# Industrial Technologies PROGRAM

## Accelerating Advances in Industrial Energy Efficiency

## Industrial energy efficiency is one of the most reliable ways to reduce near-term carbon emissions in the United States.

The Industrial Technologies Program (ITP) is the lead government program working to increase the energy efficiency of U.S. industry—which accounts for about one-third of U.S. energy use. In partnership with industry, ITP helps research, develop, and deploy innovative technologies that companies can use to improve their energy productivity, reduce carbon emissions, and gain a competitive edge.

We continuously feed the technology pipeline and move scientific breakthroughs toward the market. Successful development of these transformational technologies will provide a step change in energy efficiency and expand markets at home and abroad. Through our technical assistance activities, we help industry identify the proven technologies and practices that offer the most cost-effective options for saving energy today.

## ITP delivers results.

Working with industry, we have successfully put cutting-edge technologies and energy-saving measures into active use. These accomplishments have made a real difference to our nation.


ITP's proven track record includes:

- Placing over 220 technologies into commercial markets
- Saving more than 9.3 quadrillion ($10^{15}$) Btu of energy (quads) since program inception
- Reducing carbon emissions by over 206 million metric tons
- Earning 51 prestigious *R&D 100* awards between 1991 and 2009
- Supporting research that has led to more than 200 patents since 1994.

## Mission

Reduce industrial energy and carbon intensity by partnering with industry to research, develop, and deploy advanced manufacturing technologies and energy management practices.

## Goals

Develop a suite of advanced manufacturing technologies and practices that provide pathways for doubling the energy productivity of U.S. industry and enabling the associated carbon reductions.

## Objectives

- Provide national leadership in energy-efficient, low-carbon manufacturing and products.
- Harness the scientific ingenuity of acedemia, industry, and the National Laboratories to transform energy use in manufacturing.
- Promote the use of proven, advanced technologies and strategies throughout the industrial supply chain.
- Foster industrial productivity to stimulate economic growth and jobs creation.

## U.S. Manufacturing

- Contributes 12% of U.S. GDP
- Produces nearly a quarter of the world's manufacturing output
- Supplies about 55% of U.S. exports (worth $80 billion per month)
- Directly employs over 11.8 million people and generates another 6.8 million jobs in related industries
- Provides a diverse array of products used throughout our economy

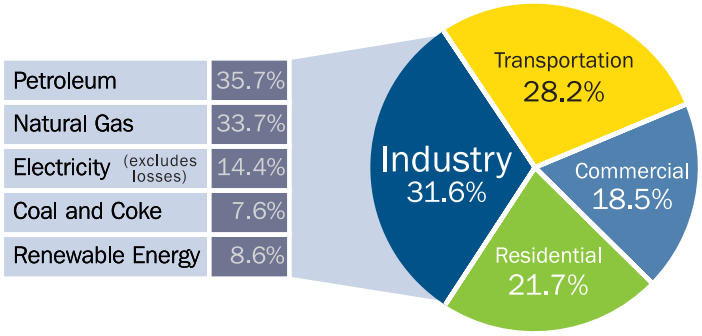
## Industry is a cost-effective target for energy and carbon reduction efforts

- A large industrial plant uses as much energy as 20,000 typical homes; a medium-sized plant consumes as much energy as 455 homes.
- For every ***one*** plant in the United States, there are 320 homes and 685 motor vehicles.
- U.S. industry embraces technology innovations that offer proven benefits.

## Industry is critical to America's energy security and economic health.

U.S. industry consumes a large share of U.S. energy, functions as a vital economic engine, and makes a significant contribution to GDP. In today's global markets, our industrial manufacturers face major challenges. With access to advanced, ultra-efficient technologies, the U.S. manufacturing sector can convert these challenges into opportunities—increasing competitiveness and capturing new markets for clean energy solutions.

U.S. industry consumed 31.4 quadrillion Btu in 2008




Source: EIA AER.

## Improved industrial energy efficiency enhances competitiveness—making it an ideal way to meet national and corporate energy goals.

Substantial opportunities for saving energy and reducing carbon exist throughout U.S. industry. To address industry's underinvestment in energy efficiency, concerted action is needed to accelerate the development and uptake of leading-edge technologies and practices. Developments in next-generation processes and materials hold great promise for revolutionary advances in energy efficiency. These advances will build our capacity for leading-edge manufacturing of clean energy technologies and sustainable growth in these expanding markets.

"We can watch as millions of new jobs with good pay and good benefits are created for American workers. And we can take pride as the technologies and discoveries and industries of the future flourish in the United States of America. We can lead the world, secure our nation, and meet our moral obligation to future generations."

President Barack Obama

## Working with industrial partners, ITP is transforming the way industry uses energy.

ITP provides cost-shared support for groundbreaking research to address the top energy challenges facing the nation. Our research teams develop next-generation processes that eliminate entire manufacturing process steps or completely reinvent production pathways to radically reduce energy use, carbon emissions, and material requirements.

Using advanced materials science and engineering, our teams develop next-generation materials that deliver novel properties to increase productivity and flexibility, extend component life, and lower cost. These efforts are delivering the technological advances that will reinvigorate the manufacturing base and position U.S. industry as a global leader in clean energy technologies and products.

ITP works closely with industrial partners to identify opportunities with the potential for large energy savings across diverse industries. Collaborative teams from industry, academia, and the National Laboratories solve critical manufacturing issues and accelerate commercialization of innovative technology solutions. ITP also collaborates with industry, states, the financial community, and other stakeholders to help plants access the latest technologies and energy management practices, promoting energy efficiency throughout the manufacturing supply chain.

### Strategic Elements

**Develop real-world solutions to revolutionize industrial energy use**

- Turn scientific advances into next-generation processes and materials that will
  - Minimize processing steps and raw material wastes
  - Enable new properties and functions
  - Allow parts and products to be manufactured in near final form
  - Reduce costs while moving products rapidly into markets
- Enable the development of new products and industries
- Facilitate development of clean energy solutions, including advanced combined heat and power systems
- Expand innovation through strategic partnerships with industry, universities, national laboratories, and others

**Drive the state-of-the-art in manufacturing energy efficiency**

- Accelerate the adoption of cost-effective technologies and energy management practices
- Elevate energy efficiency as a key corporate strategy by encouraging ambitious voluntary commitments to reduce energy intensity
- Leverage resources with states, utilities, states, the financial community, and other stakeholders
- Help train the next generation of energy engineers
- Provide accurate, unbiased information and tools that enable continuous improvement in energy performance
- Increase energy efficiency throughout the supply chain

The Industrial Technologies Program drives energy efficiency and carbon reduction throughout the manufacturing value chain, from the extraction of raw materials through the assembly of commercial products.

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