



# Industrial Energy Efficiency in Massachusetts

## Overview

Combined heat and power, or CHP, technologies provide reliable electricity, mechanical power, or thermal energy by capturing heat that is wasted during electricity generation. District energy takes heat from a CHP system to heat or cool entire complexes, such as a university campus, office park, or downtown area. More recently, a process called waste heat to power, or WHP, has been used to capture heat released during industrial processes that convert raw materials into products. These on-site technologies allow businesses to achieve energy efficiencies of up to 80 percent. Technologies such as CHP and WHP represent tremendous potential to reduce energy consumption in Massachusetts' industrial sector, saving manufacturers money and creating energy businesses and jobs.

## State and regional statistics

Manufacturing accounts for 10.1 percent of the state's total output and employs 7.2 percent of the nonfarm workforce.

Source: National Association of Manufacturers

Massachusetts ranked 34th in the nation in industrial energy use in 2012 (256.8 trillion British thermal units). The industrial sector represents 18.7 percent of the total energy consumed statewide.

Sources: U.S. Energy Information Administration State Energy Data System Rankings and U.S. Energy Information Administration Massachusetts Profile

Manufacturers in the Northeast place second in the nation in on-site CHP generation. The Northeast produces 11 percent of its industrial power needs from on-site CHP facilities.

Source: U.S. Energy Information Administration, Manufacturing Energy Consumption Survey, 2010

Massachusetts has 199 CHP facilities with a combined generating capacity of 1,573 megawatts.

Source: U.S. Department of Energy

## State policies support industrial energy efficiency

Massachusetts' Energy Efficiency Resource Standard is one of the strongest in the country. Signed in 2009, it is based on three-year plans from multiple electric utility administrators across the state, a policy carried over from the 2008 Act Relative to Green Communities. The first plan outlines a savings of 1 percent in 2009, 1.4 percent in 2010, 2 percent in 2011, and 2.4 percent in 2012. The 2013 three-year plan pushes the energy savings goal to 2.6 percent by 2015. The state's aggressive energy plan is expected to save 3,703 gigawatt hours in 2015.

Source: American Council for an Energy-Efficient Economy

CHP accounted for 30 percent of the utilities' energy-efficiency goals in 2011. In addition, it has the lowest average price of any energy-efficient resource, keeping the electricity costs low for consumers.

Source: American Council for an Energy-Efficient Economy

Massachusetts has an Alternative Energy Portfolio Standard that requires 5 percent of the state's power to come from alternative energy by 2020 according to yearly increments. CHP was used to meet 99 percent of the requirements in 2009 and 2010.

Source: Database of State Incentives for Renewables and Efficiency

The Massachusetts Energy Efficiency Fund, first established in 1997, was revised in 2008 to promote renewable energy and energy efficiency for utilities and customers, and it includes eligibility for CHP activities.

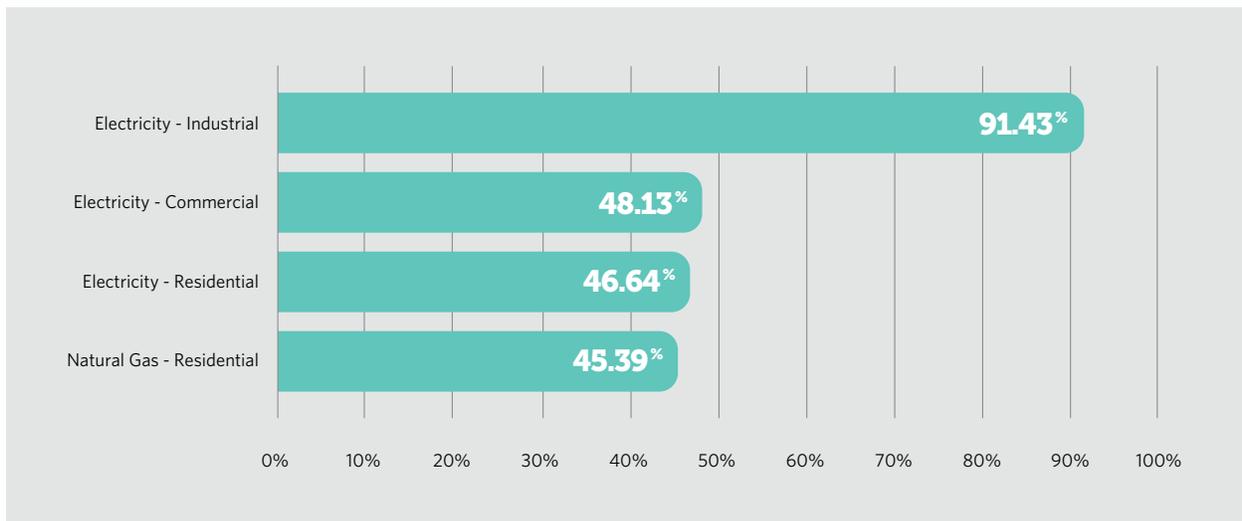
Massachusetts utilities' use of CHP in their industrial and commercial energy-efficiency portfolios was considered a major factor in the cost reduction and energy savings from 2010 to 2011, according to the Massachusetts Energy Efficiency Advisory Council.

Source: Mass Save, Energy Efficiency Advisory Council

The electric and natural gas efficiency plan in Massachusetts for 2013 to 2015 is fully funded and is estimated to save the taxpayers a net total of more than \$6.2 billion over that period.

Source: American Council for an Energy-Efficient Economy

## Massachusetts Price Differences from U.S. Average



Source: U.S. Energy Information Administration, Petroleum Marketing Monthly, Natural Gas Monthly, Electric Power Monthly

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## Examples of CHP Facilities in Massachusetts

City	Facility	Application	Year operational	Capacity (kW)	Fuel type
<b>Boston</b>	Mass Bay (Harpoon) Brewery	Food processing	2012	225	Natural gas/ propane
<b>Swampscott</b>	Swampscott High School	Schools	2011	75	Natural gas/ propane
<b>Jamaica Plain</b>	Assisted Living Facility	Nursing homes	2010	75	Natural gas/ propane

Source: U.S. Department of Energy

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### CHP improves energy security

Reducing strain on the electrical grid with energy-efficient technologies increases power reliability during electrical outages resulting from extreme weather and other causes.

Superstorm Sandy hit the eastern United States on Oct. 29, 2012, causing nearly 8 million customers to lose power across the region. In Massachusetts, over 200,000 customers experienced blackouts lasting for days because of the extreme weather.

Source: CBS News 2012

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### For further information, please visit:

[pewtrusts.org/industrialefficiency](http://pewtrusts.org/industrialefficiency)

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