

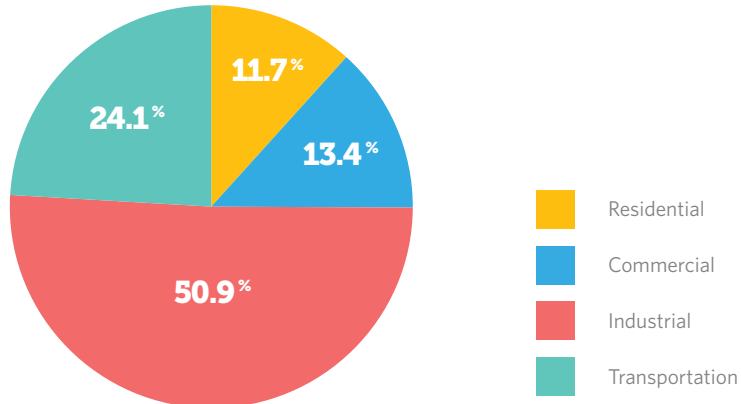


Industrial Energy Efficiency in North Dakota

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 North Dakota's industrial sector, saving manufacturers money and creating energy businesses and jobs.

North Dakota Energy Consumption by End-Use Sector, 2012



Source: U.S. Energy Information Administration

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State and regional statistics

North Dakota has a strong and growing manufacturing sector. Manufacturing accounts for 5.8 percent of the state's total gross product and employs 5.48 percent of the workforce. Manufacturing in North Dakota was worth \$3.3 billion in 2013.

Source: National Association of Manufacturers

Industrial energy accounts for 50.9 percent of North Dakota's total energy consumption.

Source: U.S. Energy Information Administration North Dakota Profile

North Dakota has the potential to increase its CHP capacity. From 2005 to 2010, the state ranked 19th in new additions of CHP projects and 15th in the total capacity of these installations. It added four CHP sites over those five years totaling 23 megawatts in capacity. These projects take advantage of waste heat in industry and ethanol production and from natural gas pipeline compressors.

Source: American Council for an Energy-Efficient Economy

Support for industrial energy efficiency in North Dakota



Pipeline CHP facility in St. Anthony, North Dakota.
Photo: Great River Energy

In 2007, North Dakota established a voluntary renewable portfolio standard, an objective that includes CHP and WHP as eligible resources. Under the objective, 10 percent of all retail electricity sold in the state would be obtained from renewable and recycled energy sources by 2015. The target applies to all types of utilities. Municipal and electric cooperatives that receive wholesale electricity through a municipal power agency or generation and transmission cooperative can aggregate their renewable and recycled energy to meet the objective. This goal was surpassed in 2010 and at the end of 2013 the state surpassed 15 percent.

Source: U.S. Environmental Protection Agency and North Dakota State Public Utilities Commission, personal communication

Financial assistance for CHP is provided through the North Dakota renewable sales tax incentives, which provide a tax credit for electrical generation facilities.

Sources: Database of State Incentives for Renewables & Efficiency

Pipelines use WHP technology

Pipelines that are outfitted with compressor stations to maintain pipeline pressure can take advantage of large amounts of waste heat and recover it for on-site power production. Three sites along the Northern Border Pipeline (Manning, St. Anthony, and Zeeland) use WHP technology to convert waste heat from the exhaust of gas turbine-driven compressors into electricity for sale to local utilities or for on-site power.

CHP improves energy security

CHP can help keep North Dakota's critical infrastructure operating during power outages. In 2014, the state had 21 power outages affecting 29,239 people and lasting more than 12 hours.

Source: Blackout Tracker

Reducing strain on the electrical grid with energy-efficient technologies increases power reliability during electrical outages that result from extreme weather and other causes. CHP is the cornerstone of a resilient energy infrastructure. It enables hospitals, fire stations, police stations, and similar critical facilities to continue to function when the electric grid goes down during a disaster.

Source: U.S. Department of Energy

Examples of CHP Facilities in North Dakota

City	Organization	Application	Year operational	Capacity (kW)	Fuel type
Underwood	Coal Creek Power Station	Chemicals	2007	6,500	Coal
Fargo	Holiday Inn	Hotels	2002	30	Natural gas
Drayton	American Crystal Sugar Co.	Food processing	1964	6,000	Coal
Walhalla	Archer Daniels Midland Co.	Chemicals	2002	2,000	Coal

Source: U.S. Department of Energy

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For further information, please visit:

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