

# The Dow Chemical Company

STATEMENT FOR THE RECORD

SUBCOMMITTEE ON ENERGY AND ENVIRONMENT  
COMMITTEE ON ENERGY AND COMMERCE

HEARING ON

Energy Efficiency: Complementary Policies  
for Climate Legislation  
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## About Dow

The Dow Chemical Company appreciates the opportunity to submit these written comments to the Subcommittee on Energy and Environment, Committee on Energy and Commerce.

Dow was founded in Michigan in 1897 and is one of the world's leading manufacturers of chemicals and plastics. We supply products to customers in 160 countries around the world, including hundreds of specialty chemicals, plastics, agricultural and pharmaceutical raw materials for products essential to life. About half of our employees are in the US, and we help provide health benefits to more than 34,000 retirees in the US.

Dow is committed to sustainability. We have reduced our absolute levels of greenhouse gas (GHG) emissions 22% since 1990, and we are committed to do even better in the future. Our ambitious 2015 sustainability goals underscore this commitment.<sup>1</sup>

Dow is an energy-intensive company. We use energy, primarily natural gas and natural gas liquids, as a feedstock material to make a wide array of products. For its global operations, Dow uses the energy equivalent of 850,000 barrels of oil every day. This amount is more than the oil consumption of some countries, such as The Netherlands or Australia.

Because roughly half of our operating costs are energy costs, Dow is actively investigating and moving forward on alternate feedstock materials such as glycerin to propylene glycol (for use in antifreeze) and soy to polyols (for use as cushioning in furniture).

Despite being energy-intensive, Dow products help consumers save energy and reduce GHG emissions. For the home or business, our insulation and polyurethane foam sealants can reduce home and business energy costs by 20%-30%. For saving energy on the road, our new diesel particulate filter technology, enabling improved environmental performance and fuel efficiency. We also offer plastics, composites, and adhesives to help make cars stronger and lighter, while improving overall gas mileage. For the industrial sector, we have saved energy by down-gauging industrial stretch film (PE), a process of making a plastic film thinner but stronger, so that less plastic (and feedstock energy) can be used while getting the same benefits in use.

These examples provide an overview of the benefits of Dow products. Additionally, we have begun work to validate the contribution our products have through Life Cycle Assessment (LCA). Using a third-party validated LCA, we are pleased to report the net reduction in greenhouse gas (GHG) emissions resulting from the use of Dow thermal insulation in residential and commercial buildings and in industrial pipeline applications. The avoided emissions from the use of these products are seven times greater than our total corporate emissions. This calculation was made by quantifying the GHG emissions at all stages of the life cycle of the Dow insulation product and comparing these with the

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<sup>1</sup> To learn more about Dow's commitment to sustainability, go to our website at [www.dow.com](http://www.dow.com).

GHG emissions savings from the use of the insulation products in buildings and pipe systems.

## **Need for Complementary Policies to Cap and Trade**

As a member of the U.S. Climate Action Partnership (USCAP), Dow supports prompt enactment of environmentally effective, economically sustainable and fair climate change legislation to reduce U.S. greenhouse gas emissions sharply by mid-century. The centerpiece of legislation should be an economy-wide cap and trade program. This market-based approach is the best way to put a price on carbon and ensure that short- and long-term emissions targets are met.

USCAP launched its landmark report, titled *A Call for Action*<sup>2</sup>, in January 2007, which lays out a legislative framework for climate protection. Most recently, USCAP released *A Blueprint for Legislative Action*, which provides consensus recommendations for climate protection legislation. USCAP includes a total of 31 businesses and environmental organizations.<sup>3</sup> The coalition recognizes that the United States faces an urgent need to reinvigorate our nation's economy, make the country more energy secure, and take meaningful action to slow, stop, and reverse GHG emissions to address climate change. Thoughtful and comprehensive national energy and climate policy will help secure our economic prosperity and provide American businesses and the nation's workforce with the opportunity to innovate and succeed.

USCAP recommends an array of complementary policies in addition to cap and trade. The purpose of these complementary policies is to (1) spur the development and deployment of low-carbon technologies to achieve emission reductions that would otherwise not occur in a timely manner under cap and trade alone and (2) avoid disproportionate negative impacts to certain sectors of the economy and/or regions of the country.

Energy efficiency plays a key role in many—but not all—of these complementary policies. Energy efficiency represents a relatively low-cost solution to the challenge posed by rising GHG emissions—not to mention the significant issues of energy dependence and volatile energy prices. In addition, aggressive energy efficiency efforts today can help address the so-called “dash to gas”.

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<sup>2</sup> *A Call for Action* and *A Blueprint for Legislative Action* can be found at [www.us-cap.org](http://www.us-cap.org).

<sup>3</sup> The current members of USCAP are: Alcoa; Boston Scientific Corporation; BP America, Inc.; Caterpillar Inc.; Chrysler LLC; ConocoPhillips; Deere & Co.; Dow; Duke Energy; DuPont; Environmental Defense Fund; Exelon Corporation; Ford Motor Company; FPL Group; General Electric; General Motors Corporation; Johnson & Johnson; Marsh, Inc.; Natural Resources Defense Council; NRG Energy; PepsiCo North America; Pew Center on Global Climate Change; PG&E Corporation; PNM Resources; Rio Tinto; Shell Oil Company; Siemens Corporation; The Nature Conservancy; World Resources Institute; and Xerox Corporation.

## Preventing a “Dash to Gas”

The growing body of science of global warming suggests that aggressive action is needed to reduce GHG emission levels in the atmosphere. Legislation introduced in Congress over the last few years supports aggressive US reductions in the short-term. USCAP recommends a 2020 target that is 14%-20% below 2005 emission levels, in line with President Obama’s recommended target.

How can the US achieve such a target by 2020? One approach would be several years of negative economic growth. Aside from being politically unacceptable, such a “solution” would do nothing to spur low-carbon technologies needed to achieve the deep, long-term reductions that will be needed to solve this global problem.

One of the easiest, and most likely, ways to meet aggressive, short-term emission reduction targets is through fuel switching from coal to natural gas in the power sector. A strong price signal on carbon would exacerbate such a movement, which is already underway even in the absence of a US cap and trade program.

The fuel-switching solution could be economically ruinous for those industrial businesses and consumers dependent on affordable natural gas, if natural gas supply does not keep pace with rising demand, or if natural gas supply lags significantly behind demand. Recent US history suggests this is a plausible scenario.

Natural gas prices have skyrocketed more than 460% over the last eight years. The increase in price has significantly contributed to the US manufacturing sector losing over 3.7 million jobs, the chemical industry losing nearly 120,000 jobs<sup>4</sup>, and the permanent loss of nearly half our fertilizer production capacity. The manufacturing sector, which has limited fuel switching ability, has become the shock absorber for high natural gas costs. For the forest products industry, energy is the third largest manufacturing cost—up fifty percent in recent years for pulp and paper mills. For some mills, the cost has eclipsed employee compensation.

Dow first expressed alarm about high natural gas prices in 2002. At that time, our total annual energy and feedstock bill was \$8 billion. In 2008, our energy bill was \$27 billion. Our energy expenditures are by far the largest component of our production costs, and equate to about half of our total revenues.

Policies that increase natural gas demand will make this already bad situation even worse. For example, policies that mandate corn-based ethanol will increase demand for natural gas. One billion gallons of ethanol require the use of 28 billion cubic feet of natural gas.

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<sup>4</sup> The chemical industry uses 1.93 trillion cubic feet (TCF) of natural gas annually, representing 8% of US natural gas consumption. The majority of steam boilers and cogeneration units in the manufacturing sector are powered by natural gas. The remainder is for feedstock purposes. Due to the historic abundance and low cost of natural gas in the USA, natural gas has been vital to domestic chemical production.

Another example is climate change legislation. Natural Gas Council models predict that climate change legislation will increase natural gas demand by as much as 10 trillion cubic feet (TCF) per year.

Congress has been enticed into over-reliance on natural gas before. The Clean Air Act Amendments of 1990 were enacted with the belief that natural gas would be the clean fuel of the future and would be cheap and plentiful. Unfortunately, Congress did not anticipate the run-up in natural gas prices and the resulting demand destruction in the industrial sector.

Before we repeat this mistake and consider creating new demand for natural gas, we need to consider complementary policies to minimize fuel switching. Such policies should aggressively promote energy efficiency, especially with respect to the largest users of natural gas: the power sector and the building sector.

We view the recent softening of natural gas prices to be associated with the dramatic demand destruction caused by the weakening economy. According to EPA/DOE analyses, cap and trade legislation will increase the demand for natural gas at least in the near-term (prior to 2030), as power companies find it economical to fuel switch from coal to less-CO<sub>2</sub>-intensive natural gas. In the longer-term, fuel switching is of less concern as new technology is deployed to cost-effectively address GHG emissions from coal-fired power plants.

In designing a cap and trade program, several different elements (targets and timetables, cost containment, complementary policies) will impact the degree of fuel switching, and Congress should keep all of these in mind as it develops a climate policy. Dow recommends that any US climate policy be designed in ways to minimize fuel switching.

### **Complementary Policy Recommendations: Energy Efficiency**

The most important complementary policy is one that aggressively promotes the cleanest, most reliable, and most affordable “fuel”—energy efficiency. We acknowledge the significant “down payment” made in the stimulus bill on energy efficiency, but we stress the need to do more if we are going to meet the ambitious GHG reduction target set by the President.

Dow has been a pioneer in energy efficiency and has been recognized for its leadership. Since 1994, Dow has saved 1,600 trillion BTU of energy through the company’s energy efficiency program. This savings is equivalent to the energy needed to generate the electricity used in all the residential houses in California for one year. Dow’s energy efficiency program has resulted in energy savings of \$8.6 billion dollars and has prevented 86 million metric tons of CO<sub>2</sub> from entering the atmosphere.

If the U.S. adopted a similar economy-wide goal, the country could save the BTU equivalent of all of its oil imports from the Middle East.

According to a 2007 report from the National Petroleum Council, available efficiency technology could reduce energy use 15 to 20 percent if applied today.

In Dow's view, the most important sectors in which to seek improvements in energy efficiency are those that use large amounts of natural gas: buildings and homes, the power sector, and industrial operations. Such a focus will help to minimize increases in natural gas prices due to cap and trade. In this section, we list those policies that we believe could make the biggest difference in the near-term.

### Aggressively Promote Energy Efficiency in Buildings

Congress should establish a national goal of increased model building codes of at least 30% by 2012 and at least 50% by 2020, based on the 2006 International Energy Conservation Code (IECC). Congress should provide incentives to states that adopt these model energy efficiency codes in a prescribed timeline upon a determination by the Department of Energy. The 30% target is based on a goal set by the American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) for the pending 2010 update of their model commercial building code. The 50% goal is a qualification level for energy efficiency tax credits adopted by Congress in 2005. As new codes are finalized, states were directed to either adopt these model codes or their own state-specific equivalents. Funding and technical assistance to states was authorized. In order to meet long-term energy goals, it is important that new buildings be as energy-efficient as is economically justified, since it will be much more expensive to retrofit these buildings after they are completed. This provision should be adopted in 2009.

We are also supportive of other policies that can advance energy efficiency in buildings and homes:

- Congress should expand EPA's Home Performance with Energy Star program to stretch nationwide (it currently operates in only 22 states) and should encourage much greater participation in the program by establishing rebates for homes that undertake comprehensive energy efficiency retrofits.
- Congress should give serious consideration to a provision in the draft Dingell-Boucher bill to expand the Energy Star building labeling program to include homes and additional types of commercial buildings. These labels let building owners, prospective purchasers, and prospective tenants know how the energy performance of a building compared to other similar buildings in the area. The intent is to motivate building owners to upgrade their buildings, and to help prospective purchasers and tenants select efficient buildings.
- Congress should adopt long-term extensions of the tax credit for high efficiency new homes, efficient heating, cooling and water heating equipment, and heavy-duty hybrid vehicles.

## Emphasize Efficiency in Portfolio Standards

Aside from changing the regulatory structure, portfolio standards have been adopted by 18 states as one way to promote energy efficiency in the power sector. Under a federal Energy Efficiency Resource Standard (EERS), retail distributors would be required to obtain energy savings from customer facilities, distributed generation installations, or their own distribution systems in amounts equal to a specified percentage of base year sales of electricity (energy) or natural gas. The requirements apply to retail distributors, including unbundled distribution utilities or fully integrated generation and distribution utilities that have annual sales over a set level of megawatt hours of electricity or cubic feet of natural gas.

Currently, new conventional base-load production sources generate electricity at a rate between \$0.073 and \$0.135 per kilowatt-hour.<sup>5</sup> At a cost of \$0.03 per kilowatt-hour saved, efficiency improvements are significantly less expensive than building new plants and power lines and burning more fuel. Implementing a national EERS would commit every state to utilizing this least-cost resource, establish a baseline level of cost-effective and achievable energy savings, and reduce carbon dioxide emissions far beyond the level achievable by those states currently acting alone.

The American Council for an Energy-Efficient Economy (ACEEE) estimates that by 2020, a federal EERS could reduce peak electric demand by about 90,000 megawatts<sup>6</sup>—equivalent to 300 power plants that each have a 300 megawatts capacity. Carbon dioxide emissions reductions would total approximately 260 million metric tons in 2020—equivalent to taking 43 million automobiles off the road (for a year), and 260,000 net jobs would be created. Furthermore, utility customers would save a net \$144 billion, with the proposed EERS producing a benefit-to-cost ratio of about 3:1.

If Congress decides to enact a Renewable Electricity Standard (RES) rather than an EERS, we recommend that Congress allow a large part of the renewables mandate to be met through energy efficiency.

## Provide Significant Investment Capital for Low-Interest Loans

A scarcity of investment capital is a serious impediment to energy efficiency projects at industrial sites, power plants, and in residential and commercial buildings. Our experience with energy efficiency efforts is that it is difficult to justify an industrial project whose sole purpose is energy efficiency unless the payback period is two years or less. The current economic downturn has raised the bar even higher for energy efficiency projects. And this situation is not unusual across industry or even for homeowners.

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<sup>5</sup> See Lazard, 2008, *Levelized Cost of Energy Analysis — Version 2.0*, [http://www.narucmeetings.org/Presentations/2008%20EMP%20Levelized%20Cost%20of%20Energy%20-%20Master%20June%202008%20\(2\).pdf](http://www.narucmeetings.org/Presentations/2008%20EMP%20Levelized%20Cost%20of%20Energy%20-%20Master%20June%202008%20(2).pdf).

<sup>6</sup> These savings are in addition to savings now required under state EERS's.

To remedy this serious problem, the federal government ought to consider creating a large pool of capital (at least tens of billions of dollars) designated for energy efficiency projects with a longer payback period (e.g., between two and eight years). The funds would be loaned to homeowners, commercial entities where the payback period coincides with the expected return on investment due to lower energy costs, and leaves the borrower revenue neutral. Such a program would ensure the availability of funding for projects that would otherwise not be undertaken, while creating many new jobs.

### Re-Energize Existing Industrial Energy Efficiency Programs

The DOE Industrial Technologies Program (ITP) offers a wide range of important benefits to the manufacturing sector:

- The program provides training for the next generation of manufacturing energy efficiency engineers through the Industrial Assessment Program. Graduates of this program have a proven track record of being able to perform in jobs much more quickly than students without the experience. These students also become sensitive to identifying and implementing energy efficiency opportunities.
- The program has the ability to convene representatives from a wide range of companies to work on manufacturing issues as a whole, without raising anti-trust concerns.
- The program's cooperative RD&D efforts have been valuable to industry by allowing industry and government to work together to target research that meets the needs of manufacturing industries, resulting in near-term impacts.

Dow supports the ITP, which is currently the only federal program that supports energy efficiency in the manufacturing sector. To strengthen the program, we recommend the Committee follow the recommendations of the recently published corporate peer review report for the ITP program. In particular, these recommendations support a major increase in the budget level, a greater emphasis on early-stage R&D including an emphasis on efficient use of feedstock material and alternative feedstocks. In addition, we recommend the following:

- Expand the program to focus on cogeneration (combined heat and power-- CHP) and recycled energy as important opportunities.
- Develop closer relationships to manufacturing company representatives to ensure that ITP activities meet the needs of the manufacturing sector.
- The program should be coordinated with NIST MEP Centers and DOE CHP Regional Application Centers to maximize synergies between program offerings and minimize redundancies.

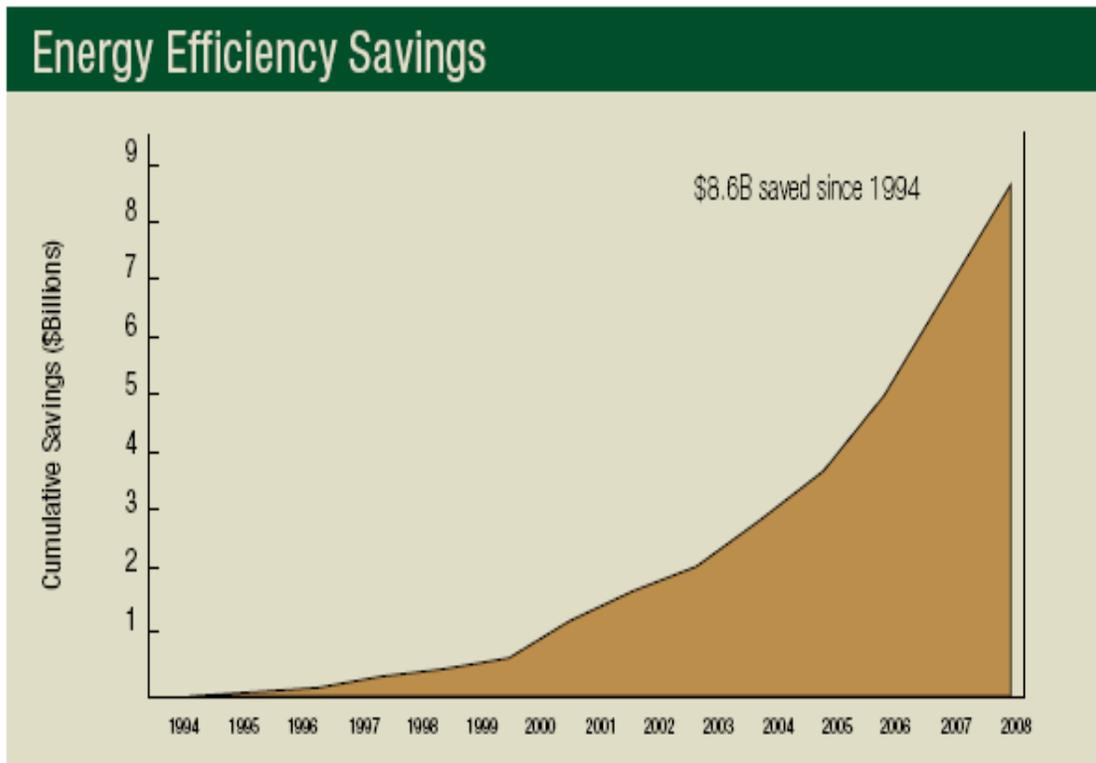
## **Conclusion**

Congress should pass cap and trade legislation with complementary policies to drive energy efficiency through technology development and deployment. Aggressive energy efficiency efforts will help lessen demand for natural gas, aiding the US manufacturing sector and residential consumers. Recommended policies include significant capital funding of private sector energy efficiency projects, portfolio standards that emphasize energy efficiency, and improvements in model building codes. Should Congress enact legislation placing a price on carbon, some of the revenue could be used to fund energy efficiency efforts, such as those described in this testimony.

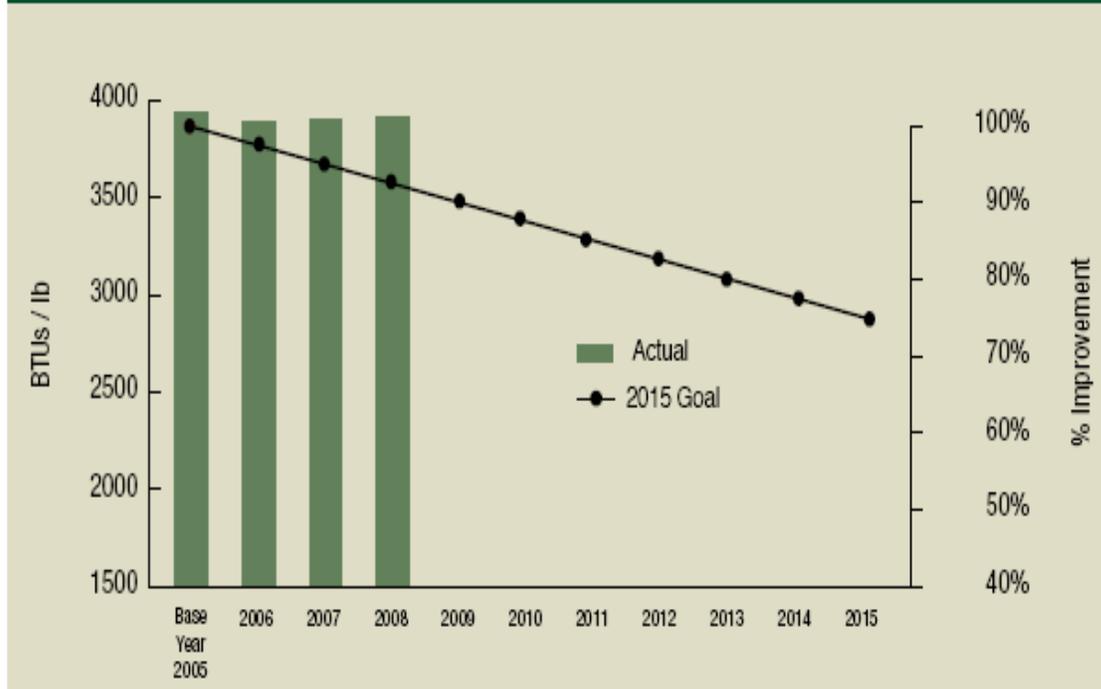
## Appendix: Dow and Energy Efficiency

The Dow Chemical Company is a recognized industry leader in energy management. Energy efficiency has been part of our heritage since the very early years of our company, when Dow helped pioneer the use of industrial combined heat and power, also known as cogeneration. In conventional power plants, a significant portion of the energy is lost (usually through cooling towers or flue gas) in the process of electricity generation. In contrast, cogeneration captures more of the heat, utilizing less fuel, which has a significant impact on greenhouse gas emissions and improved air quality relative to conventional utility power. Cogeneration typically uses 20% to 40% less fuel than separate steam and power generation because energy is captured and used that would otherwise be wasted.

In recent years, through a companywide focus on energy efficiency, we have dramatically increased our energy efficiency -- and exceeded an aggressive, long-term corporate energy efficiency goal. Since 1994, we have reduced our energy intensity 22% worldwide. Our cumulative energy savings have reached approximately 1,600 trillion BTUs, and we have avoided 86 million metric tons of carbon dioxide emissions. Figure 1 shows how our \$1 billion investment in energy efficiency has returned more than \$7 billion in energy savings. We are very proud of the fact that EPA has recognized Dow as their 2008 Energy Star "Partner of the Year".



## Energy Intensity Performance 2005-2015



Dow's energy efficiency and conservation initiative relies strongly on our structured approach to resource conservation and energy intensity reduction. At the core is the sustained commitment and support of Dow's corporate leadership. The overall Energy Efficiency and Conservation effort within Dow is driven by a Global Energy Efficiency Leader, who has full responsibility and accountability for implementing and managing an aggressive global energy conservation plan. The energy conservation leader sponsors technology center and site energy efficiency teams and networks throughout the company to identify energy saving opportunities, develop long-term energy improvement plans, and implement projects.

In addition, each business unit at Dow is responsible for aligning its goals and plans to the corporate goal on energy efficiency. Focal points within each business unit are responsible for driving energy efficiency within their respective technologies. Energy efficiency is further driven by the energy conservation teams at our 13 largest energy-consuming sites, which account for over 90% of Dow's energy usage. These local teams actively engage employees in energy efficiency improvement projects at their sites and drive an energy efficiency mindset and culture at the local level.

Our efforts to improve energy efficiency have been so positive that we are involved with many external organizations to expand the scope of our activities. Two examples:

- Dow joined with Lawrence Berkley National Laboratory and China's Energy Research Institute to develop a program aimed at supporting small- and medium-sized companies' goal to reduce energy intensity and improve energy efficiency.
- Dow is working with the U.S. National Association of Manufacturers' (NAM) and the Department of Energy to promote energy efficiency best practices by helping to develop a database aimed toward NAM's 13,000 member companies. NAM is the largest U.S. industrial trade association, representing small and large manufacturers in every industrial sector.