



SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Industrial Energy Efficiency and Combined Heat and Power

Energy efficiency and combined heat and power (CHP) offer significant benefits for manufacturers, states, and utilities. The Industrial Energy Efficiency and Combined Heat and Power (IEE/CHP) Working Group of the State and Local Energy Efficiency Action Network (SEE Action) offers information resources and technical assistance to state, local, and utility decision makers who can help realize these benefits.

Industrial energy efficiency is the implementation of energy saving projects and processes to lower the energy consumption and operating costs of industrial facilities. CHP is an efficient, clean, and reliable approach to the simultaneous on-site generation of electric and thermal energy from a single fuel source.

What is the Opportunity?

There are significant cost savings available in the industrial sector through cost-effective investment in energy efficiency and CHP. The industrial sector has an annual energy bill of more than \$200 billion.¹ Many facilities can save 15% or more annually through projects with payback periods of less than three years.² There is over \$100 billion³ in potential cost-effective energy efficiency investment to be made in the industrial sector by 2020, which would result in total energy savings of 5 quads and annual cost savings of almost \$50 billion.⁴

There is more than \$50 billion in potential cost-effective CHP investment to be made by 2020 in the industrial and commercial sectors, which would result in a total savings of 1.4 quads of energy and over \$75 billion.⁵ Many facilities achieve energy savings of 25% or more through economically attractive CHP projects.⁶

Additionally, utilities can undertake efforts to increase energy efficiency for manufacturing customers to improve and diversify customer program offerings, utilize energy efficiency as a least-cost resource for meeting rising energy demand, and help meet state energy savings requirements.

How SEE Action Helps

SEE Action advances best practice recommendations where some of the largest opportunities exist to reap benefits from increased energy efficiency. The IEE/CHP Working Group offers state policymakers, utilities, regulators, manufacturers, and other stakeholders a variety of resources that identify and promote adoption of proven, successful state and utility IEE/CHP programs and policies:

- *An Industrial Energy Efficiency Best Practice Programs Guide and Guide to the Successful Implementation of State CHP Policies* will provide successful policy and program approaches to industrial energy efficiency and CHP by utilities and state and local governments.
- *Regional Manufacturing Stakeholders Workshops* bring together regulators, program administrators, utilities, measurement and verification experts, state officials, and manufacturers to address barriers to IEE and CHP programs and policies through actionable solutions.
- *The IEE/CHP Webinar Series* features expert speakers discussing ways to advance energy efficiency policies and programs, remove barriers, and grow state and local investment in IEE and CHP in the industrial sector.

Key Points

- Industrial Energy Efficiency and Combined Heat and Power (CHP) offer significant cost savings opportunities for the manufacturing sector.
- State policymakers and regulators can provide cost-effective policies and programs that help manufacturers reduce operating costs through efficiency and CHP.
- SEE Action provides resources and best practice recommendations that can help decision makers and manufacturers implement proven, successful industrial energy efficiency and CHP programs and policies.

About SEE Action

The State and Local Energy Efficiency Action Network (SEE Action) is a state and local effort facilitated by the federal government that helps states, utilities, and other local stakeholders take energy efficiency to scale and achieve all cost-effective energy efficiency by 2020.

About the Working Group

The working group is comprised of representatives from a diverse set of stakeholders; its members are provided at www.seeaction.energy.gov.

SEE Action's Industrial Energy Efficiency and Combined Heat and Power Working Group

The IEE/CHP Working Group addresses the significant energy efficiency and CHP opportunities in the U.S. industrial sector. Chaired by state policymakers, the working group represents diverse stakeholders, including state policymakers and regulators, and representatives from industry, utilities, academia, and non-profit organizations, among others.

The working group develops resources and best practice recommendations for the design and implementation of policies and programs that drive demand for IEE and CHP; build the workforce and promote efficient operations and investment; move the market toward CHP technologies adoption; and promote efficient operations and investment.

Working Group Goals

The IEE/CHP Working Group has set aggressive goals to significantly increase IEE and CHP in the U.S. The working group identifies and supports the adoption and implementation of policies, programs, and practices that will lead to:

- A 2.5% average annual reduction in industrial energy intensity by 2020
- Installation of 40 gigawatts (GW) of new, cost-effective CHP by 2020.

Meeting these goals would help save an average of one quad of energy annually through 2020, resulting in an estimated \$37 billion per year in industrial energy cost savings⁷ and capturing nearly 80% of the potential energy efficiency in the industrial sector.⁸ The installation of 40 GW of new, cost-effective CHP alone—which would increase current U.S. capacity by 50%—would mitigate more than 150 million metric tons of CO₂ emissions.

In support of the national goals, the working group has established metrics to annually track:

- Number of states or utilities that have initiated or implemented a new program or policy identified in the IEE or CHP guides
- Annual changes in investment levels in IEE ratepayer-funded efficiency programs
- Energy savings from ratepayer-funded IEE programs and CHP projects installed.

For more information, contact:

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References

¹ \$215.56 billion nominal in 2011, taken from EIA AEO 2012 <http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2012&subject=3-AEO2012&table=3-AEO2012®ion=1-0&cases=ref2012-d020112c>. Figure includes feedstock energy use.

² From the IAC database: calculated by averaging the identified savings per facility as a percent of total facility energy expenditures for the 1,897 IAC assessments conducted from 2007 to present (July 6, 2012). Overall payback determined by summing implementation cost of all recommendations from the assessment of a facility and dividing by sum of all savings from recommendations from the same assessment.

³ McKinsey & Co., "Unlocking Energy Efficiency in the U.S. Economy." July 2009. Capturing the cost effective energy efficiency potential in U.S. industry would require present value investment of \$113 billion between 2009 and 2020 (page 75).

⁴ McKinsey & Co., "Unlocking Energy Efficiency in the U.S. Economy." July 2009. Capturing the cost-effective energy efficiency potential in the U.S. industrial sector would lead to \$47 billion and 5,030 TBTUs per year in energy savings in 2020 (page 75).

⁵ McKinsey & Co., "Unlocking Energy Efficiency in the U.S. Economy." July 2009. See pages 75 and 86.

⁶ Based on CHP Installation database and DOE CEAC technical assistance.

⁷ McKinsey Global Energy and Materials. 2009. *Unlocking Energy Efficiency in the U.S. Economy*. www.mckinsey.com/client-service/electricpower-natural-gas/downloads/US_energy_efficiency_full_report.pdf. The report estimates 13.4 quads of total industrial energy efficiency potential in the U.S. through 2020 and \$47 billion per year in associated energy cost savings. Achievement of the working group goal of 10.4 quads of industrial energy efficiency savings represents 78% of the 13.4 quads of identified by McKinsey, presumably reflecting capture of 78% of the \$47 billion per year in associated cost savings as well, or \$36.7 billion per year.

⁸ 2020 efficiency potential is based on an estimated 25.2% growth in GDP by 2020 (Annual Energy Outlook 2008) and a fixed industrial energy intensity through 2020. www.eia.gov/oiaf/archive/aeo08/index.html.