, EPA worked collaboratively with leading designers, states, federal agencies, the American Institute of Architects (AIA), and green building rating organizations to integrate aggressive energy use targets for new buildings so as to capture the environmental benefits and financial value that energy efficiency offers. Highlights for 2005 are described below:



- The number of participating architecture and engineering (A&E) firms rose to 70—a fourfold increase in 3 years. Partners now use the “Designed to Earn the ENERGY STAR” graphic on their project drawings to show the projects meet EPA energy performance criteria.
- About 1,200 professionals in the A&E community learned about the importance of setting energy targets during the design phase and checking their designs’ estimated energy use against these targets as projects mature.
- The 2005 AIA Top Ten Green Projects, a prominent U.S. design competition, incorporated EPA’s energy rating as part of the evaluation criteria.
- Green building rating tools began to integrate energy performance requirements or guidance. For instance, Green Globes, a green building management tool, incorporated EPA’s energy performance rating (Target Finder) into its green building assessment. The USGBC’s LEED Advanced Workshops and Energy Simulation Workshop include training on how to set energy targets, and LEED-NC added a requirement that new construction projects use Target Finder to document the whole-building energy use expected from the building submitted for certification.
- Innovative Design of Raleigh, North Carolina, was the first architecture firm to receive national recognition from EPA for energy-efficient design.

## Making More Commercial Products Available.

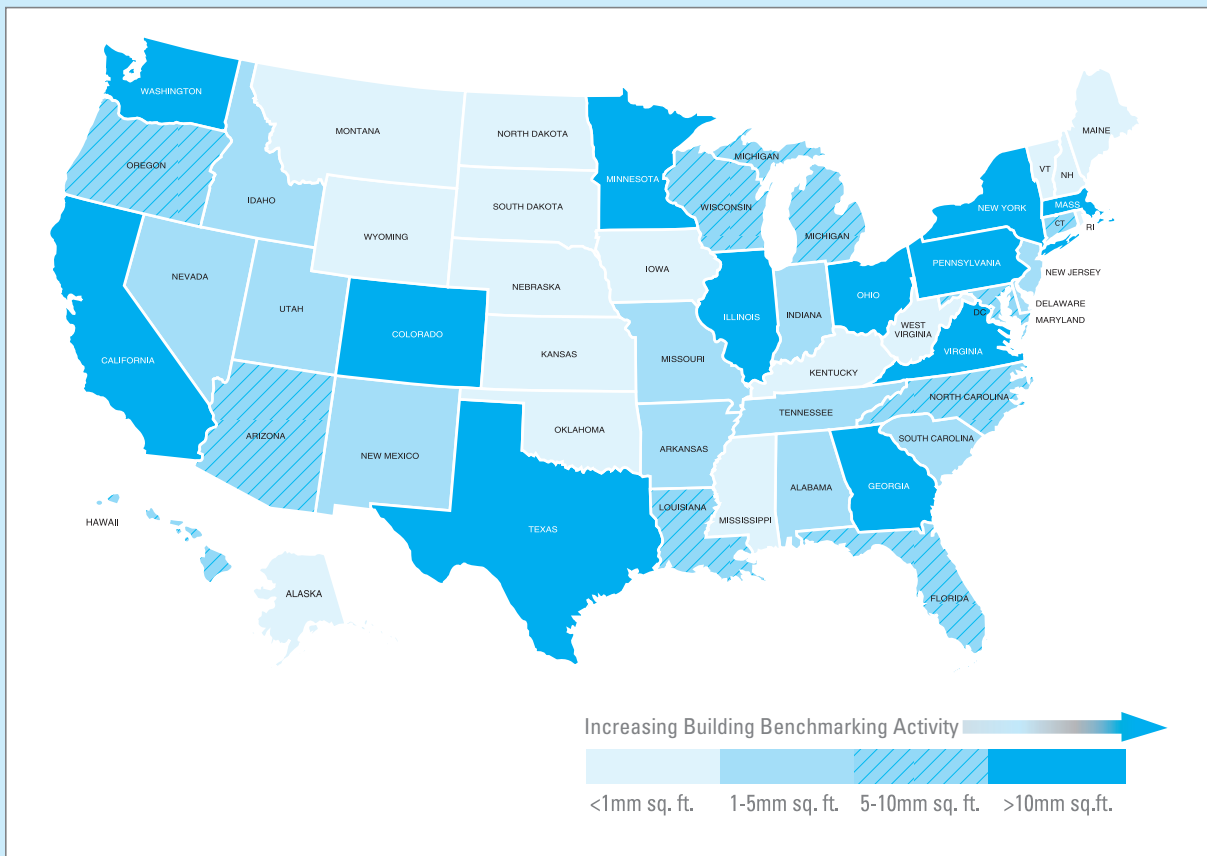
EPA promotes the purchase of certain commercial products as a key strategy for saving energy in private and public sector buildings. Program efforts focus on office equipment, commercial food service equipment, and lighting (exit signs and LED traffic signals), among others. EPA also assists partners in adopting and enabling computer power management, a proven energy and cost saving tool. EPA is working to keep the ENERGY STAR specifications for these products up to date, as well as to add new product categories with a focus on providing a suite of efficient products for the commercial food service sector (see Table 12 on p. 18 and Table 16).

**Helping Small Businesses Save Energy.** Small businesses and faith-based organizations have tremendous opportunity to cost-effectively reduce energy use, which is critical to keeping their energy costs manageable and making significant contributions that benefit the environment. ENERGY STAR guidance helps these organizations find effective energy solutions. In 2005, EPA:

- Improved the ease of use of its ENERGY STAR Small Business guide by producing a Web-based version of the popular “Putting Energy into Profits Guidebook,” which was downloaded more than 8,000 times in 2005.
- Produced a new energy efficiency guide specifically tailored to automobile dealerships in conjunction with the National Automobile Dealers Association (NADA), which will print 20,000 copies and distribute them to members.
- Made plans to implement the Energy Policy Act of 2005, signed in November 2005, which directed EPA to provide “special outreach to small business” in conjunction with the U.S. Small Business Administration and DOE.

**Building the Market for Services.** In 2005, EPA continued to partner with organizations such as energy service providers, utilities, state energy groups, and public benefits funds administrators to provide clear, accurate information to energy end-users about opportunities for improving energy performance. Highlights include:

- To meet a California Executive Order requiring a 20-percent reduction in energy use in state buildings by

**FIGURE 14. BUILDING BENCHMARKING ACTIVITY BY STATE****TABLE 16. ENERGY STAR COMMERCIAL PRODUCT SPECIFICATIONS REVISED AND IN PROGRESS**

PRODUCT CATEGORY	YEAR INTRODUCED AND (YEAR REVISED)	RESPONSIBLE AGENCY	STATUS OF ACTIVITY IN 2005
Computers	1992 (2006)	EPA	Revision starting in 2006
Commercial dishwashers	2006	EPA	New specification to be finalized in 2007
Copiers	1995	EPA	Revision in progress
Printers and fax machines	1993, 1994	EPA	Revision in progress
Roof products	1999 (2006)	EPA	Revision in progress
Scanners	1997	EPA	Revision in progress
Vending machines	2004 (2006)	EPA	Revision in progress

2015, the California Energy Commission (CEC), California State Department of General Services, and EPA collaborated to use EPA's energy performance rating to assess the energy use of state buildings.

- The EPA energy performance rating was successfully implemented in programs promoting whole-building energy saving improvements by NSTAR, National Grid, Connecticut Light and Power, and the Business Council of Fairfield County, Connecticut (SACIA). Other program administrators provided the Consortium for Energy Efficiency (CEE) with the information to develop a whole-building performance program model in cooperation with their national membership of utilities and energy efficiency program administrators.
- In collaboration with the energy services industry, EPA and the National Association of Energy Service Companies (NAESCO) trained over 500 energy service professionals from about 250 companies on the use of ENERGY STAR tools and resources to deliver objective energy assessments to energy users.
- EPA expanded ENERGY STAR to energy billing and tracking services by launching the ENERGY STAR Exchange Services with nine service providers in the fall of 2005. Anyone using these billing services can automatically receive ENERGY STAR ratings across their building portfolio.

## What to Expect in 2006 and Beyond

EPA will continue to work with its commercial sector partners to promote energy management and improvements in building energy use. Specifically, EPA will:

- Continue to promote the ENERGY STAR Challenge by increasing the number of participating organizations and reaching more building owners to assist them in reducing energy demand in their buildings. EPA will also expand its partnerships with all current Challenge participants, including the BOMA BEEP program, to build on their early successes and bring energy efficiency to more building owners.
- Refine and expand EPA's energy performance rating system. EPA will work collaboratively with additional stakeholders—including those in retail, higher education, and restaurants—to bring meaningful energy performance benchmarks and energy efficiency guidance to the market. EPA will also update the

energy performance rating system based on new commercial building energy use survey information. EPA expects to add water use tracking, another important measure of efficient management and environmental performance.

- Update energy-efficient product specifications for office equipment, refrigerated vending machines, and commercial roof products to increase their stringency. EPA will also add commercial dishwashers to the ENERGY STAR suite of qualifying commercial kitchen products (see p. 35).
- Continue to expand its emphasis on portfolio-wide energy savings. EPA will launch new efforts to allow all types of organizations to track and measure energy savings across their entire portfolio and to receive recognition for reaching important milestones.
- Work with the General Services Administration (GSA) and other federal agencies to make energy efficiency requirements part of government procurement and leasing policy starting with the facilities that house EPA employees.
- Work with other organizations to ensure that green buildings are energy efficient and deliver the financial and environmental benefits expected by owners. EPA will collaborate with federal agencies, AIA, and organizations that develop green rating systems to ensure that appropriate energy metrics are incorporated, including EPA's energy performance rating.
- Make information available to ENERGY STAR partners on how to use the energy efficiency tax incentives to further their energy efficiency goals; provide real estate owners guidance on how to use ENERGY STAR to find the best building opportunities; and offer EPA's energy performance rating as an important tool to include in supporting documentation for the tax deduction.
- Collaborate with small business associations and development centers, DOE, and the Small Business Administration to bring ENERGY STAR to this market, as intended by the Energy Policy Act of 2005.
- Continue efforts to integrate ENERGY STAR into state and utility energy efficiency programs to help organizations make cost-effective energy reductions of 10 percent or more.

**PARTNER OF THE YEAR—ENERGY MANAGEMENT****GRESHAM-BARLOW SCHOOL DISTRICT 10JT.  
GRESHAM, OREGON**

Gresham-Barlow School District 10Jt. serves more than 12,000 students in 19 K-12 schools. In 1998, to reduce energy and water consumption, the district adopted an energy policy and began investing in building infrastructure, energy-efficient equipment, and energy management software. Since then, Gresham-Barlow has decreased its overall energy use by 46 percent and saved a total of \$4.3 million. For the school year 2004/2005, the district avoided more than \$1 million in utility costs, equivalent to salaries for over 20 teaching positions. As a result of its partnership with the energy services company Save More Resources, which offers EPA's new automated rating feature, the district automatically tracks the impact of its efficiency program using EPA's energy performance rating for all schools. Gresham-Barlow School District 10 has earned the ENERGY STAR label for 12 of its schools, more than half, and is the first school district in the nation to achieve a 30-point improvement in energy performance. The energy team has developed a successful model for achieving buy-in from district executives, as well as principals and onsite staff, creating an environment where custodians, students, and teachers work together to save energy. Gresham-Barlow School District 10 is committed to promoting, educating, modeling, and teaching other school districts about their energy management system at conferences and workshops throughout the Pacific Northwest.

**MARRIOTT INTERNATIONAL, INC.  
WASHINGTON, DC**

In 2005, Marriott International, Inc. continued to build on its ambitious energy management achievements and took energy management to the next level. The success of its energy management program is rooted in the strong commitment of senior corporate leaders to responsible environmental stewardship. Marriott's strategy has ranged from simple behavior modifications to lighting replacements to the introduction of new technologies. The company has integrated energy management into daily operations through the active participation of all Marriott associates. To involve staff, the hotels hold contests with prizes for the best energy-saving tips and for the 10 best Energy Awareness Week posters. In 2005, Marriott introduced a retro-commissioning program and launched a 6-month re-lamping campaign to replace all lighting with the most energy-efficient option. Marriott has now rated 580 properties, moving closer to its goal of benchmarking 100 percent of its 980 properties. More than 150 properties have earned the ENERGY STAR label. Through its energy management program, Marriott has achieved annual energy savings of more than \$5 million and prevented the emissions of more than 68,000 tons of greenhouse gases.

**NEW YORK-PRESBYTERIAN HOSPITAL  
NEW YORK, NEW YORK**

An ENERGY STAR Award winner 2 years in a row, New York-Presbyterian Hospital (NYPH), which includes the university hospitals of Columbia and Cornell, employs more than 5,000 physicians and delivers comprehensive medical services to residents of New York City and its surrounding boroughs. NYPH joined ENERGY STAR in 2003, recognizing that every dollar saved on energy costs is a dollar that can be devoted to healthcare delivery or medical research. NYPH continues to implement a multi-million dollar initiative throughout its facilities. In 2005, the hospital system saved more than 4.5 million kWh of electricity (worth \$823,000), increased the average energy performance rating across its portfolio by 14 points, and earned the ENERGY STAR label for both hospitals. NYPH has embarked on an ambitious system-wide mission to communicate the value of energy efficiency using newsletters and posters, employee incentives, and presentations to its network affiliates. The financial value of New York Presbyterian Hospital's energy savings is equivalent to generating more than \$16 million in new business.



Highlights of more 2005 Award winners may be found at [energystar.gov/awards](http://energystar.gov/awards).

# ENERGY STAR IN THE INDUSTRIAL SECTOR

Manufacturing requires the input of substantial amounts of energy; therefore, companies that control costs by trimming energy use can improve their competitive advantage. EPA's industrial work began in the early 1990s with the Green Lights and Climate Wise programs and by 2000 was folded into ENERGY STAR. Through ENERGY STAR, EPA works with industries to help them strategically manage energy use, improve overall energy efficiency, and earn distinction as environmental stewards. EPA offers guidance on energy management, energy performance measurement tools, and peer exchange opportunities, which enable manufacturers to measure, monitor, manage, and continuously improve their energy use.

## Achievements in 2005

### Fostering Energy Savings Through Industrial Focuses.

By 2000, EPA had developed a robust energy management program for the commercial sector that included a new energy performance benchmarking approach for buildings to help building owners target energy efficiency investments and stimulate energy savings. In consultation with industry, EPA embarked upon developing similar energy management tools for the industrial sector, working with companies within specific sectors to address the unique energy efficiency barriers they face. These Industrial Focuses offer:

- Guidance on strategic energy management
- An industry-specific energy guide identifying the barriers to efficiency and options for overcoming them
- Peer exchange opportunities
- Plant-level energy performance indicators (EPIs) for gauging the energy efficiency of manufacturing plants and targeting improvements where systems do not exist

By 2005, eight industries were actively engaged with EPA in these efforts (see Table 17). Highlights of 2005 include:

- Three new focus industries were added—food processing, glass manufacturing, and water/wastewater treatment—as EPA partnered with them to develop standardized measurement tools, industry-specific best practices, and peer exchange opportunities.

- EPA advanced the existing industry focus partnerships with automobile manufacturing, cement, corn refining, pharmaceuticals, and petroleum refining by developing sector-specific energy management guidance and engaging the majority of companies in these sectors in discussions of best practices.
- EPA also made steady progress in developing plant level energy performance indicators, including (1) completing the first industrial plant EPI for automobile assembly plants located in the United States, (2) bringing two additional EPIs for cement plants and corn refineries close to completion, and (3) developing preliminary guidelines on how these industries can earn the ENERGY STAR for demonstrating superior energy and environmental performance.
- Companies reached out to peers to share their success with ENERGY STAR and improved energy management. EPA is pleased to share the letter written by the chairman of the Portland Cement Association to his executive counterparts throughout the industry, urging them to set clear direction for strategic energy management in their companies (see letter p. 41).

**Working Broadly with Industry.** Beyond the focus industries, EPA works with a large variety of manufacturing companies through ENERGY STAR. EPA supports these partners with energy management resources on the ENERGY STAR Web site, communication materials, an active network of energy managers, and recognition for superior energy management. Highlights of the past year include:

- The total number of industrial companies committing to improve their energy use by partnering with ENERGY STAR grew to more than 450 in 2005.
- More industrial and commercial partners than ever participated in the ENERGY STAR peer exchange network, as Webcasts and networking meetings were held to address such topics as (1) helping partners assess their energy programs and identify actions for improvement, (2) enabling companies to audit plants and buildings for energy efficiency upgrade opportunities, and (3) benchmarking energy use of facilities to empower organizations to set challenging goals. Participating partners indicated that they have learned valuable energy management information through ENERGY STAR networking and that they intend to use it in their operations. Overall, EPA saw



**TABLE 17. SUMMARY OF EPA ENERGY STAR INDUSTRIAL FOCUSES**

FOCUS	FUEL AND ELECTRICITY COST(\$)* (IN MILLIONS \$)	YEARS ACTIVE	SCOPE	PEER EXCHANGE OPPORTUNITY	INDUSTRY ENERGY GUIDE	ENERGY PERFORMANCE INDICATOR
<b>CEMENT MANUFACTURING</b>	\$1,200	2	50 percent of U.S.-based clinker** production capacity	●	Complete	Final draft
<b>CORN REFINING</b>	\$800	3	95 percent of U.S.-based refining capacity	●	Complete	Final draft
<b>FOOD PROCESSING</b>	\$1,000	NEW	80 percent of U.S. processed fruit, vegetable, and grain sales	●	In process	In process
<b>GLASS MANUFACTURING</b>	\$950	NEW	50 percent of U.S. flat, container, and fiberglass sales	●	In process	In process
<b>MOTOR VEHICLE MANUFACTURING</b>	\$900	4	75 percent of the industry with U.S.-based production.	●	Complete	Final, beginning updates
<b>PETROLEUM INDUSTRY</b>	\$7,600	1	64 percent of U.S.-based refining capacity	●	Complete	Exploring options
<b>PHARMACEUTICALS</b>	\$700	1	Over 50 percent of the global and U.S. manufacturing capacity	●	Complete	In process
<b>WATER AND WASTEWATER</b>	\$4,000	NEW	40 percent of the total U.S. population represented	●	In process	In process

\* Source: "Statistics for Industry Groups and Industries: 2004." Annual Survey of Manufacturers. Table 4. U.S. Census Bureau. December 2005.

\*\* Clinker is the output from a cement kiln.

## SUSTAINED EXCELLENCE AWARD WINNERS

### 3M

#### ST. PAUL, MINNESOTA

3M, a diversified technology company with a worldwide presence, continues to demonstrate outstanding leadership in improving energy performance. 3M's dedication to company-wide involvement in energy management yielded a 9-percent improvement in the energy efficiency of its facilities worldwide from 2004 levels. Continuous improvement over the past 5 years has enabled 3M to reduce energy intensity by almost 34 percent and save more than \$82 million, surpassing the company's energy reduction targets. As an active ENERGY STAR partner, 3M has promoted the benefits of energy efficiency and best management practices to employees, surrounding communities, and other U.S. manufacturing industries. 3M's energy management system is well-known among U.S. industrial companies and serves as a model for them.



### TOYOTA MOTOR MANUFACTURING NORTH AMERICA, INC.

#### ERLANGER, KENTUCKY

The principle of continuous improvement is the foundation for environmental and energy management at Toyota Motor Manufacturing North America (TMMNA). In 2005, TMMNA continued to follow its successful path by achieving an 8-percent reduction per vehicle in energy consumption. All of this was accomplished within a business environment where new manufacturing capabilities were added and total vehicle production increased. In addition to a corporate-wide energy management system, Toyota Motor Manufacturing completed a study of new generation lighting in its plants, transferred its facility assessment process to the plant level, and established an energy benchmarking procedure for its North American auto assembly plants using EPA's energy performance indicator. All TMMNA assembly plants scored well, indicating their energy-efficient operation.



participation grow to include nearly 400 participants in 2005, representing close to 200 organizations.

- New materials are now available to guide companies in improving energy management. These include “A Roadmap for Strategic Energy Planning and Management,” which EPA supported through The Conference Board, a leading organization that engages corporate managers in strategic business issues. The Roadmap helps companies systematically develop and implement corporate energy management programs. At the end of 2005, EPA also released a guide on building internal energy teams to help organizations take a key step in implementing more effective energy programs. The guide, titled “Teaming Up to Save Energy,” draws on the best practices from ENERGY STAR partners whose strong energy programs have consistently reduced energy use. Initial partner reaction has been positive, and several corporations have expressed an interest in distributing the guide across their entire organization to educate employees about managing energy.
- Two ENERGY STAR industrial partners were recognized in 2005 for Sustained Excellence in Energy Management: 3M and Toyota Motor Manufacturing North America. Recipients of the Sustained Excellence award continually challenge their organizations to improve energy efficiency and consistently meet the challenge. Both organizations have advanced company-wide energy management systems that annually achieve substantial energy savings (see p. 39). Additional industrial partners were also recognized with ENERGY STAR awards in 2005.

## What to Expect in 2006 and Beyond

In the coming years, EPA will expand its efforts to offer industrial companies assistance in reducing costs and improving environmental performance through energy efficiency. For example, EPA will:

- Continue industrial focuses with the eight interested sectors. EPA expects to finalize three industrial EPIs—for the cement and corn refining industries, and an updated EPI for auto assembly—and to make important progress in developing EPIs for the other sectors by the end of 2006. EPA will also expand the scope of some of the industrial focuses based on sector-specific interests and requests, including addressing

energy efficiency opportunities outside of vehicle assembly operations with the vehicle manufacturers, incorporating water-saving measures into the corn refining and food processing industry focuses, and developing a second EPI for the food processing industry for cereal production plants. EPA will continue to support peer exchange forums for these sectors in 2006 and beyond, including holding the first industry meetings with the glass and food processing industries.

- Add two new industrial sectors to its industrial focus initiative: petrochemical producers and the pulp and paper industry in 2006, and thereafter expect to add two industrial sectors each year.
- Based on the sector-specific EPIs, offer a system for labeling energy-efficient U.S.-based plants with the ENERGY STAR. EPA expects that facilities in the auto assembly, wet corn milling, and cement manufacturing industries will have earned the ENERGY STAR by the end of 2006.
- Expand the capability of companies to benchmark or rate the energy performance of all types of facilities by producing a guide on how to benchmark energy use. This guide will enable corporate energy managers to understand how to approach benchmarking as an important energy management practice and enable them to evaluate, compare, and improve the energy performance of their facilities, particularly where EPA has not provided benchmarks as part of its national energy performance rating system.
- Develop new energy management assessment tools. EPA will develop an energy management assessment matrix designed to evaluate the energy management practices in use at individual plants and buildings and to guide managers toward best practices. This plant-level assessment tool will complement the existing assessment matrix for evaluating the performance of corporate energy management programs.
- Work with leading U.S. business executives to identify the energy management strategies that can be used to manage energy effectively and competitively over the next decade.
- Continue to recognize excellence in industrial energy management.



## CALIFORNIA PORTLAND CEMENT COMPANY

2025 E. FINANCIAL WAY, GLENDORA, CA 91741 / TEL. (626) 852-6200 FAX (626) 963-9630

Dear Colleagues:

The U.S. cement industry is vibrant and thriving. As the leaders of this vital industry, we have the unparalleled opportunity to positively position our businesses, help the national economy, and promote practices that improve the environment through increased energy efficiency.

Energy is a major expense for this industry, often occupying up to 50% of variable costs. Profit erosion due to rising prices is a serious threat. At the same time, some governments are moving forward to control energy's impacts on the environment. Since most of us operate multinationally, somewhere in the world we are faced with paying the cost of controlling carbon emissions, or will be in the future. Further, consider that the Europeans are just beginning to evaluate the impacts of embedded energy in building materials. Imagine how this might affect our products.

As leaders, we must reduce energy use and remain viable in the future. We need to think progressively and act to minimize the risks, commit to sustainable energy management practices, and set clear directions for managing energy in our operations.

At California Portland Cement Company, I charged my staff with developing an energy management system that spans all operations. To date, we have saved over a million dollars in less than 2 years. We did this by deliberately making energy management part of our core business, by creating a corporate function for energy, and by viewing energy as a profit center for our business.

Many of us have made attempts to manage energy through hit-or-miss efforts, gathering the easy energy savings and accepting average performance. Remember this, without a permanent, centralized program, low-hanging fruit will grow back and the initial savings you achieve will be quickly lost. I encourage you to create an effective and permanent energy management program in your company.

California Portland Cement Company took advantage of its partnership with the ENERGY STAR program to identify the steps we needed to take. Most of you are partners and as such have a variety of resources available to help you successfully manage energy. If you have questions about how to do this, contact our Corporate Energy Manager Steve Coppinger at (626) 852-6200 or Tom Carter of the Portland Cement Association at (202) 408-9494.

Sincerely,

James Repman  
*Chairman, Portland Cement Association*  
*Chief Executive Officer*  
*California Portland Cement Company*

Cc: Stephen L. Johnson, Administrator  
 U.S. Environmental Protection Agency

## PROGRAM EVALUATION: MEASURING RESULTS IN THE ENERGY STAR PROGRAM

In 2005, the ENERGY STAR program helped Americans save more than \$12 billion on their energy bills while avoiding 34.2 million metric tons of greenhouse gas emissions—emissions equivalent to those from about 23 million vehicles.<sup>8</sup> The benefits resulting from key program strategies are estimated as outlined below.

### ENERGY STAR PRODUCTS AND NEW HOMES

By 2005, more than 2 billion ENERGY STAR qualifying products had been purchased, and more than 500,000 ENERGY STAR new homes had been constructed. These efforts are estimated to have saved 69.3 billion kWh of electricity and \$6.8 billion on energy bills, while avoiding 15.2 MMTCE of greenhouse gas emissions. These estimates were developed as follows:<sup>9</sup>

#### PRODUCTS

- Sales of products due to the ENERGY STAR program are determined as those above and beyond established business-as-usual purchases of these products. These sales are estimated by:
  - Collecting annual sales data on ENERGY STAR qualifying products from participating product manufacturers as a condition of partnership and supplementing these data by industry reports on total annual product sales as necessary. These data are screened and issues resolved.
  - Using established business-as-usual baselines for annual product sales for each product category. These baselines use historic data and expert judgment and typically reflect increasing market shares for efficient products and increasing product efficiencies over time.
- Annual energy savings are calculated using established values for the difference in annual energy use between a single ENERGY STAR product and a typically purchased product. For these values, EPA:
  - Assumes that ENERGY STAR products just meet the ENERGY STAR thresholds, even though there are some products that exceed this level.
  - Assumes the typically purchased product meets minimum efficiency standards where standards exist or uses the average energy use for the product category where there are no standards.
  - Supports primary data collection, such as product metering to collect power use information, where additional information is necessary to estimate energy savings.
- Peak power savings are estimated using product-specific factors that reflect the contribution of the annual energy savings from a product to peak load savings.
- Net energy bill savings reflect the incremental purchase price of ENERGY STAR qualifying products, where there is a price premium, and use national sector-specific fuel prices.
- Avoided emissions of greenhouse gases are determined using marginal emissions factors for CO<sub>2</sub> derived from energy efficiency scenario runs of national energy models. EPA is currently using the integrated utility dispatch model, Integrated Planning Model (IPM<sup>®</sup>), to estimate these emissions factors.<sup>10</sup>
- The potential for double-counting benefits, such as counting the energy savings from ENERGY STAR qualifying HVAC equipment installed in new ENERGY STAR homes in both areas, is addressed.

#### NEW HOMES

- EPA receives data quarterly from third-party verifiers (home energy raters) on the number of homes they verified to be ENERGY STAR, as a condition of program partnership. These raters abide by a set of quality assurance practices to ensure data quality. In addition, EPA reviews the submitted data and resolves any data irregularities.
- EPA recognizes that some new homes that qualify for ENERGY STAR are not a direct result of the program and that many homes built to ENERGY STAR levels due to the program are not labeled or reported to the program. Currently, EPA estimates the former number of homes to be lower than the latter.
- Annual energy savings are calculated using established values for the energy savings from a home that meets the ENERGY STAR level relative to a home built to code. Energy bill savings are calculated using average national energy prices for the residential sector.
- Peak power savings and avoided emissions of greenhouse gases are determined using approaches similar to those described for products.

## COMMERCIAL BUILDINGS

EPA estimates that 71.7 billion kWh and \$4.6 billion were saved while avoiding 14.8 MMTCE of greenhouse gas emissions due to ENERGY STAR commercial sector efforts in 2005. EPA estimates these benefits as follows:<sup>11</sup>

- Annual electricity savings are determined using a peer-reviewed methodology developed for the commercial building sector, which estimates national electricity savings due to market transformation programs throughout the United States. The methodology uses more than a decade of economic, product shipment, and other time-series data. It distinguishes electricity savings attributable to energy efficiency programs such as ENERGY STAR and those attributed to market effects such as declining prices for efficient products. It also distinguishes the electricity savings from utility-run demand-side management programs and other market transformation programs, such as DOE's Rebuild and FEMP programs and regional energy efficiency programs, so that the estimated annual electricity savings from ENERGY STAR do not overlap with these efforts.
- The peak power savings are estimated using system specific factors that reflect the contribution of the energy savings from lighting and other building improvements to peak load savings.
- Net energy bill savings reflect the incremental investment in ENERGY STAR measures determined by using simple payback period decision criteria and use national commercial sector fuel prices.
- Avoided emissions of greenhouse gases are determined using marginal emissions factors for CO<sub>2</sub> as discussed above.
- The potential for double-counting, such as including the electricity savings from ENERGY STAR office equipment used in commercial buildings, has been addressed.

## INDUSTRY

EPA partners in the industrial sector are estimated to have saved 10.2 billion kWh and \$1.2 billion and avoided 4.2 MMTCE of greenhouse gas emissions in 2005. EPA estimates program benefits as follows:

- Industrial partners use one of two methods to report greenhouse gas emissions reductions. Either partners file reports under the federal Voluntary Reporting of Greenhouse Gases Program (1605(b)) that are reviewed by EPA or, in a small number of cases, EPA works with individual companies to estimate their emissions reductions.
- EPA adjusts the reported results to account for business-as-usual improvements, structural changes in the sector that do not reflect efficiency improvements such as plant sales or closures, and program benefits attributable to the commercial building efforts or other federal programs. Process-related actions are included in the results, whereas activities such as recycling, lighting improvements, and transportation improvements are not.

<sup>8</sup> EPA's ENERGY STAR Qualified Products and Homes, Buildings, and Industry sector savings are \$6.8, \$4.6 billion, and \$1.2 billion respectively. Greenhouse gas savings from EPA Qualified Products, Homes, Buildings, and Industrial sectors are 14.8, 0.3, 14.8, and 4.2 MMTCE, respectively for a total of 34.2 MMTCE.

<sup>9</sup> For more details on many aspects of this method, see the peer-reviewed articles, "Savings Potential of ENERGY STAR Voluntary Labeling Programs," by Carrie A. Webber and Richard E. Brown; and "Savings Estimates for the ENERGY STAR® Voluntary Labeling Program: 2001 Status Report" by Carrie A. Webber, et al.

<sup>10</sup> For more details on IPM, see "Documentation Summary for EPA Base Case 2004 (V.2.1.9) Using the Integrated Planning Model" at <http://www.epa.gov/airmarkets/epa-ipm/docsummary.pdf>.

<sup>11</sup> For more details on many aspects of this method, see Marvin J. Horowitz, "Electricity Intensity in the Commercial Sector: Market and Public Program Effects," *The Energy Journal*, Vol 25, No. 2, Spring 2004, pp. 115 – 137, and "Economic Indicators of Market Transformation: Energy Efficient Lighting and EPA's Green Lights," *The Energy Journal*, Vol. 22, No. 4, Fall 2001, pp. 95 – 122.

# CLEAN ENERGY SUPPLY PROGRAMS

EPA is having success with two partnership programs, introduced in 2001 as part of the President's National Energy Policy, that were designed to increase the adoption of clean energy supply technologies across the United States. These programs, the Green Power Partnership and the Combined Heat and Power Partnership, provide partners with technical resources, credible benchmarks, access to expertise, and recognition for environmental leadership. The programs help partners find cost-effective solutions to meeting their energy needs. Efficient and clean energy supply options such as combined heat and power (CHP) and renewable energy resources are attractive options for many organizations as they face escalating fossil fuel prices and volatile energy markets. Clean energy supply also helps reduce emissions of criteria air pollutants and greenhouse gases, lower energy costs, and improve the reliability and security of our energy system. In 2005, EPA's Clean Energy Supply programs reduced greenhouse gas emissions by 3.1 million metric tons of carbon equivalent (see Table 18).

## Green Power Partnership

Fortune 500 corporations, colleges and universities, government agencies, and local communities all



significantly increased their green power purchasing in 2005 as part of EPA's Green Power Partnership, making it an outstanding year for the partnership. Partners are finding that purchasing electricity from renewable resources is an easy, effective way to reduce the environmental impact of their operations, hedge against volatile energy prices, stand out from the competition,

generate goodwill, and demonstrate environmental leadership. Because of this group's significant combined buying power, electricity providers are responding with new and improved products for the green power market.<sup>12</sup>

### In 2005, the Green Power Partnership:

- Increased the national visibility of its leading green power purchasers with the introduction of the Top 25 Partners list, which was picked up by media such as *USA Today*, *Newsweek*, Dow Jones, ABC News, MSNBC, CNN, and National Public Radio.
- Rolled out the Green Power Communities, which helps forward-thinking communities encourage citizens and businesses to purchase green power.
- Grew to 600 partners, with the addition of 95 new partners, and green power purchases totaling 4 billion kilowatt-hours (kWh) annually, 60 percent more than in 2004 and enough to power 375,000 homes (see Figure 15).
- Presented 22 Green Power Leadership Awards to top purchasers of green power and onsite renewable power systems (see Table 19).

### What to Expect in 2006 and Beyond

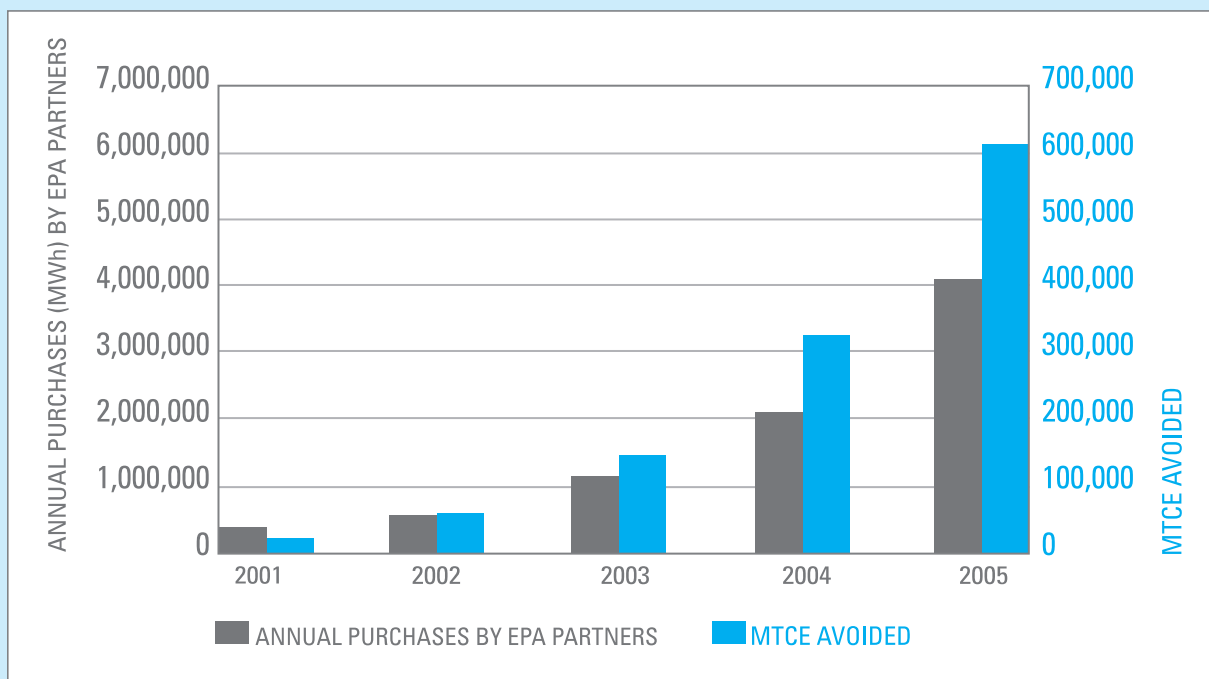
In the coming years, EPA will engage many new organizations in purchasing green power. EPA will launch a green power challenge for colleges and universities and add two new Top Partner lists for local governments and federal agencies. Overall, EPA hopes to engage new and existing partners to purchase 6 billion kWh of green power in the coming year. EPA also intends to update the program requirements for joining the Green Power Partnership to reflect the changing green power marketplace.

**TABLE 18. GREENHOUSE GAS EMISSIONS AVOIDED BY EPA'S CLEAN ENERGY SUPPLY PROGRAMS (MMTCE)**

	2002	2003	2004	2005
Clean Energy Supply Programs	0.5	1.0	2.0	3.1

<sup>12</sup> NREL, 2006. Price Trends in Green Power Purchases by Large Commercial and Institutional Customers. Prepared for the Climate Protection Partnerships Division.

**FIGURE 15. PARTNER GREEN POWER PURCHASES AND RESULTING GHG EMISSIONS AVOIDED SINCE 2001**



**TABLE 19. EPA RECOGNIZED 22 LEADING GREEN POWER PARTNERS IN 2005**

GREEN POWER ON SITE GENERATION AWARD	GREEN POWER PURCHASING AWARD	GREEN POWER PARTNER OF THE YEAR
Aspen Skiing Company <i>Aspen, Colorado</i>	Atlantic Golf, a Division of the Brick Companies <i>Edgewater, Maryland</i>	HSBC North America <i>Buffalo, New York</i>
City of Fresno General Services Department <i>Fresno, California</i>	Dagoba Organic Chocolate <i>Ashland, Oregon</i>	Johnson & Johnson <i>New Brunswick, New Jersey</i>
City of Vallejo, California <i>Vallejo, California</i>	Green Mountain Coffee Roasters <i>Waterbury, Vermont</i>	U.S. Air Force
County of Alameda <i>Oakland, California</i>	Harvard University <i>Cambridge, Massachusetts</i>	WhiteWave Foods Company <i>Boulder, Colorado</i>
FedEx Express-Oakland Hub Facility <i>Oakland California</i>	Hyatt Regency Dallas & Hyatt Regency DFW <i>Dallas, Texas</i>	
St. Francis Winery & Vineyards <i>Santa Rosa, California</i>	Mohawk Fine Papers, Inc. <i>Cohoes, New York</i>	
University of Minnesota, Morris <i>Morris, Minnesota</i>	Safeway Inc. <i>Pleasanton, California</i>	
	Starbucks Coffee <i>Seattle, Washington</i>	
	Western Washington University <i>Bellingham, Washington</i>	
	Whole Foods Market-Rocky Mountain Region <i>Austin, Texas</i>	
	The World Bank Group <i>Washington, D.C.</i>	

## Combined Heat and Power Partnership

Through the CHP partnership, EPA works in collaboration with partners—including energy users, project developers, equipment suppliers, and federal, state, and local policy makers—to address key barriers to further investment in cost-effective CHP. The program continues its work reaching out to key markets for CHP deployment. In 2005, EPA provided market analysis for three strategic sectors (dry mill ethanol production, hotels and casinos, and wastewater treatment plants) through targeted outreach, technical assistance, and multiple speaking engagements.



### In 2005, the CHP Partnership:

- Grew to 170 partners by adding 33 new partners, including Alliant Energy Generation, City of Palo Alto Utilities, Chevron Energy Solutions, Cornell University, Johnson & Johnson, and New York Presbyterian Hospital.

- Facilitated more than 30 new CHP projects, totaling 1,120 megawatts (MW) of new CHP capacity, for a total of nearly 3,500 MW since the program's inception (see Figure 16).
- Awarded 28 ENERGY STAR CHP Awards and Partnership certificates for highly efficient, exemplary CHP projects (see Table 20).
- Provided technical assistance to an additional 40 new projects.

### What to Expect in 2006 and Beyond

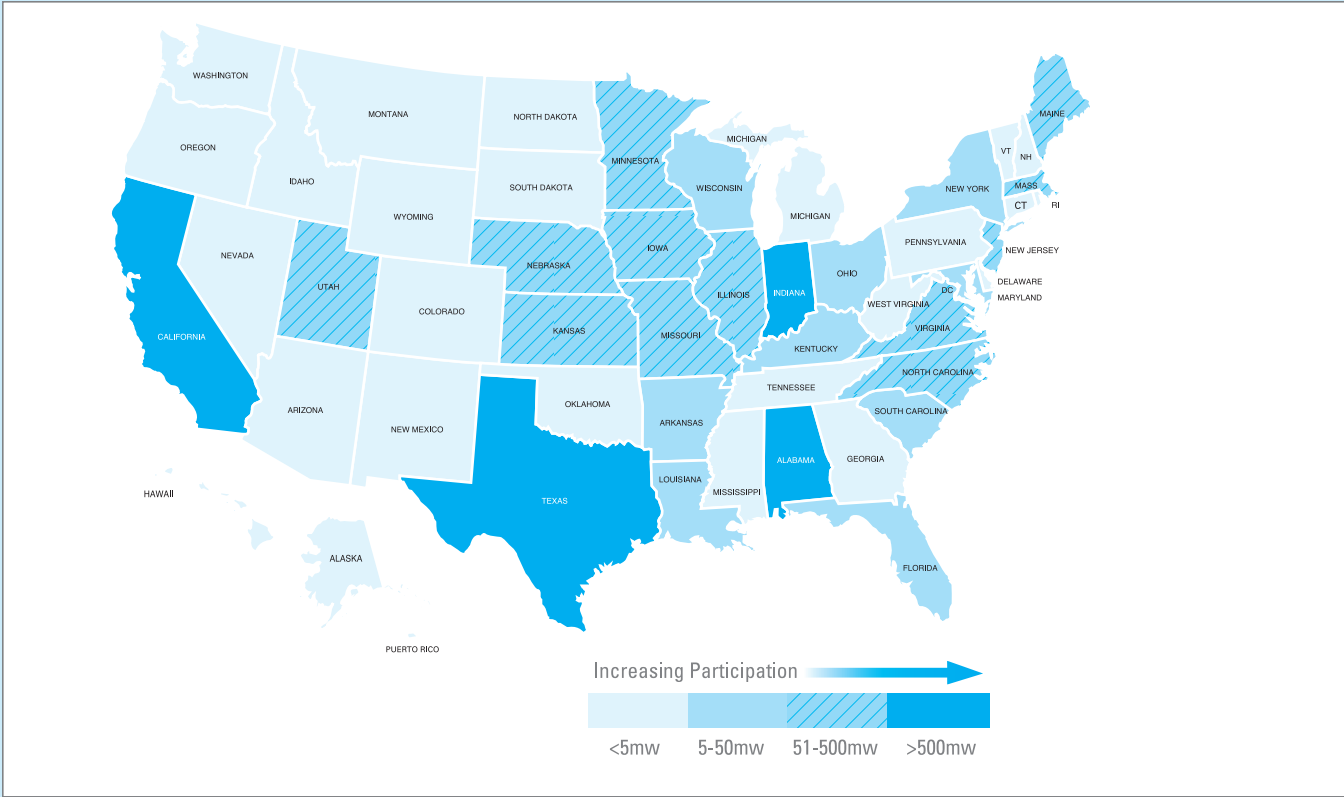
EPA will provide assistance in the development of about 30 new CHP projects, representing about 800 MW of new CHP capacity for each of the next few years. EPA will continue to work with the rapidly growing ethanol industry, begin working with the U.S. Department of Agriculture's Rural Development Business Programs to provide project facilitation services to rural renewable energy projects that offer significant environmental and economic development benefits, and provide technical assistance to states considering policies that promote CHP.

## PROGRAM EVALUATION: MEASURING RESULTS IN THE CLEAN ENERGY SUPPLY PROGRAMS

COMBINED HEAT AND POWER PARTNERSHIP	GREEN POWER PARTNERSHIP
<p>Program partners such as project owners voluntarily provide project-specific information on newly operational CHP projects to EPA. These data are screened and any issues resolved.</p> <p>Energy savings are determined on a project-by-project basis, based on fuel mix and project use. Estimates of the use of electricity, oil, and natural gas are developed, as well as the efficiency of use or generation, as appropriate.</p> <p>Emissions reductions are calculated on a project-by-project basis to reflect the greater efficiency of on-site CHP. Avoided emissions of greenhouse gases from more efficient electricity generation are determined using marginal emissions factors derived from energy efficiency scenario runs of an integrated utility dispatch model—IPM®, and displaced emissions from boiler produced thermal energy are developed through engineering estimates. In addition, emissions reductions may include avoided transmission and distribution losses, as appropriate.</p> <p>Only the emissions reductions from projects that meet the assistance criteria for the program are included in the program benefit estimates. EPA also addresses the potential for double counting of the benefits between this and other partnerships by having program staff meet annually to identify and resolve any overlap issues.</p>	<p>As a condition of partnership, program partners submit data on their purchases of qualifying green power products annually. These data are screened and any issues resolved.</p> <p>Avoided emissions of greenhouse gases are determined using marginal emissions factors for CO<sub>2</sub> derived from scenario runs of an integrated utility dispatch model, Integrated Planning Model (IPM®).</p> <p>The potential for double counting, such as counting green power purchases that may be required as part of a renewable portfolio standard or may rely on resources that are already part of the system mix is addressed through a partnership requirement that green power purchases be incremental to what may already be required.</p> <p>EPA estimates that the vast majority of the green power purchases made by program partners are due to the partnership, as partners comply with aggressive green power procurement requirements (usually at incremental cost) to remain in the program. Further, EPA estimates that its efforts to foster a growing voluntary green power market have likely led to additional voluntary green power purchases that have not been reported through the program.</p>



**FIGURE 16. CAPACITY OF COMBINED HEAT AND POWER PROJECTS BY STATE AS OF 2005**



**TABLE 20. EPA RECOGNIZED 28 LEADING COMBINED HEAT AND POWER PROJECTS IN 2005**

2005 ENERGY STAR CHP AWARD WINNERS	2005 CHP CERTIFICATE OF RECOGNITION WINNERS
<p>Arrow Linen Supply Company <i>New York</i></p> <p>Greenpark Care Center; American DG New York, LLC <i>New York</i></p> <p>Hermany Farms Dairy; American DG New York, LLC <i>New York</i></p> <p>Hexion Specialty Chemicals, Inc. <i>New York</i></p> <p>Middlebury College <i>Vermont</i></p> <p>Mohegan Sun <i>Connecticut</i></p> <p>Rego Park Nursing Home; AES-NJ Cogen Co. Inc. <i>New York</i></p> <p>St. Francis Hospital and Medical Center <i>Connecticut</i></p> <p>Sea Rise I; Bay Park I Associates <i>New York</i></p> <p>Sea Rise II; Bay Park II Associates <i>New York</i></p> <p>South Houston Green Power 2; Cinergy Solutions, Inc., and BP Global Power <i>Texas</i></p> <p>University of Maryland, College Park <i>Maryland</i></p> <p>University of Texas at Austin <i>Texas</i></p> <p>Weyerhaeuser Albany Containerboard Mill <i>Oregon</i></p> <p>Weyerhaeuser Hawesville Complex <i>Kentucky</i></p>	<p>4C Foods <i>New York</i></p> <p>10 West 66th Street Corporation <i>New York</i></p> <p>30 North LaSalle; Equity Office Properties <i>Illinois</i></p> <p>Beaumont Refinery Project; ExxonMobil Corporation <i>Texas</i></p> <p>Federal Research Center—White Oak Central Utility Plant; General Services Administration <i>Maryland</i></p> <p>Holliswood Care; American DG New York, LLC <i>New York</i></p> <p>La Jolla Medical Center; Department of Veterans Affairs <i>California</i></p> <p>Manchester Tank; NiSource Energy Technologies <i>Indiana</i></p> <p>South Windsor High School <i>Connecticut</i></p> <p>University of Cincinnati <i>Ohio</i></p> <p>Utilimaster; NiSource Energy Technologies <i>Indiana</i></p> <p>Vestil Manufacturing; NiSource Energy Technologies <i>Indiana</i></p> <p>Waldbaums Supermarket; A&amp;P Tea Company <i>New York</i></p>

# STATE AND LOCAL PROGRAMS AND INITIATIVES

Since 1992, EPA's State and Local Programs have been providing state and local governments with assistance in their efforts to develop policies and programs to reduce energy costs, improve energy efficiency, lower greenhouse gas emissions, improve air quality and public health, and promote economic development. With the demand for energy expected to climb 40 percent by the year 2025 and about 126 million people living in counties where monitored air is unhealthy at one or more times during the year, state and local officials are interested in solutions. There are many available clean energy policies for state and local governments to explore and develop. EPA estimates that if all 50 states implemented cost-effective clean energy and environment policies, the projected growth in demand for electricity could be cut in half by 2025; while the additional remaining increase in demand could be met with cleaner energy supplies. This translates into an annual savings of \$70 billion in energy costs by 2025, avoiding the need for more than 300 power plants and preventing the greenhouse gas emissions equivalent to those from 80 million vehicles.

EPA is pursuing a number of strategies to help states explore and implement clean energy policies. The strategies include a new partnership program with interested states to advance clean energy policies, targeted efforts to assist local governments, and efforts to help utilities and their regulators explore policy options for increasing investment in energy efficiency, combined heat and power, and renewable energy.

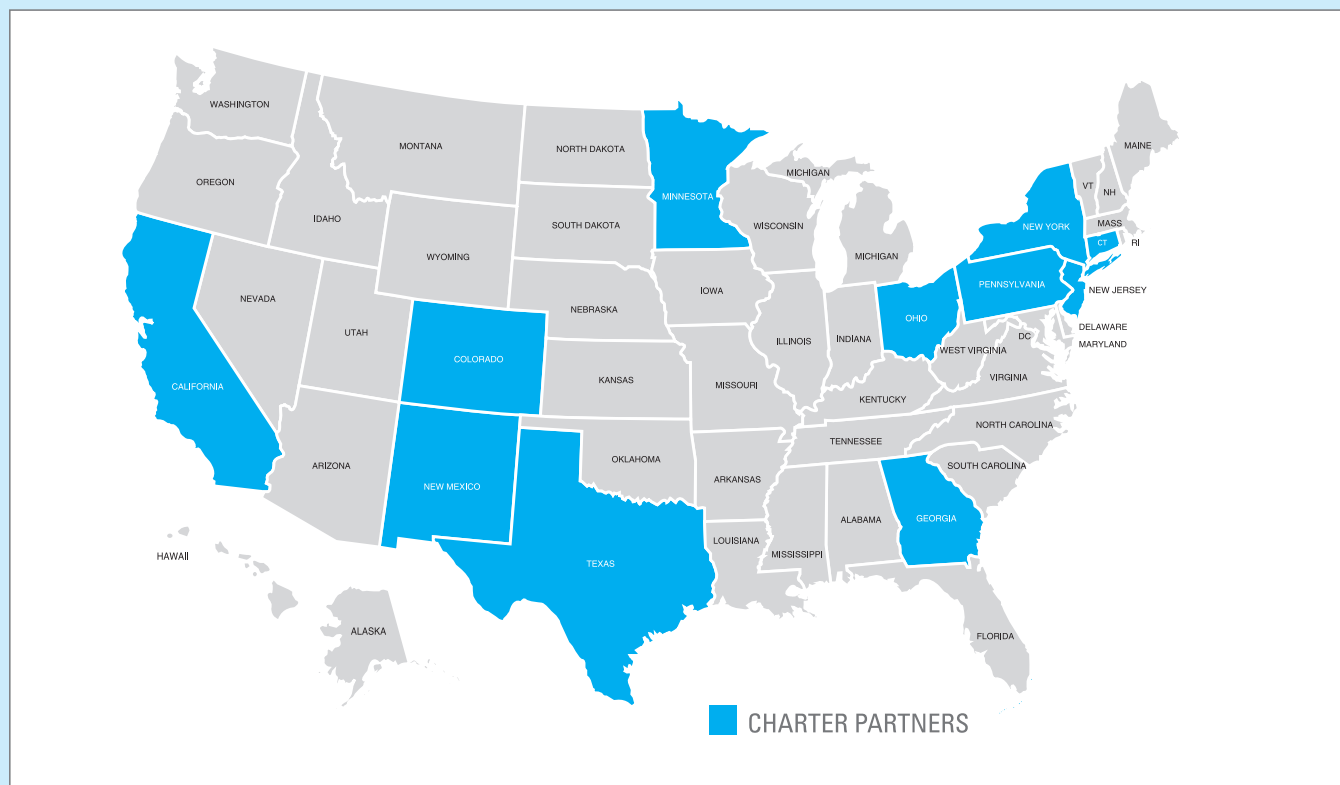
## Clean Energy-Environment State Partnership

In 2005, EPA launched the Clean Energy-Environment State Partnership program, designed to help states adopt clean energy policies and deploy clean energy programs. Through this program, EPA identifies and shares comprehensive guidance on successful, cost-effective state and local policies and initiatives; provides tools to help

states measure and evaluate the co-benefits of the policies; fosters peer exchange opportunities for state and local officials to share information on best practices and innovative policies; and recognizes their achievements.

### In 2005, the Clean Energy-Environment State Partnership:

- Supported the 11 charter partners of the program (see Figure 17) launched in February, helping them analyze clean energy options and prioritize policies of interest, as well as working with them to prioritize the type of guidance and technical assistance that would be helpful from EPA in the coming years.
- Developed a final draft of a new *Clean Energy and Environment Guide to Action*, which identifies and describes 16 clean energy policies and strategies that states have used to meet their clean energy objectives (see Table 21). These policies were selected for inclusion in the Guide to Action because of their proven effectiveness in a number of states. States are using the Guide to Action to learn from each other as they design and implement their own clean energy programs and policies.
- Conducted more than 10 peer exchange sessions of the EPA Clean Energy-Environment Technical Forum—involving a total of more than 100 state environmental, energy, and utility regulatory officials from over 35 states—to examine best practices on topics including renewable energy credits, state energy planning, high performance buildings, and clean distributed generation.
- Advanced knowledge about the role of pavement in heat islands by helping chart a strategy to help decisionmakers know the heat island implications of their paving options. EPA issued the draft *Cool Pavements* study, capturing the current knowledge about the science and options of alternative paving materials that can help lower urban temperatures.

**FIGURE 17. CHARTER PARTNERS IN THE CLEAN ENERGY-ENVIRONMENT STATE PARTNERSHIP****TABLE 21. SUMMARY OF CLEAN ENERGY POLICIES DESCRIBED IN EPA'S CLEAN ENERGY-ENVIRONMENT GUIDE TO ACTION**

CLEAN ENERGY-ENVIRONMENT GUIDE TO ACTION SUMMARY OF CLEAN ENERGY POLICIES BY TYPE OF CLEAN ENERGY			
CLEAN ENERGY POLICY	ENERGY EFFICIENCY	RENEWABLE ENERGY	CLEAN DG/CHP
<b>STATE PLANNING AND INCENTIVE STRUCTURES</b>			
Lead by Example	●	●	●
State and Regional Energy Planning	●	●	●
Determining the Air Quality Benefits of Clean Energy	●	●	●
Funding and Incentives	●	●	●
<b>ENERGY EFFICIENCY ACTIONS</b>			
Energy Efficiency Portfolio Standards (EEPS)	●		
Public Benefits Funds (PBF) for Energy Efficiency	●		
Building Codes for Energy Efficiency	●		
State Appliance Efficiency Standards	●		
<b>ENERGY SUPPLY ACTIONS (RENEWABLE ENERGY AND COMBINED HEAT AND POWER)</b>			
Renewable Portfolio Standards (RPS)		●	●
Public Benefits Funds (PBF) for State Clean Energy Supply Programs		●	●
Output-based Environmental Regulations to Support Clean Energy		●	●
Interconnection Standards		●	●
Fostering Green Power Markets		●	
<b>UTILITY PLANNING AND INCENTIVE STRUCTURES</b>			
Portfolio Management Strategies	●	●	●
Utility Incentives for Demand-Side Resources	●	●	●
Emerging Approaches: Removing Unintended Utility Rate Barriers to Distributed Generation		●	●

## What to Expect in 2006 and Beyond

EPA will continue to provide state and local governments with support for their clean energy activities. Specifically, EPA will:

- Add up to three new partners to the Clean Energy-Environment State Partnership Program.
- Release the final *Clean Energy-Environment Guide to Action* and maintain up-to-date online information about related state clean energy policies.
- Develop additional tools and materials for implementing policies in the Guide to Action, including a guidebook and tracking tool to support Lead by Example initiatives; a guidebook for measuring the multiple benefits of clean energy; and guidance for undertaking energy efficiency and renewable energy potential studies and designing clean energy funds.
- Expand collaboration with program partners, providing targeted support for their efforts to develop and implement effective clean energy policies, including sponsoring peer exchange opportunities to assist states in learning about leading policies.
- Release the Co-Benefits Risk Assessment Model (COBRA), a peer reviewed tool that enables officials to compare air pollution scenarios associated with different policies and incorporate human health effects into their decisions.
- Establish a Center of Excellence on SMART Innovations for Urban Climate and Energy to research and help implement environmentally preferable technologies and policies for reducing urban temperatures.
- Publish the *Heat Island Guidebook* presenting easy to-understand action strategies on temperature reducing measures—in particular, cool roofing and strategic tree planting—and implementation guidance for governments and community groups.

## Clean Energy and Utility Regulatory Policies

EPA has been assisting state public utility commissions (PUCs) and others with tools and resources for exploring and implementing clean energy policies for a number of years, including maintaining an important database on power plant emissions, eGRID, that allows policy makers to track the progress of key policies.

## In 2005, EPA:

- Announced a set of pilots with seven interested PUCs—those in Arkansas, Connecticut, Hawaii, Minnesota, New Mexico, New Jersey, and the District of Columbia—to explore approaches for encouraging energy efficiency and clean energy resources within their processes. Highlights to date include assisting state PUCs in exploring options for energy efficiency proceedings; providing materials on the success of time-of-use rates in promoting energy efficiency; assisting with state-level workshops to explore clean energy policies; and sharing of best practice information on energy efficiency programs.
- Initiated, in conjunction with DOE, an effort to bring utilities, their regulators, and other key stakeholders together to identify and address utility regulatory and other barriers limiting greater investment in energy efficiency in a National Action Plan for Energy Efficiency. The effort is co-chaired by Diane Munns, President of the National Association of Regulatory Utility Commissioners, and Jim Rogers, CEO of Duke Energy, and involves more than 50 representatives from leading gas and electric utilities, state agencies, energy consumers, energy service providers, and environmental and energy efficiency organizations (see Table 22). This leadership group has developed a work plan for meeting their objectives, which will be carried out in 2006 (see letter excerpt, p. 51).

## What to Expect in 2006 and Beyond

EPA will continue to assist interested state PUCs in their efforts to advance clean energy by organizing workshops, keeping eGRID up to date, sharing experiences, and conducting research on best practice policies and programs across the country. EPA will continue to facilitate the National Action Plan for Energy Efficiency in conjunction with DOE. Key milestones include the development and release of major recommendations and the announcement by the leadership group and others of actions they will take to advance energy efficiency in their areas of business.

**TABLE 22. NATIONAL ACTION PLAN FOR ENERGY EFFICIENCY LEADERSHIP GROUP**

Alliance to Save Energy	ISO New England Inc.	Santee Cooper
American Council for an Energy-Efficient Economy	Johnson Controls	Seattle City Light
American Electric Power	MidAmerican Energy Company	Servidyne Systems, LLC
Austin Energy	Minnesota Public Utilities Commission	Southern California Edison
Baltimore Gas and Electric	National Association of Regulatory Utility Commissioners (NARUC)	Southern Company
Bonneville Power Administration	Natural Resources Defense Council	State of Maine
California Energy Commission	New Jersey Board of Public Utilities	Tennessee Valley Authority
California Public Utilities Commission	New Jersey Natural Gas (New Jersey Resources Corporation)	Texas State Energy Conservation Office
Connecticut Consumer Counsel	New York Power Authority	The Dow Chemical Company
Connecticut Department of Environmental Protection	New York State Public Service Commission	Tristate Generation and Transmission Association, Inc.
Connecticut Department of Public Utility Control	North Carolina Air Office	USAA Realty Company
District of Columbia Public Service Commission	North Carolina Energy Office	Vectren Corporation
Duke Energy	Office of the Ohio Consumers' Counsel	Vermont Energy Investment Corporation
Entergy Corporation	Pacific Gas and Electric	Wal-Mart Stores, Inc.
Environmental Defense	PJM Interconnection	Washington Utilities and Transportation Commission
Exelon	PNM Resources	Waverly Light and Power
Food Lion	Sacramento Municipal Utility District	Xcel Energy
Great River Energy		

**OCTOBER 3, 2005****EXCERPT FROM LETTER FROM CO-CHAIRS TO THE LEADERSHIP GROUP FOR THE NATIONAL ACTION PLAN FOR ENERGY EFFICIENCY**

As an important energy market participant, you know that today we face a number of challenges in securing affordable, reliable, secure and clean energy to meet our nation's growing energy demand. Your leadership is necessary to help us meet this challenge.

Energy efficiency is a critically under-utilized resource in the nation's energy portfolio. Those states and utilities that have made significant investments in energy efficiency have lowered the growth for energy demand and moderated their energy costs. However, many hurdles remain that block broader investments in cost-effective energy efficiency. That is why we have agreed to chair the Energy Efficiency Action Plan. It is our hope that with the help of leading organizations like yours, we will identify and overcome these hurdles.

Through this Action Plan, we intend to identify the major barriers currently limiting greater investment by utilities in energy efficiency. We will develop a series of business cases that will demonstrate the value and contributions of energy efficiency and explain how to remove these barriers (including regulatory and market challenges). These business cases, along with descriptions of leading energy efficiency programs, will build upon practices already in place across the country.

Our goal is to use the resulting ideas and products, beginning in 2006, to spark an aggressive new national commitment to energy efficiency ... and a dynamic Energy Efficiency Action Plan for the nation.

Diane Munns  
*President, NARUC*  
*Member, Iowa Utilities Board*

Jim Rogers  
*President and CEO*  
*Duke Energy*

# METHANE PROGRAMS

Twenty times more effective than CO<sub>2</sub> at trapping heat in the atmosphere, methane (CH<sub>4</sub>) is both a potent greenhouse gas and a valuable energy resource (see Table 23).

EPA's methane partnerships include the Landfill Methane Outreach Program, the Natural Gas STAR Program, and the Coalbed Methane Outreach Program. All follow a successful strategy—to provide reliable and comprehensive technical, economic, and regulatory information on effective emissions reduction technologies and practices. In addition, EPA's methane partnerships offer tools to help industrial sector partners implement methane reduction opportunities and recognize those partners demonstrating leadership. Partners can gain a competitive advantage by improving their operating efficiency. EPA also provides information and tools to the agricultural community to encourage methane reductions (see sidebar below).

In 2005, the methane programs saved a combined 14.2 MMTCE, an increase of more than 50 percent since 2000 (see Table 24). These climate partnerships, in conjunction with a regulatory program to limit air emissions from the nation's largest landfills, have reduced national methane emissions to 10 percent below 1990 levels, and they are projected to remain below 1990 levels through at least 2012 (see Figure 18).

## Natural Gas STAR Program

Natural Gas STAR is a voluntary partnership between EPA and the U.S. natural gas industry designed to overcome barriers to the



adoption of cost-effective technologies and practices that reduce emissions of methane. Initiated in 1993, Natural Gas STAR welcomes partners from all sectors of the supply chain—production, processing, transmission, and distribution—to participate in the program and reap the benefits of methane reduction. EPA has developed a range of tools and resources to help corporate partners implement best management practices designed to reduce gas loss. The program achieved significant reductions through 2005, reducing methane emissions from natural gas systems by 7.5 MMTCE in 2005 alone.

### In 2005, Natural Gas STAR:

- Achieved 56 percent industry participation across all major sectors (production, processing, transmission, and distribution).
- Partnered with seven new companies, bringing the total number of partners to 114.
- Conducted six technology transfer workshops covering all four sectors.

### AGRICULTURAL BASED PROGRAMS

Through outreach to agriculture-based organizations and livestock producers, EPA and the U.S. Department of Agriculture (USDA) work together to promote practices that reduce greenhouse gas emissions at U.S. farms. The programs collaborate with the nation's swine and dairy producers to encourage development of waste management systems that generate farm revenues while reducing water and air pollution. Currently, there are 184 operating or planned systems in the United States. EPA provides technical information and tools to aid in the assessment and implementation of these projects.

#### IN 2005, EPA AND USDA:

- Assisted swine and cattle producers in carrying out projects that produced nearly 400 million kWh/year of renewable energy from farms capturing methane. This energy is then used by the farm and local community.
- Continued to expand methane-reducing technologies in the livestock sector to help ensure clean water and air, and held extension events to market these opportunities. Such activities take place as part of the implementation of Section 9006 of the 2002 Farm Bill.

#### WHAT TO EXPECT IN 2006 AND BEYOND

- Collaboration with state energy programs across the country to facilitate the development of anaerobic digesters as renewable energy resources
- Organization of a national conference to provide environmental, program, market, state-of-the-art technical, and funding information on anaerobic digestion systems

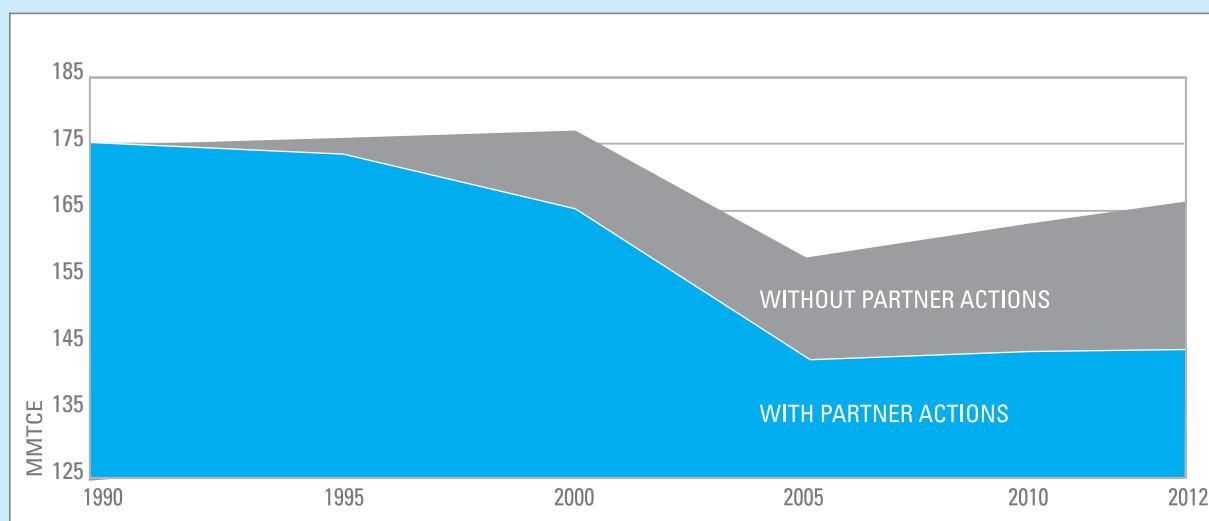
**TABLE 23. GLOBAL WARMING POTENTIALS (GWPS) AND ATMOSPHERIC LIFETIMES OF GREENHOUSE GASES**

GREENHOUSE GAS	GLOBAL WARMING POTENTIAL FOR 100 YEARS	ATMOSPHERIC LIFETIME (YEARS)
Carbon Dioxide	1	50-200
Methane	21	12± 3
Nitrous Oxide	310	120
Hydrofluorocarbons	140-11,700	1.5-264
Perfluorocarbons	6,500-9,200	3,200-50,000
Sulfur Hexafluoride	23,900	3,200

Source: IPCC 1996

**TABLE 24. METHANE PROGRAMS: EPA GOALS AND ACHIEVEMENTS**

PROGRAM	2005 GOAL	2005 ACHIEVEMENT	2006 GOAL
<b>Natural Gas STAR</b>			
Industry Participation (% in program)	66%	56%	59%
Annual Gas Savings (MMTCE)	6.3	7.5	6.5
<b>Coalbed Methane Outreach Program</b>			
Annual Methane Reductions (MMTCE)	1.8	2.2	1.9
<b>Landfill Methane Outreach Program</b>			
Number of Projects	289	300	309
Annual Methane Reductions (MMTCE)	4.5	4.5	4.8
<b>TOTAL REDUCTIONS (MMTCE)</b>	<b>12.6</b>	<b>14.2</b>	<b>13.2</b>

**FIGURE 18. PARTNER ACTIONS ARE PROJECTED TO MAINTAIN METHANE EMISSIONS BELOW 1990 LEVELS THROUGH 2012**

- Recognized five outstanding partners with Partner of the Year Awards and promoted their achievements in a PSA that ran in the *American Oil & Gas Reporter*, *Business & Industry Connection*, and *American Gas Journal* (see p. 55). EPA also honored seven oil and gas partner companies for Continuing Excellence (see list on p. 55).

### What to Expect in 2006 and Beyond

- Continue to work with existing partner companies to expand their current methane emissions reduction projects
- Conduct nine technology transfer workshops, including one Web-based workshop, to enable broader company participation
- Work with the oil and gas industry to expand the Natural Gas STAR Program, specifically in the area of small-to-medium size natural gas production companies
- Expand Natural Gas STAR internationally in support of the Methane to Markets Partnership

## Coalbed Methane Outreach Program

The Coalbed Methane Outreach Program (CMOP) collaborates with large coal companies and small businesses to reduce methane emissions from underground coal mines through the development of environmentally beneficial, cost-effective coal mine methane (CMM) projects. CMOP efforts focus on providing high-quality, project-specific information and technical assistance to the coal industry. These include analyses of technologies and potential projects, mine-specific project feasibility assessments, state-specific analyses of project potential, market evaluations, and guides to state, local, and federal assistance programs. As a result of EPA's successful collaboration with large coal companies and small specialized businesses, the percentage of coal mine methane recovered grew from 25 percent in the early 1990s to more than 70 percent in 2005.



- To capture the remaining methane emitted from degasification systems, EPA is working with industry to use CMM in small-and large-scale power generation, for mine heating and coal drying, and to upgrade low-quality gas to pipeline specifications.

- EPA is expanding its focus to include the methane emitted from coal mine ventilation systems and from abandoned mines. These systems represent about 77 Bcf of methane annually, or 45% of U.S. CMM liberated in a single year.
- CMOP achieved significant results through 2005. Working with the operators of virtually every major U.S. underground coal mine, CMOP achieved a reduction of 2.2 MMTCE in 2005. These results include those from 20 CMOP projects that captured and used methane from 30 U.S. abandoned mines.

### In 2005, the Coalbed Methane Outreach Program:

- Launched a targeted outreach effort with the mining industry in the Western United States to increase mine methane capture and use in Colorado, New Mexico, and Utah.
- Evaluated potential sites for detailed monitoring and site measurements of methane emissions.
- Developed more robust basin-specific estimates for methane emissions from surface mines.

### What to Expect in 2006 and Beyond

- Provide targeted analyses for at least one Western U.S. coal mine to assess the technical and economic feasibility of potential coal mine methane end use strategies
- In cooperation with CONSOL Energy and DOE, support efforts to design, install, and operate the first test-scale demonstration of ventilation air oxidation technology in the United States
- Develop enhanced tools to assist potential project developers, including a project finance model and a comprehensive database of U.S. CMM reduction projects
- Support the development of methane recovery and utilization projects at abandoned mines by identifying candidate mines



## Natural Gas STAR 2005 Award Winners

### Production Partner of the Year Devon Energy Corporation

Devon joined the Natural Gas STAR Program in 2003 and received the Rookie of the Year Award in 2004 for its active program. Devon submitted its first annual report to EPA in 2005, which included the highest annual emissions reductions among the production partners for 2004—6.3 billion cubic feet (Bcf). These reductions were the result of the implementation of core best management practices, as well as six Partner Reported Opportunities (PROs), bringing the company's cumulative methane emissions reductions to 10.6 Bcf. The company has done an excellent job of building field and management support for the Gas STAR Program. Based on its experience, Devon developed a presentation on how to replicate its success, delivered it at three technical workshops, and made it available to all Natural Gas STAR partners.

### Processing Partner of the Year Enbridge Energy Partners L.P.

Enbridge joined the Natural Gas STAR Program in December 2003. In its first annual report in mid-2005, the company reported the highest emissions reductions of all processing partners for 2004—nearly 850,000 cubic feet (Mcf)—after implementing five PROs. Enbridge has contributed to the Natural Gas STAR Partner Update and participated in the Dallas processing workshop, which highlighted the company's optical imaging work with Leak Survey, Inc.

### Transmission Partner of the Year Northern Natural Gas

Northern Natural Gas joined the Natural Gas STAR Program in February 2003. In 2005, Northern Natural Gas reported methane emissions reductions of 1.6 Bcf for 2004, which brought the company's cumulative emissions reductions to 10.6 Bcf. Northern Natural Gas has consistently given strong support to Gas STAR workshops, including sponsorship of the June 2005 technology transfer workshop in Midland, Texas.

### Distribution Partner of the Year DTE Energy-MichCon

DTE Energy-MichCon has been a Gas STAR partner since 1996. In 2004, the company reported the second highest emissions reductions in the distribution sector, with methane savings of 0.4 Bcf. To date, DTE's cumulative emissions reductions total 1.3 Bcf.



Congratulations to Those  
Who Set the Bar High,  
Then Soar Above.

These forward-thinking companies are recognized by EPA as leaders in implementing and promoting voluntary, cost-effective measures to reduce emissions of methane, a potent greenhouse gas. By sharing their successes through the Natural Gas STAR Program, these and over 100 other oil and gas companies are addressing global climate change while improving profitability.

To learn more about joining these industry leaders, call the Natural Gas STAR Program at 202-543-9386 or 202-543-9669.

**2005  
Natural Gas STAR  
Award Winners**

**devon**

**DTE Energy**  
MichCon

**ENBRIDGE**

**NEWFIELD**

**Northern  
Natural Gas**

**OXY**

**Natural Gas**  
IN RELATED INDUSTRIES

**EPA**  
United States  
Environmental Protection  
Agency

The Natural Gas STAR Program is a voluntary partnership between EPA and the oil and natural gas industry to identify and implement cost-effective projects to reduce methane emissions.

EPA Natural Gas STAR Program – [epa.gov/gasstar](http://epa.gov/gasstar)

### International Partner of the Year Occidental Oil and Gas Corporation

Occidental joined the Natural Gas STAR Program in 2004 and has concentrated its efforts on helping to move the program into the international arena. Occidental was the first company to sponsor an international Natural Gas STAR workshop under the Methane to Markets Initiative.

### Continuing Excellence

EPA also honored seven Natural Gas STAR partners as Continuing Excellence award winners, recognizing the companies' long-standing commitment to the program:

**Columbia Gas & Columbia Gulf Transmission**  
**Duke Energy Gas Transmission**  
**El Paso Pipeline Group**  
**Kerr-McGee Oil & Gas Corporation**  
**Southwest Gas Corporation**  
**Western Gas Resources**

## Landfill Methane Outreach Program

Of all sources of human-related (anthropogenic) methane emissions in the United States, landfills are the largest. The Landfill Methane Outreach Program (LMOP)



launched in 1994 encourages the development of landfill gas energy (LFGE) projects. The capture and use of landfill gas (LFG) can not only directly reduce methane emissions, but also indirectly reduces CO<sub>2</sub> emissions by avoiding the use of fossil fuels.

LMOP's varied tools and technical resources—including feasibility analyses, decisionmaking software for evaluating project economics, a database of over 600 candidate landfills, a project development handbook, and energy end-user analyses—help landfill owners and operators overcome the barriers they encounter as they develop new LFGE projects.

Over the past decade, LMOP has assisted with 300 projects and reduced methane emissions from landfills by about 27 MMTCE. In 2005 alone, LMOP emissions reductions totaled 4.5 MMTCE. In addition, the total number of landfill gas energy projects grew to nearly 400 nationwide, and EPA assisted all 25 LFGE projects that became operational during the year.

### In 2005, the Landfill Methane Outreach Program:

- Assisted in the development of 22 new landfill gas energy projects and 3 project expansions, for a cumulative total of 300 projects since LMOP was launched.
- Welcomed 73 new partners, increasing participation by 16 percent and bringing the total number of LMOP partners to 490.
- Provided technical assistance to more than 15 corporations, helping them identify opportunities to advance landfill gas energy as a reliable, low-cost source of energy. Additionally, over 95 analyses were conducted using a new LMOP Locator software tool to identify LFG opportunities near corporate and industrial facilities.
- Conducted five state workshops that attracted more than 400 participants to promote the use of landfill gas as a cost-effective, low emissions energy source.
- Recognized the outstanding accomplishments of eight program partners (see pp. 57-58).

### What to Expect in 2006 and Beyond

- Assist in the development of more than 40 new landfill gas energy projects
- Expand efforts to promote the benefits of LFG energy to economic development offices, emphasizing job creation and tax revenue opportunities for states and communities
- Host the 10th Anniversary LMOP Conference, Project Expo, and Awards Ceremony to showcase the top LMOP partners and projects and discuss the latest industry trends

## LMOP 2005 Award Winners

EPA recognized the outstanding accomplishments of eight landfill methane partners in 2005 for their efforts to reduce emissions of methane and expand the nation's renewable energy sources.

### LMOP Project of the Year (Direct Use)

#### **Lanchester Landfill Gas Utilization Project**

The Lanchester Landfill Gas Utilization Project, developed in south-central Pennsylvania by LMOP Industry Partner Granger Energy, was the first multi-end user project in the State. The project includes a 13-mile pipeline that transports 4,000 standard cubic feet per minute (scfm) of LFG from LMOP Community Partner Chester County Solid Waste Authority's landfill to two industrial end users. Dart Container Corporation is now using the LFG to fuel nine boilers, two ovens, and two thermal oxidizers; the company is 100-percent reliant on LFG for its energy needs. Advanced Food Products uses the LFG to fuel three boilers and expects to bring more online. Granger estimates the Lanchester project purchased more than \$1 million in local materials and created more than 100 construction jobs for local contractors.

### LMOP Project of the Year (Electricity Generation)

#### **Santee Cooper's Green Power Generating Station**

LMOP Partners Santee Cooper and Allied Waste teamed up to create a green power generating facility at the Lee County Landfill in South Carolina. The \$7 million facility, consisting of three 1.8 megawatt (MW) engines, is the second renewable energy project for Santee Cooper, which offers green power to its customers (including 15 of the state's electric cooperatives). Since 2001, Santee Cooper has sold more than 10,000 kWh of landfill gas to energy (LFGE) electricity. Santee Cooper is leading the way for green power programs in the Southeast. It has plans for a potential expansion at the Lee County Landfill to more than 21 MW by 2010, contributing to a goal of having 54 MW of green power on line by 2012.

### LMOP Project of the Year (Alternate Fuel)

#### **Biodiesel Production Facility, Denton, Texas**

Biodiesel Industries, Inc. is working with LMOP Industry Partner DTE Energy to use LFG to fuel the process needs of a 3 million gallon biodiesel production facility in Texas. This is the first facility in the world using LFG to produce this alternative vehicle fuel. The biodiesel produced at this plant fuels the city's fleet of garbage trucks and other utility vehicles. Using the 100,000 Btus of LFG to power the biodiesel plant gives Biodiesel Industries and the City of Denton, Texas, a partner in the project and LMOP Community Partner, a hedge against rising fuel prices. The Denton Landfill, which was highlighted at the LMOP Project Expo in 2003, will also house a larger LFGE project expected to be operational in 2006.

### LMOP Industry Partner of the Year

#### **Granger Energy**

Granger Energy has more than 30 years of landfill experience; in 1985 it became the first organization to develop an LFGE project in Michigan. Granger owns and operates numerous landfills and LFGE projects, with 13 projects developed or in development in six states. Granger previously won LMOP's 2001 Industry Partner of the Year for its LFGE project in conjunction with Rolls-Royce. This year's Project of the Year at the Lanchester Landfill is yet another example of the company's determination to see LFGE projects through to successful completion. Granger earned Industry Partner of the Year in 2005 owing to its strong commitment to promoting and advancing environmentally and economically beneficial landfill gas energy project development. By diversifying its project portfolio during a period of market uncertainty and showing its willingness to tackle market barriers to benefit the landfill gas industry, Granger demonstrates superior industry leadership.

## LMOP 2005 Award Winners (continued)

### LMOP Energy Partner of the Year (End User)

#### **Interface Flooring Systems**

LMOP Energy Partner Interface Flooring Systems has a corporate mission to promote projects that are both environmentally sustainable and economically feasible. In 2000, the company reached out to the City of LaGrange, Georgia, to propose building a 10-mile pipeline to bring LFG from the city's landfill to Interface's carpet production facility. This pipeline became operational in October 2005, reducing Interface's natural gas demand at the facility by 20 percent. Additionally, by securing the GHG reduction credits generated by the landfill's flare, the project helped Interface offset all GHG emissions for its North American manufacturing facilities. Interface has been successful in garnering media interest in its LFG project, which is stimulating other corporate interest in LFGE.

### LMOP Energy Partner of the Year (Provider)

#### **Wabash Valley Power Association**

Wabash Valley Power Association is an Indiana-based generation and transmission cooperative providing wholesale power to 27 distribution systems in the Midwest. In 2005, Wabash Valley Power constructed two new LFGE facilities (in Jay County, Indiana and Liberty, Indiana) and acquired three other existing Indiana facilities for a total of 22 MW of LFG-fueled generation in its power portfolio. The two new projects were developed in partnership with LMOP Industry Partner Waste Management. The five plants all consist of Caterpillar engine-generators manufactured in Indiana, adding to the in-state economic benefit of the LFGE projects. Wabash Valley Power created the green power product EnviroWatts® to sell the renewable energy to its customers; more than 4 percent of Wabash's customers are purchasing green power through EnviroWatts.

### LMOP State Partner of the Year

#### **Pennsylvania Department of Environmental Protection**

The Pennsylvania Department of Environmental Protection (PA DEP) joined LMOP in 2003 and launched a number of initiatives to encourage and foster the use of LFG. PA DEP also worked with LMOP to develop *A Primer for the Commonwealth of Pennsylvania for Developing Landfill Gas Utilization*. The state passed the Alternative Energy Portfolio Standards Act, which lists LFGE as a Tier I technology. In addition, PA DEP has been very active in providing grant assistance to LFG projects. The Harvest Energy Grant provided funding to three LFGE projects, the Alternative Fuels Incentive Grant provided more than \$1 million for LFG use as an alternative fuel, and the Pennsylvania Energy Development Authority funded two LFG projects in 2005.

### LMOP Community Partner of the Year

#### **Fairfax County, Virginia**

LMOP Community Partner Fairfax County, Virginia owns and operates the I-95 Landfill, which has a 6.4 MW electricity project, as well as a direct-use project of approximately 1,000 scfm of LFG at its wastewater treatment plant. Although most of the LFG collected was already being put to use, the County decided to replace the existing propane-fired heating system in its onsite maintenance shop with LFG-fired infrared tube heaters to expand LFG utilization. The new LFG heating system improved the working conditions in the shop. The county will save money by avoiding the purchase of propane for the old heaters, and the use of LFG will reduce GHG emissions.

*“By tapping into the power of landfill gasses, we are building on two of President Bush’s national goals: reducing domestic greenhouse gas production and developing alternative and renewable sources of energy,” said EPA Administrator Stephen L. Johnson. “EPA and our partners are taking methane waste and turning it into wealth—proving that doing what’s good for the environment is also good for business.”*

**PROGRAM EVALUATION: MEASURING RESULTS IN THE METHANE PROGRAMS**

EPA relies on the application of sound, comprehensive analyses to estimate the annual methane reductions from its programs. EPA gathers and carefully reviews partner data on all methane reduction activities implemented through the partnerships.

NATURAL GAS STAR	LANDFILL METHANE OUTREACH	COALBED METHANE OUTREACH
<p>As a condition of partnership, program partners submit implementation plans to EPA describing the emissions reduction practices they plan to implement and evaluate. In addition, partners submit progress reports detailing specific emissions reduction activities and accomplishments each year.</p> <p>EPA does not attribute all reported emissions reductions to Natural Gas STAR. Partners may only include actions that were undertaken voluntarily, not those reductions attributable to compliance with existing regulations.</p> <p>Emissions reductions are estimated by the partners either from direct before-and-after measurements or by applying peer-reviewed emissions reduction factors. These estimates are reviewed by EPA and any issues are resolved.</p>	<p>EPA maintains a comprehensive database of the operational data on landfills and LFGE projects in the United States. The data are updated frequently based on information submitted by industry, LMOP outreach efforts, and other sources.</p> <p>Reductions of methane that result from compliance with EPA’s air regulations are not included in the program estimates. In addition, only the emissions reductions from projects that meet the LMOP assistance criteria are included in the program benefit estimates.</p> <p>EPA uses emissions factors that are appropriate to the project. The factors are based on research, discussions with experts in the LFG industry, and published references.</p>	<p>Through cooperation with the U.S. Mine Safety &amp; Health Administration, state oil and gas commissions, and the mining companies themselves, EPA collects mine-specific data annually and estimates the total methane emitted from the mines and the quantity of gas recovered and used.</p> <p>There are no regulatory requirements for recovering and using coal mine methane; such efforts are entirely voluntary. EPA estimates coal mine methane recovery attributable to its program activities on a mine-specific basis, based on the program’s interaction with mines.</p>

# HIGH GLOBAL WARMING POTENTIAL GAS PROGRAMS

EPA is working closely with industry to improve technologies and processes that will substantially reduce U.S. emissions of the high global warming potential (GWP) gases released as byproducts of industrial operations. These partnership programs assist key industries in the development of cost-effective operational improvements that will help reduce emissions of perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF<sub>6</sub>)—all particularly potent greenhouse gases. When compared ton-for-ton with CO<sub>2</sub>, these three gases each trap much more heat in the atmosphere. PFCs and SF<sub>6</sub> also have very long atmospheric lifetimes (see Table 25). Despite the potential for sizable growth in high GWP greenhouse gas emissions, EPA's partner industries are expected to maintain their emissions substantially below 1990 levels through the year 2012 (see Figure 19). Greenhouse gas emissions reductions across these programs totaled 11.5 MMTCE in 2005 (see Table 26).

## The Voluntary Aluminum Industrial Partnership (VAIP)

In support of the President's Climate VISION (Voluntary Innovative Sector Initiatives: Opportunities Now)



initiative, VAIP is committed to reducing direct emissions of PFCs and CO<sub>2</sub> where technically feasible and cost effective. The aluminum industry's goal is to achieve a direct carbon intensity reduction of 53 percent from 1990 levels by 2010. This involves reducing emissions of perfluoromethane (CF<sub>4</sub>) and perfluoroethane (C<sub>2</sub>F<sub>6</sub>), which are inadvertent byproducts of the smelting process, and reducing CO<sub>2</sub> emissions caused by the consumption of the carbon anode. Their Climate VISION commitment equates to an additional direct carbon intensity reduction of 25 percent beyond the 2000 achievement.

## In 2005, the Voluntary Aluminum Industrial Partnership:

- Reduced PFC emissions by more than 45 percent and direct carbon emissions by more than 59 percent compared to the industry's 1990 baseline.
- Benchmarked emissions reduction progress for various technologies to help partner companies identify further reduction potential.
- Promoted the PFC emissions reduction actions and VAIP progress in journals and at conferences, including the International Non-CO<sub>2</sub> Conference in The Netherlands.
- Completed efforts with the International Panel on Climate Change (IPCC) to update emissions inventory methods for the aluminum sector.

## HFC-23 Emission Reduction Program

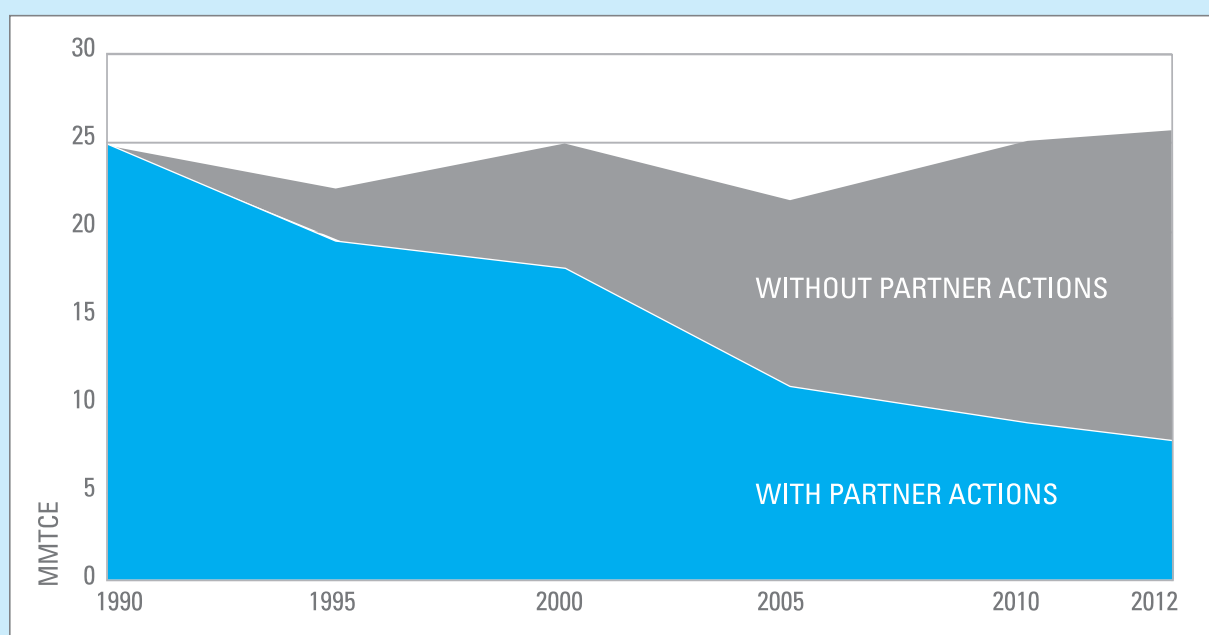
U.S. manufacturers of HCFC-22 and EPA have worked together since 1993 to reduce emissions of the greenhouse gas HFC-23, a byproduct in the production of HCFC-22 and the most potent and persistent of the hydrofluorocarbons. HCFC-22 is most commonly used as a refrigerant in residential and commercial air conditioning. Through this program, EPA encourages all U.S. producers of HCFC-22 to develop and implement feasible, cost-effective processing practices and technologies to reduce HFC-23 emissions. In 2005, EPA continued to partner with 100 percent of U.S. HCFC-22 producers to implement process optimization and abatement measures that will decrease byproduct emissions of HFC-23.

To date, EPA's partners have succeeded in lowering emissions of HFC-23 through process optimization and thermal destruction. Their efforts have helped significantly reduce the intensity of HFC-23 emissions (the amount of HFC-23 emitted per kilogram of HCFC-22 manufactured). In 2005, emissions were 6.2 MMTCE less than they would have been had production continued at 1990 emissions intensity levels.

**TABLE 25. GLOBAL WARMING POTENTIALS (GWPS) AND ATMOSPHERIC LIFETIMES OF GREENHOUSE GASES**

GREENHOUSE GAS	GLOBAL WARMING POTENTIAL FOR 100 YEARS	ATMOSPHERIC LIFETIME (YEARS)
Carbon Dioxide	1	50-200
Methane	21	12± 3
Nitrous Oxide	310	120
Hydrofluorocarbons	140-11,700	1.5-264
Perfluorocarbons	6,500-9,200	3,200-50,000
Sulfur Hexafluoride	23,900	3,200

Source: IPCC 1996

**FIGURE 19. PARTNER ACTIONS ARE PROJECTED TO MAINTAIN EMISSIONS OF HIGH GWP GASES BELOW 1990 LEVELS THROUGH 2012****TABLE 26. HIGH GWP GAS PROGRAMS: EPA GOALS AND ACHIEVEMENTS**

	2005 GOAL	2005 ACHIEVEMENT	2006 GOAL
<b>VOLUNTARY ALUMINUM INDUSTRIAL PARTNERSHIP (VAIP)</b>			
Industry Participation (% in program)	98%	98%	98%
Reductions (MMTCE)	2.3	2.3	2.7
<b>HFC-23 PARTNERSHIP</b>			
Industry Participation (% in program)	100%	100%	100%
Reductions (MMTCE)	4.8	6.2	4.9
<b>OTHER STEWARDSHIP PROGRAMS</b>			
Industry Participation (% in program) <sup>1</sup>	50-100%	45-100%	50-100%
Reductions (MMTCE)	3.0	3.0	3.8
<b>TOTAL REDUCTIONS (MMTCE)</b>	<b>10.4</b>	<b>11.5</b>	<b>11.4</b>

<sup>1</sup> Participation varies from 45% of net generating capacity for electric power systems to 100% for primary magnesium producers.

## The PFC Reduction/Climate Partnership for the Semiconductor Industry

Since its inception in 1996, this partnership has been a catalyst for semiconductor companies in Europe, Asia, and North America to set the first global target for reducing greenhouse gas emissions. Semiconductor manufacturers have worked alongside EPA to identify and implement PFC-reducing process changes and manufacturing tool improvements for the production of integrated circuits. In April 1999, the World Semiconductor Council (WSC), whose members include the national semiconductor industry associations of Europe, Japan, Korea, Taiwan, and the United States, announced a technically challenging goal; to reduce PFC emissions by at least 10 percent below the 1995 baseline level by year-end 2010. The WSC's goal represents the world's first industry-wide, global greenhouse gas emissions reduction target. This type of aggressive goal setting reassures international governments, industry suppliers, and the public of the semiconductor industry's commitment to climate protection. Today's challenge is to expand the global industry's cooperative climate protection initiative to include China's semiconductor manufacturers, the world's fastest growing integrated circuit (IC) production center.



### In 2005, the PFC Reduction/Climate Partnership for the Semiconductor Industry:

- Reduced absolute PFC emissions 65 percent below 1999 levels while U.S. manufacturing continued to expand. EPA's semiconductor industry partners are on track to meet their 2010 WSC/Climate VISION commitment.
- Led the IPCC's initiative to revise fluorinated greenhouse gas emissions reporting guidelines for electronics manufacturing, including semiconductors, flat panel displays, and photovoltaics.
- Worked with global industry representatives at the International Semiconductor Environment Safety and Health (ISESH) conference to encourage China's rapidly emerging semiconductor manufacturing industry to participate with WSC in controlling PFC emissions.

- Facilitated emissions reduction technology transfer between related electronic manufacturing sectors such as semiconductor and flat panel displays to identify and implement the most cost-effective PFC reduction strategies.
- Completed and published the *2005 State-of-the-Technology Report on Reduction of Perfluorocompound (PFC) Emissions* in cooperation with the Semiconductor Industry Association.

## Sulfur Hexafluoride (SF<sub>6</sub>) Emissions Reduction Partnership for Electric Power Systems

SF<sub>6</sub> is the most potent and persistent greenhouse gas. Used primarily by electric utilities, SF<sub>6</sub> is a gaseous dielectric for high-voltage circuit breakers and gas-insulated substations.



The global warming potential of SF<sub>6</sub> is 23,900 over a 100-year time horizon, which means it is 23,900 times more effective at trapping infrared radiation than an equivalent amount of CO<sub>2</sub>.

In 1999, EPA partnered with several electric utilities to form a voluntary program to reduce SF<sub>6</sub> emissions. In addition to providing a means to actively address climate change, this program has helped partner companies reap financial savings through reduced SF<sub>6</sub> gas purchases. In 2005, partner companies reported SF<sub>6</sub> emissions of almost 416,000 pounds, bringing their average SF<sub>6</sub> emission rates down to 8.4 percent of the total nameplate capacity of installed equipment.

### In 2005, the SF<sub>6</sub> Emissions Reduction Partnership for Electric Power Systems:

- Recruited four new companies into the partnership: LG&E Energy (KY); Otter Tail Power (MN); Great River Energy (MN); PECO Energy Delivery (PA).
- Completed a new equipment study showing that that leak rates for high-voltage equipment installed between 1998 and 2002 were as much as two times improved over the industry standard for new equipment.
- Conducted three Webcasts with SF<sub>6</sub> partners, prospects, and other sector vendors on SF<sub>6</sub> emissions reporting requirements and other technical program issues.




**PROGRAM EVALUATION: MEASURING RESULTS IN THE HIGH GWP GAS PROGRAMS**

Annual high GWP gas reductions achieved by EPA’s programs are estimated using reliable data and established methods.

<b>VOLUNTARY ALUMINUM INDUSTRY PARTNERSHIP</b>	<b>HFC-23 EMISSION REDUCTION PROGRAM</b>	<b>ENVIRONMENTAL STEWARDSHIP PROGRAMS</b>
<p>All VAIP partners agree to report aluminum production and anode effect frequency and duration in order to estimate annual PFC emissions.</p> <p>Reductions are calculated by comparing current emissions to a business-as-usual baseline that uses the industry’s 1990 emissions rate. Changes in the emissions rate (per ton production) are used to estimate the annual greenhouse gas emissions and reductions resulting from the program.</p> <p>The aluminum industry began making significant efforts to reduce PFC emissions as a direct result of EPA’s climate partnership program. Therefore, all reductions achieved by partners are assumed to be the result of the program.</p>	<p>Program partners report HCFC-22 production and HFC-23 emissions to a third party that aggregates the estimates and submits the total estimates for the previous year to EPA.</p> <p>Reductions are calculated by comparing current emissions to a business-as-usual baseline that uses the industry’s 1990 emission rate. Changes in the emissions rate are used to estimate the annual greenhouse gas emissions and reductions resulting from the program.</p> <p>Subsequent to a series of meetings with EPA, industry began making significant efforts to reduce HFC-23 emissions. All U.S. producers participate in the program; therefore, all reductions achieved by manufacturers are assumed to be the result of the program.</p>	<p>Partners report emissions and emissions reductions based on jointly developed estimation methods and reporting protocols. Data collection methods are sector specific, and data are submitted to EPA either directly or through a third party.</p> <p>Reductions are calculated by comparing current emissions to a business-as-usual baseline, using industry-wide or company-specific emissions rates in a base year. The reductions in emissions rates are used to calculate the overall greenhouse gas emissions reductions from the program.</p> <p>The share of the reductions attributable to EPA’s programs are identified based on a detailed review of program activities and industry-specific information.</p>

**INTERNATIONAL CLIMATE PROTECTION AWARD WINNERS**

<div style="display: flex; align-items: flex-start;">  <div> <p>In 1998, EPA established the Climate Protection Awards to recognize exceptional leadership, personal dedication, and technical achievements in protecting the Earth’s climate. Over the past years, awards have been presented to individuals and organizations from 16 countries: Australia, Belgium, Brazil, Canada, Chile, China, France, India, Italy, Japan, Mexico, Netherlands, South Korea, Sweden, United Kingdom, and the United States. This year, 13 individuals and organizations earned the award by crafting international, national, state, and local policies; reducing energy consumption; and inventing technologies that protect the climate.</p> </div> </div>		
<b>CORPORATE, GOVERNMENT AND MILITARY</b>	<b>ORGANIZATIONS AND ASSOCIATIONS</b>	<b>INDIVIDUALS</b>
<p>Arizona Public Service Company <i>Phoenix, Arizona</i></p> <p>Baxter International Inc. <i>Deerfield, Illinois</i></p> <p>DENSO Corporation <i>Kariya, Japan</i></p> <p>IBM Corporation <i>Armonk, New York</i></p> <p>Johnson &amp; Johnson <i>New Brunswick, New Jersey</i></p> <p>National Renewable Energy Laboratory of the U.S. Department of Energy <i>Golden, Colorado</i></p> <p>United States Air Force</p> <p>Yokota Tohoku Company <i>Tokyo, Japan</i></p>	<p>Mobile Air Conditioning Society Worldwide <i>Lansdale, Pennsylvania</i></p> <p>Refrigerant Reclaim Australia <i>Canberra, Australia</i></p>	<p>Susan J. Brown California Energy Commission <i>Sacramento, California</i></p> <p>Mayor Gregory J. Nickels <i>Seattle, Washington</i></p> <p>Barry G. Rabe University of Michigan <i>Plymouth, Michigan</i></p>

## SF<sub>6</sub> Emission Reduction Partnership for the Magnesium Industry

The U.S. magnesium industry is also working with EPA to identify and encourage the adoption of best management practices for reducing emissions of SF<sub>6</sub>. Launched in 1999, this partnership works to reduce SF<sub>6</sub> emissions from magnesium production and casting operations and currently includes almost 80 percent of the U.S. magnesium industry. Partner companies are striving to completely eliminate magnesium industry-related SF<sub>6</sub> emissions by the end of 2010.



### In 2005, the SF<sub>6</sub> Emission Reduction Partnership for the Magnesium Industry:

- Held SF<sub>6</sub> emissions steady at 2004 levels, equaling an absolute reduction of 19 percent since the program's inception in 1999. 2005 was the sixth year in which EPA collected annual SF<sub>6</sub> emissions reports from magnesium partners.
- Organized and led the first International Melt Protection Users Group Round Table in conjunction with the 2005 Annual World Magnesium Conference in Germany. More than 20 industry and government participants from Asia, Europe, North America, and the Middle East exchanged technical information on phasing out SF<sub>6</sub>-based melt protection.
- Supported partner companies' efforts to evaluate available alternative melt protection technologies such as alternative cover gases AM-Cover™ (HFC-134a) and Novec™ 612 (a fluorinated ketone). An initial EPA study has shown that both gases are capable of reducing greenhouse gas emissions by more than 99 percent compared to the traditional SF<sub>6</sub>-based protection system.
- Maintained U.S. industry participation in the partnership, representing 100 percent of primary magnesium production and 80 percent of domestic casting and recycling capacity.

- Developed and distributed a simplified cover gas emissions tracking and reporting tool and held a Webcast training session for EPA's magnesium partners.

## Mobile Air Conditioning Climate Protection Partnership

Motor vehicle air conditioners consume more energy than any other auxiliary vehicle equipment and account for a significant portion of global greenhouse gas emissions.<sup>13</sup> In the United States alone, vehicle air conditioners consume 7 billion gallons of gasoline every year, equivalent to over 16 MMTCE.<sup>14</sup> Refrigerant emissions add another 8.7 MMTCE.<sup>15</sup>

In 1998, the Society of Automotive Engineers (SAE), the Mobile Air Conditioning Society Worldwide, and EPA formed a global voluntary partnership to reduce the climate impacts of mobile air conditioning. Since then membership has grown to include representatives from Australia, Canada, Europe, and Japan; environmental and industry non-governmental organizations (NGOs); and most of the world's vehicle manufacturers and their suppliers. The partnership has four goals:

- Promote cost-effective designs and improved service procedures to minimize refrigerant emissions
- Promote next-generation mobile air conditioning systems that are better for the environment while satisfying customer safety, cost, and reliability concerns
- Communicate technical progress to policymakers and the public
- Document current and near-term opportunities to improve the environmental performance of mobile air conditioning system design, operation, and maintenance

The work under this partnership focuses on improving servicing practices and system energy efficiency and on identifying alternatives for the refrigerant HFC-134a—the refrigerant that became widely used in vehicle air conditioning systems worldwide beginning in 1994.

<sup>13</sup> Intergovernmental Panel on Climate Change Technology and Economic Assessment Panel (2005). *Safeguarding the Ozone Layer and the Global Climate System: Issues Related to Hydrofluorocarbons and Perfluorocarbons*. New York: Cambridge University Press, p. 300.

<sup>14</sup> Andersen, S., Hovland, V. and Rugh, J. (2004). *Significant Fuel Savings and Emission Reductions by Improving Vehicle Air Conditioning: A Study by the U.S. Department of Energy's National Renewable Energy Laboratory*. Presented at the 15th Annual Earth Technologies Forum and Mobile Air Conditioning Summit, April 15, 2004: Washington D.C. The paper reported that 62 million metric tonnes of CO<sub>2</sub> were released into the atmosphere as a result of mobile air conditioning fuel use in the United States (not including defrost). Converting by a factor of 12/44 yields 16.9 million metric tons of carbon equivalent (MMTCE).

<sup>15</sup> Does not include CFC-12 emissions. Sources: U.S. EPA (2006). *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004*. Page 2-28. Washington, D.C. US EPA #430-R-06-002 and Hoffpauir, Elvis (2005). *Estimated refrigerant use*. Society of Automotive Engineers Improved Mobile Air Conditioning Cooperative Research Project presentation. Pages 12-14. Troy, MI: June Meeting of the Improved Mobile Air Conditioning Cooperative Research Project stakeholders.

## 2005 MOBILE AIR CONDITIONING CLIMATE PROTECTION PARTNERSHIP PSA RECOGNIZED PARTNER EFFORTS

# Thank you

## for putting the environment in the driver's seat!

AC Delco  
ACC Climate Control  
AGRAMKOW  
Airsept  
Alliance of Automobile Manufacturers  
Arkema  
Association of International Automobile Manufacturers  
Audi  
Australian Department of Environment and Heritage  
Australian Federated Chamber of Automotive Industries  
Australian Federation of Automotive Parts Manufacturers  
Australian Fluorocarbon Council  
Australian Greenhouse Office  
Automotive Aftermarket Industry Association  
Behr  
Bergstrom  
BMW  
California Air Resources Board  
CalsonickKansei  
Centro Ricerche Fiat  
Clare Automotive  
DaimlerChrysler  
Delphi Corporation  
DENSO  
DuPont Fluoroproducts  
Eaton  
Ecole des Mines de Paris  
Edith Cowan University (Australia)  
Environment Canada  
European Commission  
Fiat Auto  
Four Seasons  
Friends of the Earth  
General Motors  
Goodyear  
Honda  
Honeywell  
Hutchinson FTS

Hyundai  
Indian Institute of Technology Delhi  
Indian Ministry of Environment and Forests  
INEOS Fluor  
Institute of Governance and Sustainable Development  
International Organization of Standardization  
Isuzu  
Japan Automobile Manufacturers Association  
Japan Fluorocarbon Manufacturers Association  
Japan Industrial Conference for Ozone Layer and Climate Protection  
Japan Ministry of Economy, Trade and Industry  
Japan Ministry of Environment  
Johnson Controls  
Kia  
Konvekta  
Korea Advanced Institute of Science and Technology  
Maflow  
Mitsubishi Motors  
Mobile Air Conditioning Partners Europe  
Mobile Air Conditioning Society Worldwide  
Modine  
Natural Resources Defense Council  
Neutronics  
Nissan  
Obrist  
Parker-Hannifin  
PPG Industries  
PSA Peugeot/Citroen  
Red Dot  
Refrigerant Reclaim Australia  
RTI Technologies  
Sanden  
Shecco

Sinochem USA  
Skye International Holdings  
Snap-On Diagnostics  
Society of Automotive Engineers  
Society of Indian Automobile Manufacturers  
Solvay Fluorochemicals  
SPX Robinair  
Subaru  
Subros  
Sun Test  
Suzuki  
TATA Motors  
TEXA, S.p.a.  
Texas Instruments  
The Energy and Resources Institute (India)  
TI Automotive  
Toyota  
Tracer Products  
Transpro  
TYC Genera  
Underwriters Laboratories  
United Nations Environment Programme DTIE  
U.S. Army RDE Command  
U.S. Department of Energy's National Renewable Energy Laboratory  
U.S. Environmental Protection Agency  
University of Braunschweig (Germany)  
University of Illinois  
University of Maryland  
UView Ultraviolet Systems  
Valeo  
Vehicle Airconditioning Specialists of Australia  
Visteon Corporation  
Volkswagen  
Volvo Car Corporation  
World Resources Institute  
ZEXEL-Valeo

**Congratulations to the Mobile Air Conditioning Climate Protection Partners for helping us all save money and drive a little cleaner.** This global team of corporate, government, and environmental leaders is working together to rapidly improve the efficiency of your vehicle air conditioning systems by at least 30% and reduce refrigerant leakage by at least 50%. Vehicle manufacturers and suppliers are improving existing air conditioning systems and technicians are offering environmentally superior service as the global search for better refrigerants continues. These voluntary actions will ultimately avoid millions of tons of greenhouse gas emissions each year.

Visit our website at [www.epa.gov/cppd/mac](http://www.epa.gov/cppd/mac) and help put the environment in the driver's seat.



HFC-134a has no ozone depleting potential and only one-sixth the global warming potential of the former mobile air conditioning refrigerant, CFC-12. Nevertheless, HFC-134a is still a potent greenhouse gas: one pound of HFC-134a released to the atmosphere has the same potential global warming effect as 1,300 pounds of CO<sub>2</sub>.

This partnership is making great progress. On Earth Day 2004, it announced the Improved Mobile Air Conditioning (IMAC) 30/50 project with ambitious goals to reduce air conditioning fuel consumption by at least 30 percent and cut refrigerant emissions by 50 percent. In 2005, substantial progress was made toward these goals.

### **In 2005, the Mobile Air Conditioning Climate Protection Partnership:**

- Helped finalize a standard (J-2727, SAE) to certify low-leakage mobile air conditioning systems.
- Identified technologies to reduce the vehicle air conditioning coefficient of performance by up to 50 percent—20 percent more than the initial IMAC goal.
- Developed a new technician certification program that will improve technicians' skills and refrigerant recovery rates.
- Helped update refrigerant recovery and recycling equipment standards (J-2788, SAE) to recover more refrigerant when vehicles are repaired or retired.
- Placed a public service announcement recognizing partners, which garnered 1.2 million impressions (see PSA p. 65).

### **What to Expect in 2006 and Beyond for the High GWP Gas Programs**

The High Global Warming Potential Gas partnership programs for the industrial sector will continue to work with their partners and implement strategies to keep emissions below 1990 levels. EPA plans to:

- Continue to implement agreements with industry to reduce greenhouse gas intensity for the aluminum, magnesium, and semiconductor sectors through the Climate VISION effort.

- Hold the 2nd Magnesium Melt Protection Users Group Round Table at the 63rd Annual World Magnesium Conference in Beijing, China. This EPA-sponsored workshop seeks to provide an open forum for the global magnesium industry to share experiences in testing and implementing emerging alternative melt protection technologies to eliminate SF<sub>6</sub> emissions by 2010.
- Conduct a follow-up study and publish a new technical brochure of alternative magnesium melt protection technologies. The results of the study are expected to help the partnership accelerate its phase-out of SF<sub>6</sub> by 2010.
- Host the 4th International Conference on SF<sub>6</sub> and the Environment, which will bring together the electric power and magnesium industries to share information on SF<sub>6</sub> emissions reduction and elimination strategies and technologies.
- Present findings from a new equipment leak study at the Annual General Meeting of the Institute of Electrical and Electronics Engineer's (IEEE) Power Engineering Society.
- Develop a Web-based emissions reduction training module for primary aluminum facility managers and pot-room operators. This module will increase awareness of greenhouse gas emissions from aluminum smelting and identify technical and operational opportunities to reduce them.
- Evaluate the performance of a new electrically heated thermal PFC abatement device at a semiconductor partner's manufacturing facility.
- Maintain active partnerships with HCFC-22 chemical manufacturers to continue to reduce emissions of HFC-23.
- Pursue additional greenhouse gas savings by reducing refrigerant leakage and improving vehicle air conditioner efficiency. Two partners are already developing new, low-GWP refrigerants. Both companies—DuPont and Honeywell—are currently testing chemicals claimed to have global warming potentials of less than 150.

## CALCULATING VOLUNTARY PROGRAM BENEFITS

The benefits and how they are derived are described below for three key climate partnership program areas: ENERGY STAR, Methane Programs, and High GWP Gas Programs. These descriptions build on the Program Evaluation summaries included in each of the three program sections.

**ENERGY STAR.** The estimated benefits from the ENERGY STAR program reflect the stream of energy savings that will persist through 2015 due to technology investments and product purchases made through the year 2005 by ENERGY STAR partners and due to the effects of markets already transformed. The persistence is calculated by maintaining the energy savings achieved in 2005 through the year 2015.<sup>16</sup> The underlying assumption is that the lifetime of most building and industrial facility improvements is at least 10 years. For residential and commercial products, expected lifetimes range between 4 and 20 years, and the expected lifetime for homes is over 30 years. Once consumers buy ENERGY STAR qualified products, they are likely to replace them with ENERGY STAR qualified products. Taking a conservative approach, only a portion of future replacement purchases and investments are counted towards the cumulative program benefits. The benefits that can be attributed to pre-existing trends are subtracted out of the estimated ENERGY STAR benefits presented in this 2005 annual report.

In addition, EPA estimates the PV of expenditures on energy-efficient technologies based on the partners' or customers' cost of the energy-efficient equipment.<sup>17</sup> For ENERGY STAR qualified products, expenditures were taken as the incremental costs compared to standard products, if any. For ENERGY STAR building and industrial improvements, expenditures include the capital costs of upgrading a building to ENERGY STAR specifications. Finally, the NPV of bill savings is the difference between the PV of energy bill savings and the PV of the investment. It represents the net value to partners and ENERGY STAR product consumers participating in the program.

The estimated cumulative benefits for the ENERGY STAR program from 1993 to 2015 are as follows:

### Qualified Products and Homes.

- Preventing 157 MMTCE in greenhouse gas emissions.
- Prompting investment of \$8.7 billion in climate friendly technologies.
- Providing energy bill savings net of investment of \$64.9 billion.

### Building and Industrial Improvements.

- Preventing 241 MMTCE in greenhouse gas emissions.
- Prompting investment of \$26.8 billion in climate friendly technologies.
- Providing energy bill savings net of investment of \$60.2 billion.

**Methane Programs.** The benefits for programs with a small number of partners, such as Natural Gas STAR and Landfill Methane, are calculated on a project-by-project basis from the list of projects that the programs are known to have affected. Energy bill savings include the revenue from the sale of methane and/or the sale of electricity made from the captured methane. The expenditures include the capital costs agreed to by partners to bring projects into compliance with the Methane programs' specifications and any additional operating costs engendered by program participation. Both energy bill savings and technology expenditures have been placed in present value terms. These programs are estimated to have the following benefits from 1993 through 2015:

- Preventing 209 MMTCE in greenhouse gas emissions.
- Prompting \$2.8 billion in investment in climate friendly technologies.
- Providing energy bill savings net of investment of \$4.9 billion.

**High GWP Gas Programs.** The benefits for these programs are derived from direct partner reports of the greenhouse gas emissions the partners have avoided. Program partners are expected to maintain their investments in technologies and practices through 2015. Expenditures and financial savings in the High GWP Gas Programs are proprietary and are not included in the summary of economic benefits and expenditures. The programs are estimated to have the following benefits from 1993 through 2015:

- Preventing 192 MMTCE in greenhouse gas emissions.

<sup>16</sup> The energy savings for the year 2005 are estimated from information provided by the Division for ENERGY STAR Homes, Buildings, and Industrial Improvements and from information provided by the Lawrence Berkeley National Laboratory for ENERGY STAR Qualified Products.

<sup>17</sup> Calculated using a discount rate of 7% and 2005 perspective

# COMPANIES AND ORGANIZATIONS MENTIONED IN THIS REPORT

3M	.5, 19, 39, 40	Buehler Food Markets	.33
4C Foods	.47	Building Owners and Managers Association	.30, 31, 36
10 West 66th Street Corporation	.47	Building Performance Institute	.24
30 North LaSalle; Equity Office Properties	.47	Bureau Veritas	.19
AC Delco	.65	Business Council of Fairfield County, Connecticut	.31, 36
ACC Climate Control	.65	California Air Resources Board	.65
ACE Hardware	.21	California Portland Cement Company	.19, 41
ACME Markets, Inc.	.19	California Public Utilities Commission	.51
AGRAMKOW	.65	California State Department of General Services	.36
Advanced Food Products	.57	Calpine	.5, 13
Advanced Micro Devices, Inc.	.5	CalsonicKansei	.65
Air Conditioning Contractors of America	.24	Cambridge Savings Bank	.33
Airsept	.65	Caterpillar Inc.	.5, 13, 58
Alliance of Automobile Manufacturers	.65	Cathedral Square Corporation	.19
Alliance to Save Energy	.31, 51	CenterPoint Energy	.13
Alliant Energy Generation	.46	Centro Ricerche Fiat	.65
Alliant Energy/MidAmerican Energy Company	.19	Chester County Solid Waste Authority	.57
Allied Waste	.57	Chevron Energy Solutions	.46
American Council for an Energy-Efficient Economy	.51	Cinergy Corp.	.5
American Electric Power	.5, 51	City of Denton, Texas	.57
American Institute of Architects	.34, 36	City of Fresno General Services Department	.45
American Lighting Association	.21	City of LaGrange, Georgia	.58
Anderson Homes, Inc.	.19, 28	City of Palo Alto Utilities	.46
Arizona Public Service Company	.63	City of Vallejo, California	.45
Arkema	.65	Clore Automotive	.65
Arrow Linen Supply Company	.47	Colorado Springs School District 11	.33
Aspen Homes of Colorado	.19, 28	Columbia Gas Transmission Company	.55
Aspen Skiing Company	.45	Columbia Gulf Transmission Company	.55
Association of International Automobile Manufacturers	.65	Columbus Hospitality	.33
Association of Regulatory Utility Commissioners	.51	Connecticut Consumer Counsel	.51
Association of School Business Officials International	.31	Connecticut Department of Environmental Protection	.51
ASTORIA HOMES	.19, 28, 29	Connecticut Department of Public Utility Control	.51
Atlantic Golf, a Division of the Brick Companies	.45	Connecticut Light and Power	.36
Audi	.65	CONSOL Energy	.54
Austin Energy	.19, 51	Consortium for Energy Efficiency	.21, 24, 36
Australian Department of Environment and Heritage	.65	Cornell University	.46
Australian Federated Chamber of Automotive Industries	.65	Council of Educational Facility Planners International	.31
Australian Federation of Automotive Parts Manufacturers	.65	Council of the Great City Schools	.31
Australian Fluorocarbon Council	.65	County of Alameda	.45
Australian Greenhouse Office	.65	Curtis Lumber Company, Inc.	.19
Automotive Aftermarket Industry Association	.65	D.R. Horton, Inc.	.19, 28
Avista Advantage	.19	Dagoba Organic Chocolate	.45
Ball Corporation	.5	DaimlerChrysler	.65
Baltimore Aircoil Company	.5	Dart Container Corporation	.57
Baltimore Gas and Electric	.51	David Powers Homes	.19, 28, 29
Bank of America Corporation	.5, 13	Delphi Corporation	.65
Baxter International, Inc.	.5, 13, 63	Delta-Montrose Electric Association	.19
Beaumont Refinery Project; ExxonMobil Corporation	.47	DENSO Corporation	.63, 65
Behr	.65	Devon Energy Corporation	.55
Bergstrom	.65	District of Columbia Public Service Commission	.51
Biodiesel Industries, Inc.	.57	Douglas, Emmett & Company	.33
BMW	.65	DTE Energy-MichCon	.55
Bonneville Power Administration	.51	Duke Energy	.50, 51, 55
Bosgraaf Homes	.19, 28	DuPont	.66

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DuPont Fluoroproducts	.65	Holcim (US) Inc.	.5
Eastman Kodak Company	.5	Holliswood Care; American DG New York, LLC	.47
Eaton	.65	Honda	.65
Ecole des Mines de Paris	.65	Honeywell	.65, 66
Edith Cowan University	.65	HSBC North America	.45
El Paso Pipeline Group	.55	Hutchinson FTS	.65
EMC Corporation	.5	Hyatt Regency Dallas & Hyatt Regency DFW	.45
Enbridge Energy Partners L.P.	.55	Hyundai	.65
Ence Homes	19, 28, 29	IBM Corporation	.5, 13, 63
Energy Sense	.19	Independent School District 197	.33
Energy Trust of Oregon, Inc.	.19	Indian Institute of Technology Delhi	.65
Entergy Corporation	.22, 51	Indian Ministry of Environment and Forests	.65
Environmental Defense	.51	INEOS Fluor	.65
Environment Canada	.65	Innovative Design, Inc.	.19, 34
European Commission	.65	Interface Flooring Systems	.58
European Union	.6	Interface, Inc.	.5
Exelon Corporation	.5, 13, 51	International Organization of Standardization	.65
Fairfax County, Virginia	.58	International Paper	.5
Federal Research Center—White Oak Central Utility Plant; General Services Administration	.47	Institute for Governance and Sustainable Development	.65
FedEx Express-Oakland Hub Facility	.45	Institute of Electrical and Electronics Engineer's Power Engineering Society	.66
First Environment, Inc.	.5	Iowa Utilities Board	.51
Fiat Auto	.65	ISO New England Inc.	.51
Food Lion, LLC	.19, 32, 33, 51	Isuzu	.65
Food Marketing Institute	.31	Japan Automobile Manufacturers Association	.65
Ford Motor Company	.19	Japan Fluorocarbon Manufacturers Association	.65
Fort Collins Utilities	.19	Japan Industrial Conference for Ozone Layer and Climate Protection	.65
Four Seasons	.65	Japan Ministry of Economy, Trade and Industry	.65
FPL Group, Inc.	.5	Japan Ministry of Environment	.65
Friends of the Earth	.65	Johnson & Johnson	.5, 45, 46, 63
Frito-Lay	.5, 13, 19	Johnson Controls	.51, 65
Gap, Inc.	.5, 13	Kentucky Office of Energy Policy	.19
General Electric Company	.5, 13	Kerr-McGee Oil & Gas Corporation	.55
General Electric Consumer and Industrial	.19	Kia	.65
General Motors Corporation	.5, 13, 65	Konvekta	.65
General Services Administration	.36	Korea Advanced Institute of Science and Technology	.65
Giant Eagle, Inc.	.19, 33	La Jolla Medical Center; Department of Veterans Affairs	.47
Good Earth Lighting	.19, 21	Lanchester Landfill	.57
Goodyear	.65	Leak Survey, Inc.	.55
Gorell Enterprises, Inc.	.19	Lee County Landfill	.57
Governors' Ethanol Coalition	.46	LG&E Energy	.62
Granger Energy, LLC	.57	Lithonia Lighting	.19, 21
Granite Properties	.33	Lockheed Martin Corporation	.5
Great River Energy	.51, 62	Lowe's	.19, 21, 24
Green Mountain Coffee Roasters	.45	Mack Trucks, Inc.	.5
Green Mountain Energy Company	.5, 13	Maflow	.65
Greenpark Care Center; American DG New York, LLC	.47	Manchester Tank; NiSource Energy Technologies	.47
Green Power Communities	.44	Marriott International, Inc.	.5, 13, 19, 32, 37
Gresham-Barlow School District	.19, 33, 37	Maryland Energy Administration	.19
Guaranteed Watt Saver Systems, Inc.	.19	Maytag Corporation	.19
Harvard University	.45	McCreary County Community Housing Development Corporation	.19
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Haven Properties, Inc.	.19, 28	Merck & Co., Inc.	.19
Haworth, Inc.	.5	MidAmerican Energy Company	.51
H. E. Butt Grocery Company	.33	Middlebury College	.47
Hermany Farms Dairy; American DG New York, LLC	.47		
Hexion Specialty Chemicals, Inc.	.47		

Miller Brewing Company . . . . .	5	Portland Cement Association . . . . .	38, 41
Minnesota Public Utilities Commission . . . . .	51	Power Integrations, Inc. . . . .	19
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Mohawk Fine Papers, Inc. . . . .	45	Public Technology Institute . . . . .	31
Mohegan Sun . . . . .	47	Puget Sound Energy . . . . .	19
National Association of Counties . . . . .	31	Red Dot . . . . .	65
National Association of Regulatory Utility Commissioners . . . . .	50, 51	Refrigerant Reclaim Australia . . . . .	63, 65
National Automobile Dealers Association . . . . .	34	Rego Park Nursing Home; AES-NJ Cogen Co. Inc. . . . .	47
National Grid . . . . .	19, 36	Residential Energy Services Network (RESNET) . . . . .	26
National Parent Teacher Association . . . . .	31	Roche Group U.S. Affiliates . . . . .	5
National Renewable Energy Laboratory . . . . .	5, 13, 63	Rochester City School District . . . . .	33
Natural Resources Defense Council . . . . .	51, 65	Rolls-Royce . . . . .	57
Neutronics . . . . .	65	RTI Technologies . . . . .	65
Nevada ENERGY STAR Partners . . . . .	19, 28, 29	Sacramento Municipal Utility District . . . . .	51
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New Jersey Natural Gas . . . . .	51	Save More Resources, Inc. . . . .	19, 37
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North Carolina Air Office . . . . .	51	Semiconductor Industry Association . . . . .	62
North Carolina Energy Office . . . . .	51	Servidyne Systems, LLC . . . . .	19, 51
Northeast ENERGY STAR Lighting and Appliance Initiative . . . . .	19	Shecco . . . . .	65
North East Sustainable Energy Association . . . . .	31	Sinochem USA . . . . .	65
Northern Natural Gas . . . . .	55	Skye International Holdings . . . . .	65
NSTAR . . . . .	36	Snap-On Diagnostics . . . . .	65
Obrist . . . . .	65	Society of Automotive Engineers . . . . .	64, 65
Occidental Oil and Gas Corporation . . . . .	55	Society of Indian Automobile Manufacturers . . . . .	65
Office of the Ohio Consumers’ Counsel . . . . .	51	Solvay Fluorochemicals . . . . .	65
Oracle Corporation . . . . .	5	South Colonie Central School District . . . . .	33
OSRAM SYLVANIA . . . . .	19	Southern California Edison . . . . .	19, 51
Otter Tail Power . . . . .	62	Southern California Gas Company . . . . .	19
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Parker-Hannifin . . . . .	65	South Washington County School District 833 . . . . .	33
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Pfizer, Inc. . . . .	5	SPX-Robinair . . . . .	65
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PNM Resources . . . . .	51	St. Francis Hospital and Medical Center . . . . .	47
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		Subaru . . . . .	65
		Subros . . . . .	65



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Sun Microsystems, Inc. . . . .	5, 13	U.S. Department of Housing and Urban Development . . . . .	4, 24
Sun Test . . . . .	.65	U.S. Green Building Council . . . . .	28, 34
Sustainable Buildings Industry Council . . . . .	.31	U.S. Mine Safety & Health Administration . . . . .	59
Suzuki . . . . .	.65	U.S. Office of Management and Budget . . . . .	10
TATA Motors . . . . .	.65	U.S. Small Business Administration . . . . .	34, 36
Tennessee Valley Authority . . . . .	.51	Underwriters Laboratories . . . . .	.65
TEXA, S.p.a. . . . .	.65	United Nations Environment Program DTIE . . . . .	.65
Texas Instruments . . . . .	.65	United States Telecom Association . . . . .	.31
Texas State Energy Conservation Office . . . . .	.51	United Technologies Corporation . . . . .	.5
TexEnergy Solutions, Inc. . . . .	.19	University of Braunschweig . . . . .	.65
The American Hotel & Lodging Association . . . . .	.31	University of Cincinnati . . . . .	.47
The American Society for Healthcare Engineering of the American Hospital Association . . . . .	.31	University of Illinois . . . . .	.65
The American Solar Energy Society—Legacy Schools Program . . . . .	.31	University of Maryland . . . . .	47, 65
The Association of Energy Engineers . . . . .	.31	University of Michigan . . . . .	.63
The California Energy Commission . . . . .	34, 51, 63	University of Minnesota, Morris . . . . .	.45
The Collins Companies . . . . .	.5	University of Texas at Austin . . . . .	.47
The Conference Board . . . . .	.40	USAA Real Estate Company . . . . .	19, 33, 51
The Dow Chemical Company . . . . .	.51	Utilmaster; NiSource Energy Technologies . . . . .	.47
The Energy and Resources Institute . . . . .	.65	UView Ultraviolet Systems . . . . .	.65
The Home Depot . . . . .	19, 22, 24	Valeo . . . . .	.65
The National Association of Elementary School Principals . . . . .	.31	Vectren Corporation . . . . .	.51
The National Association of Energy Service Companies . . . . .	.31, 36	Vehicle Airconditioning Specialists of Australia . . . . .	.65
The National Association of Secondary School Principals . . . . .	.31	Vestil Manufacturing; NiSource Energy Technologies . . . . .	.47
The National Association of State Energy Officials . . . . .	.31	Veridian Homes . . . . .	19, 28
The National Energy Education Development Project . . . . .	.31	Vermont Energy Investment Corporation . . . . .	.51
The National Energy Foundation . . . . .	.31	Victory Refrigeration . . . . .	.19
The National School Boards Association . . . . .	.31	Visteon Corporation . . . . .	.65
The Real Estate Roundtable . . . . .	.31	Volkswagen . . . . .	.65
The Saunders Hotel Group . . . . .	.33	Volvo Car Corporation . . . . .	.65
The Vanguard Group . . . . .	.33	Volvo Trucks North America . . . . .	.5
The World Bank Group . . . . .	.45	Wabash Valley Power Association . . . . .	.58
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