



WORLD
RESOURCES
INSTITUTE

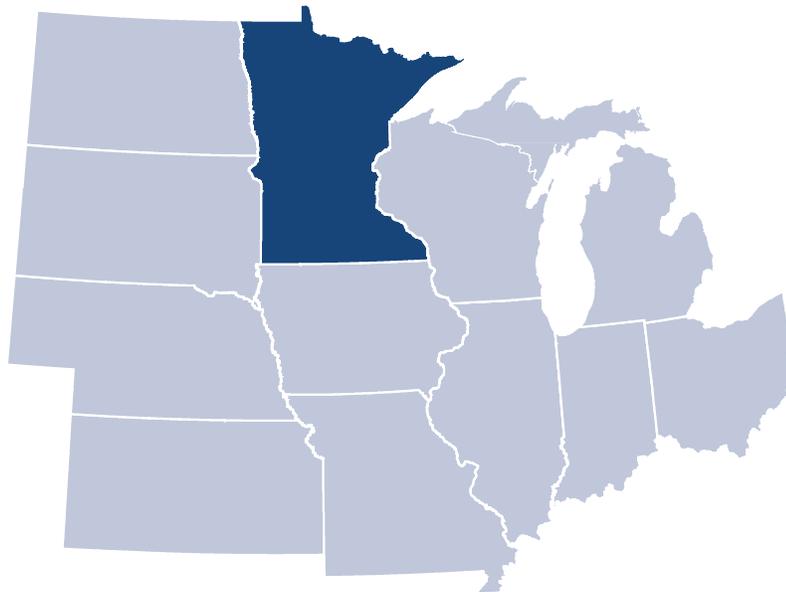
MIDWEST MANUFACTURING SNAPSHOT: MINNESOTA

JAMES BRADBURY AND NATE ADEN | WITH CONTRIBUTIONS BY AMIR NADAV AND JOHN CUTTICA

CONTACT

James Bradbury
Senior Associate
jbradbury@wri.org
(202) 729-7849

Disclaimer: *World Resources Institute Working Papers contain preliminary research, analysis, findings, and recommendations. They are circulated to stimulate timely discussion and critical feedback and to influence ongoing debate on emerging issues. Most working papers are eventually published in another form and their content may be revised.*



PRODUCED IN
ASSOCIATION WITH:



GREAT PLAINS INSTITUTE



Midwestern Governors Association

UIC Energy Resources
UNIVERSITY OF ILLINOIS
AT CHICAGO Center
COLLEGE OF ENGINEERING

This state handout is an excerpt from the WRI working paper entitled “Midwest Manufacturing Snapshot: Energy Use and Efficiency Policies”. The working paper presents comprehensive manufacturing energy-use and economic-activity data along with state-by-state policy summaries for the 10 member states of the Midwestern Governors Association (MGA).¹ For more information on Midwest region manufacturing, the methods used to derive the data, and policy background, please see the full working paper at: <http://www.wri.org/publication/midwest-manufacturing-snapshot>.

1. Member states of the MGA are Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Ohio, South Dakota, and Wisconsin.

MINNESOTA



Figure MN-1 shows the breakdown of statewide energy used for fuel and feedstock in 2006. In this year, industry consumed approximately one-third of Minnesota’s energy, while manufacturing accounted for roughly two thirds of the state’s industry energy use.

Petroleum and coal products and food manufacturing accounted for the largest share of Minnesota manufacturing energy use in 2006, followed by paper and non-metallic minerals.

Minnesota has 770 MW of total installed CHP capacity^{MN-1}, which is equivalent to 5% of total installed electricity generation capacity, versus the national average of 8%. Within total CHP, the remaining technical potential for industry CHP in Minnesota is estimated to be more than two and a half times currently installed industrial capacity (Hedman, 2010).

MN-1 This number is higher than the installed CHP capacity number in Figure 9 because it includes all CHP installations (i.e., industrial, commercial, and institutional).

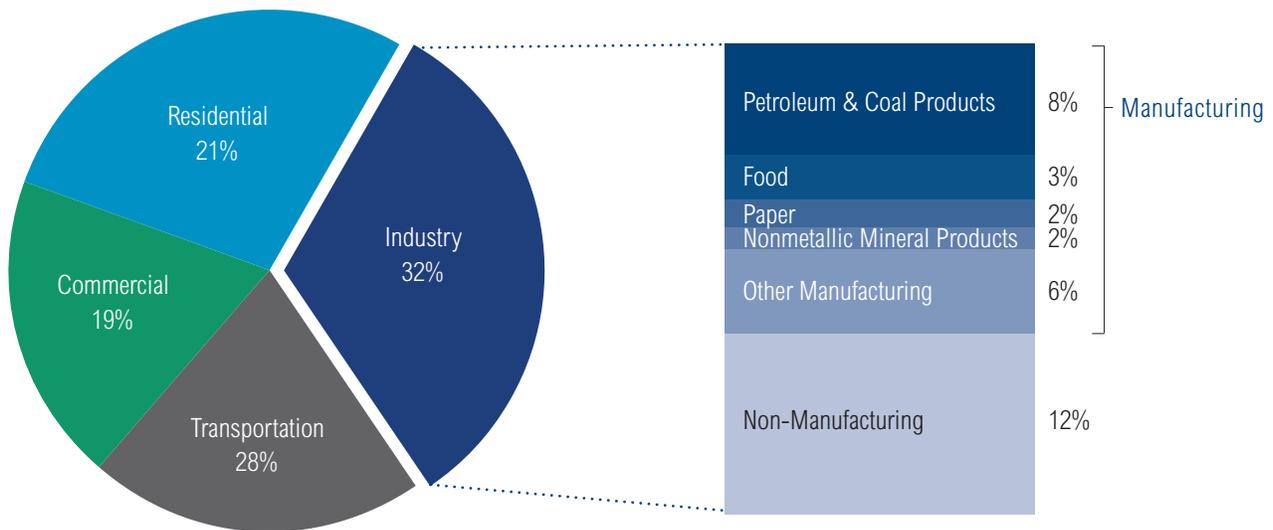
Manufacturing energy expenditures (shown by “cost of fuels & electricity” in Figure MN-2) rose substantially between 2004 and 2008. Between 2000 and 2010, the index of manufacturing energy costs rose more quickly than the value of shipments index (Figure MN-2). The average difference between these two series over the period is 9%. By 2010 Minnesota manufacturing energy expenditures had increased by 36%, while the total value of shipments rose by 24%, relative to year 2000 levels. Over the same 10-year period, Minnesota manufacturing employment dropped by 24%—from 407,000 to 308,000, compared to the national manufacturing employment decline of 37% over the same period (Figure 1).

Table MN-1 | **Minnesota Industry Delivered Energy Annual Average Prices (2010)**

	ELECTRICITY (cents/kWh)	NATURAL GAS (\$/1,000 ft ³)	COAL (\$/short ton)
Minnesota	6.29	5.58	49.06
Midwest average	6.19	6.66	50.68
U.S. average	6.77	5.49	59.28

SOURCE: U.S. Energy Information Administration; for details see Appendix.

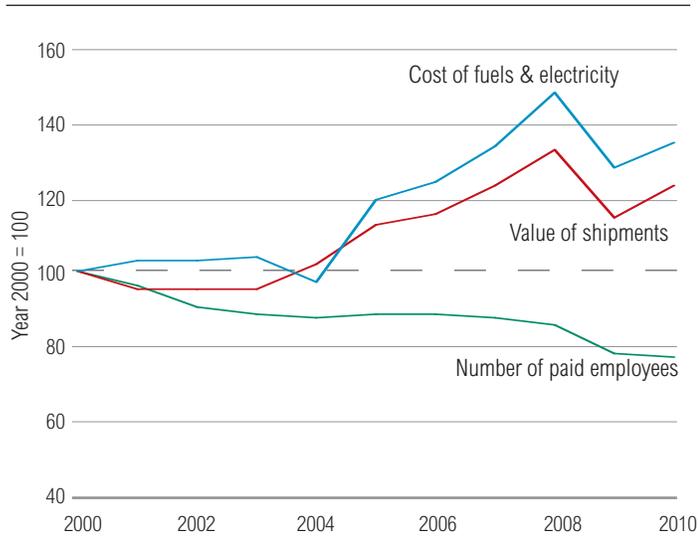
Figure MN-1 | **Minnesota Total Energy Use, 2006**



Total Energy Use: 1.9 Quads

SOURCES: MECS; ASM; SEDS.

Figure MN-2 | **Index of Minnesota Manufacturing Energy Cost, Value of Shipments, and Employment (2000-2010)**



SOURCE: ASM; BEA (employment)
NOTE: 2002 ASM values were linearly interpolated due to a gap in the published data.

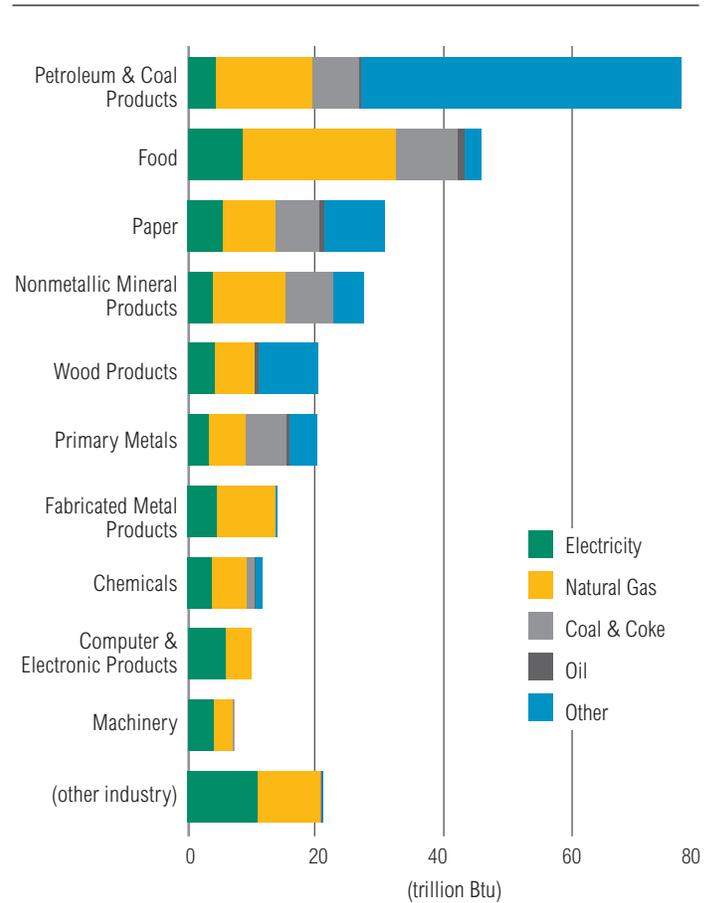
Energy prices (Table MN-1) influence demand and end-use efficiency. Reported Minnesota electricity and delivered coal prices were 7% and 17% lower than the national average, respectively, while delivered natural gas was slightly more expensive than the national average. Prices vary by end user and time of use, but this snapshot of 2010 prices suggests that Minnesota industry faces a mixed picture among different fuels.

In 2006 Minnesota manufacturing consumed 290 trillion Btu^{MN-2} of fuel. Figure shows the breakdown of Minnesota manufacturing fuel use by subsector (not including energy used as feedstocks). Natural gas was the most-consumed fuel for manufacturing. Petroleum and coal products and food manufacturing accounted for 43% of Minnesota manufacturing fuel use in 2006.

Minnesota’s 2007 Next Generation Energy Act implemented a comprehensive statewide energy efficiency resource standard and renewable energy standard. Utilities administer their own energy conservation improvement programs and offer energy efficiency rebates and incentives to their customers. Although numerous utilities offer industrial-sector programs, few policies or incentives specifically address combined heat and power.

MN-2 For energy unit conversion, 1,000 trillion Btu is equivalent to 1 Quad of energy.

Figure MN-3 | **Minnesota Manufacturing Fuel Use by Sector, 2006**



SOURCES: MECS; ASM.

Petroleum and coal products and food manufacturing accounted for the largest share of Minnesota manufacturing energy use in 2006, followed by paper and non-metallic minerals.

Table MN-2 | **Minnesota Key Energy and Environmental Policies**

MINNESOTA	
REGULATORY ENVIRONMENT	
Renewable energy standard	CHP is not an eligible technology for Minnesota's renewable energy standard.
Energy efficiency resource standard	Under § 216B.241 enacted in 2007, the state requires electric and gas utilities to implement conservation improvement programs that achieve annual energy savings equal to 1.5% of average retail sales. Some utilities offer incentives for industrial energy efficiency (DSIRE).
Emissions control programs	Minnesota does not have output-based emission standards (ACEEE).
Alternative business models	The Public Utilities Commission (PUC) has the authority to approve pilot programs to assess decoupling. CenterPoint Energy has a pilot in progress and Minnesota Energy Resources filed a decoupling notice of intent. ^a
Grid access	Minnesota's interconnection standards (adopted 2004), are applicable to CHP units up to 10 MW. The standards apply to investor-owned utilities (ACEEE).
FINANCIAL AND TECHNICAL ASSISTANCE	
Grants, loans, or tax incentives	Utilities offer rebates and other incentives through their energy conservation improvement programs (CIP). In 2010, the statewide CIP budgets amounted to \$160.2 million for electricity and \$40.1 million for natural gas (ACEEE). The Pollution Control Agency offers an Environmental Assistance Loan Program for small and medium-sized businesses and public entities, as well as an Environmental Assistance Grant program. A request for proposals has not yet been announced for 2012. ^b
Technical assistance	The University of Minnesota's MnTAP program offers site visits and places full-time interns to assist with pollution prevention and energy efficiency assistance to businesses. The Pollution Control Agency administers the RETAP program, through which retired engineers provide free facility assessments to help businesses and institutions identify opportunities to reduce costs through energy efficiency and waste reduction. ^c
UTILITY PROGRAMS	
Customer EE programs, with cost-recovery	Pursuant to § 216B.241, Minnesota's electric and gas utilities establish EE programs to help multiple customer classes achieve required energy savings. Utilities may recover program expenses through surcharges on customer bills; large customers with over 20MW peak electric demand or 500MCF gas consumption, however, may opt-out and "self-direct" their own efforts to identify, evaluate, and implement energy conservation and efficiency improvements, reporting results after five years. ^d
EE as a resource	Minnesota's regulated utilities are required to file integrated resources plans with the PUC (ACEEE). Per §216B.241, all utilities file energy conservation improvement plans at least every 3 years. Per §216B.16, the PUC may adopt mechanisms that make cost-effective conservation a "preferred resource choice."

SOURCE: "ACEEE" refers to the American Council for an Energy Efficient Economy website: <http://www.aceee.org/sector/state-policy> (February, 2012); "DSIRE" refers to the Database of State Incentives for Renewables and Energy Efficiency website: <http://www.dsireusa.org>. (February, 2012).

a <http://www.mwalliance.org/policy/minnesota-policy-info#decoupling>. (February, 2012).

b <http://www.pca.state.mn.us/index.php/about-mpca/assistance/financial-assistance/financial-assistance-grants-and-loans.html>. (February, 2012).

c MnTAP: <http://www.mntap.umn.edu/assistance.htm> (February, 2012).; RETAP: <http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/assistance-and-resources/retap/minnesota-retap.html>(February, 2012).

d See more details on page 34 of the following report: <http://www.aceee.org/research-report/ie112> (February, 2012).