

the Energy to Lead

Industrial Energy Efficiency

Important to our Nation's Manufacturing
Competitiveness

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Industrial Energy Use

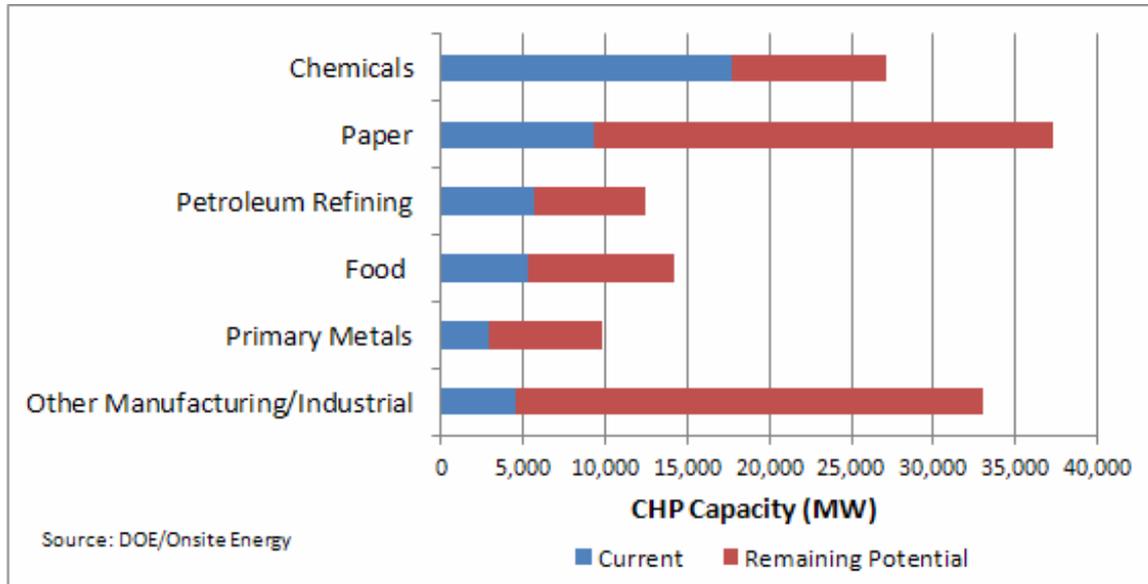
- > Approximately 30% of our nations energy demand is in the Industrial/manufacturing sector
 - > Steel Industry alone accounts for 2% of our nation's energy use
- > Reducing the energy intensity of the industrial/manufacturing sector results in
 - > Lower energy costs for manufacturing
 - > Makes US manufacturers more competitive
 - > Creates US jobs

What Reduces Energy Intensity for the Manufacturing Sector?

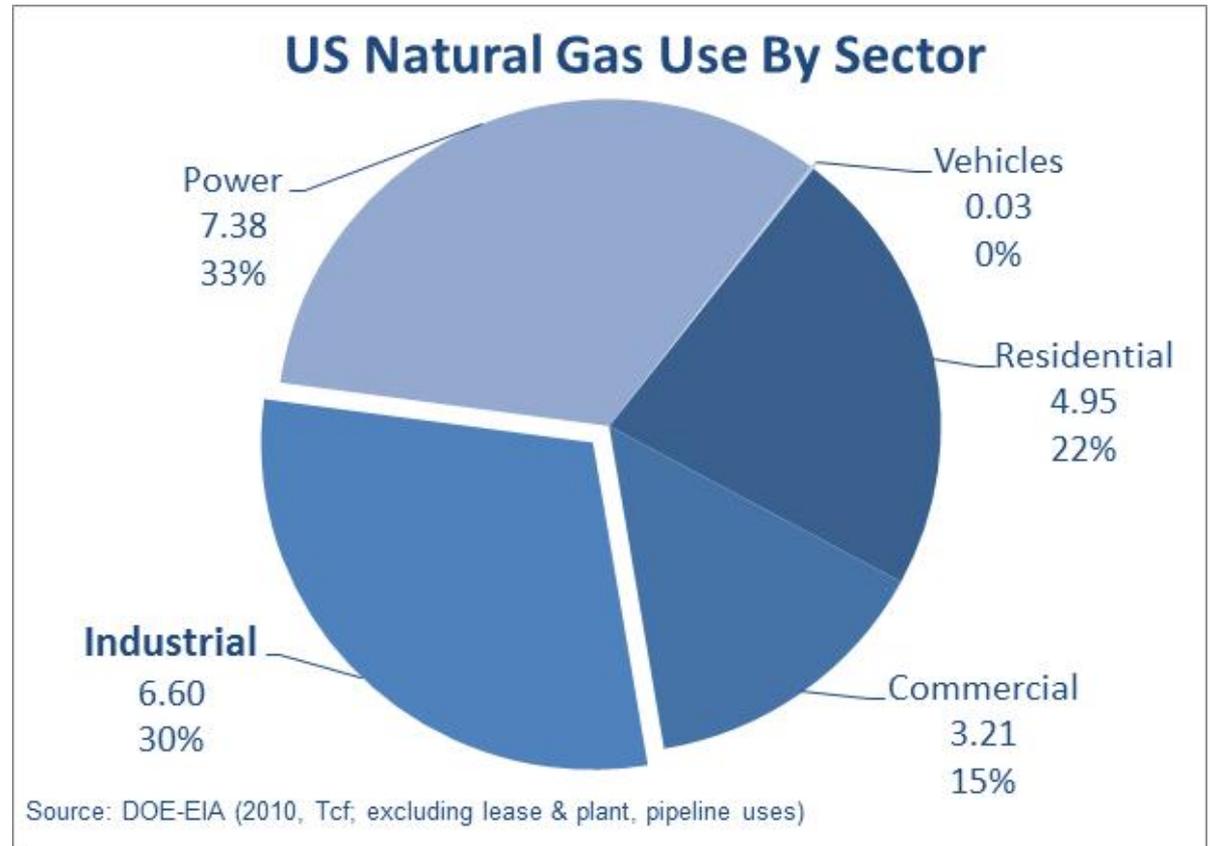
1. Combined heat and power
2. Deployment of energy efficient equipment
3. Advancement of new more efficient manufacturing processes and technologies

Manufacturing CHP

- > Combined Heat and Power opportunities remain in all manufacturing segments
- > Significant opportunity for energy and operating cost savings

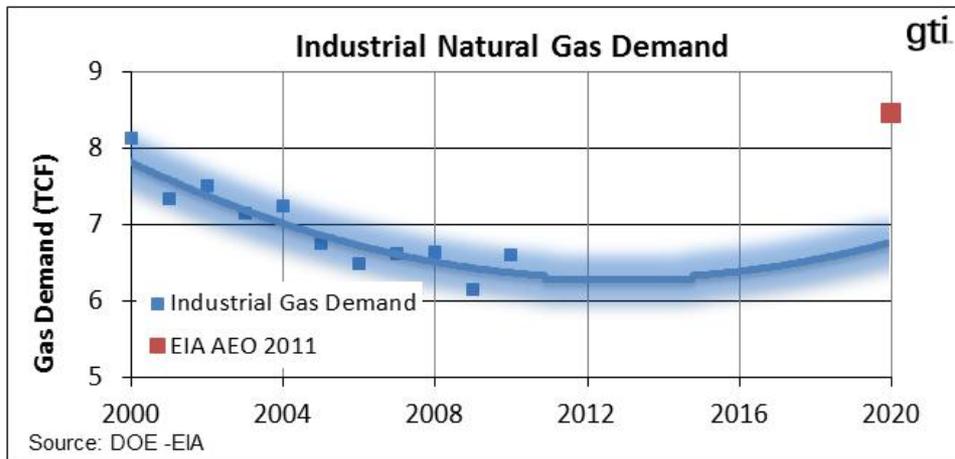


Natural Gas Use - Industrial Sector



Industrial Sector Natural Gas Demand Trends

- > Transportation, fuel and logistics costs,) & rising costs in China weighing against imports (on-shoring trend)
 - Caterpillar moving some China production back to the US
- > Downward trend for industrial gas use is reversing
- > A rebound is projected through 2020 due to low natural gas prices and other macro trends



New Industrial Plants Powered By Natural Gas

Natural Gas Boom Helps Petrochemical Industry

The petrochemical industry is benefiting from the recent boom in U.S. natural gas supplies, which has lowered feedstock costs.

"Capital investment is now being reconsidered," said Kevin Swift, chief economist with the American Chemistry Council.



Dow Chemical Plans to build a world-scale ethylene plant in 2017. The plant will be part of a plan to integrate Dow's petrochemicals business with feedstock opportunities from the US shale gas in the Marcellus and Eagle Ford shale regions.

Nucor's Natural Gas Direct Reduced Iron plant

Over the next several years, Nucor Steel will be building what could be one of the most significant industrial projects in Louisiana history. The first phase, a 2.5 million tons-per-year iron-making facility, will convert natural gas and iron ore pellets into direct reduced iron for Nucor's steel mills



PotashCorp to Restart Idled U.S. Ammonia Plant

Fertilizer giant PotashCorp plans to launch an 18-month startup process for its idled anhydrous ammonia processing operations in southern Louisiana. In 2003, the company suspended ammonia processing, citing high natural gas prices..



Industrial Technology Program (ITP) Public Private Partnerships with USDOE

- > ITP provides cost-shared funding through collaborative partnerships
- > Research and development of energy-efficient technologies for industry that reduce energy use and costs
- > These advanced technologies are then commercialized by the private sector, including many small businesses.
- > Administration has recently changed name to **“Office of Advanced Manufacturing Program”**

Industrial Technology Program

“Office of Advanced Manufacturing Program”

- > Nearly 9.3 quadrillion (10^{15}) Btu of energy saved through technology deployment and industrial technical assistance
 - Savings equal to 40% of our nation’s natural gas use
- > More than 220 technologies in commercial markets
- > Technical assistance delivered to more than 33,000 industrial plants
- > 51 prestigious *R&D 100* Awards and at least 215 patents between 1991 and 2009
- > http://www1.eere.energy.gov/industry/pdfs/itp_successes.pdf
- > http://www1.eere.energy.gov/industry/about/pdfs/impacts2008_full_report.pdf

Three Keys to Manufacturing Competitiveness

1. Combined heat and power
2. Deployment of energy efficient equipment
3. Advancement of new more efficient manufacturing processes and technologies

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