



WORLD
RESOURCES
INSTITUTE

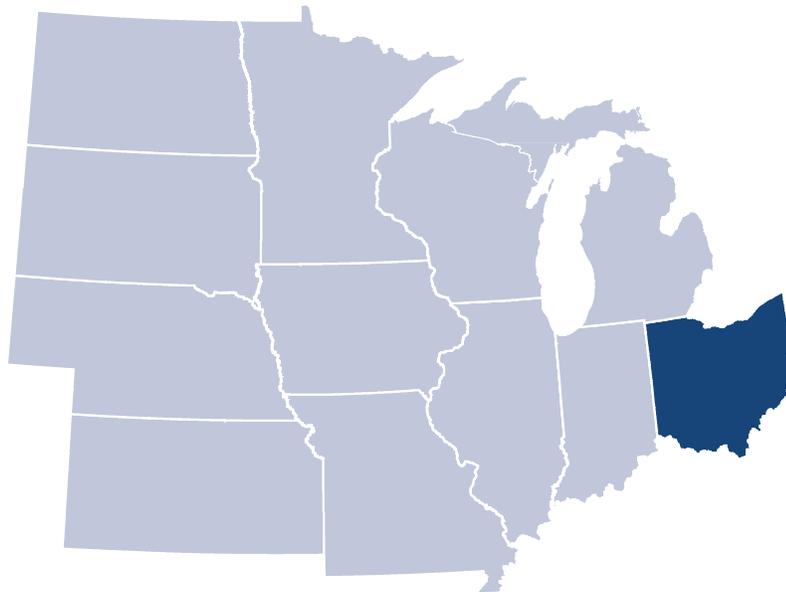
MIDWEST MANUFACTURING SNAPSHOT: OHIO

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.

OHIO



In 2006 Ohio consumed 3.9 Quads of energy—second only to Illinois in Midwestern state energy use. Figure OH-1 shows the breakdown of state-wide energy used for fuel and feedstock in 2006. More than one-third

of Ohio’s energy was consumed by industry in 2006. Manufacturing accounted for 72% of total industrial energy use (including feedstocks).

Primary metals and petroleum and coal products accounted for the largest share of Ohio manufacturing energy use in 2006, followed by chemicals and food.

Ohio has 750 MW of total installed CHP capacity^{OH-1}, which is equivalent to 2% of total installed electricity generation capacity, versus the national average of 8%. Within total CHP, the remaining technical potential for industry CHP in Ohio is estimated to be more than five times currently installed industrial capacity (Hedman, 2010).

OH-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).

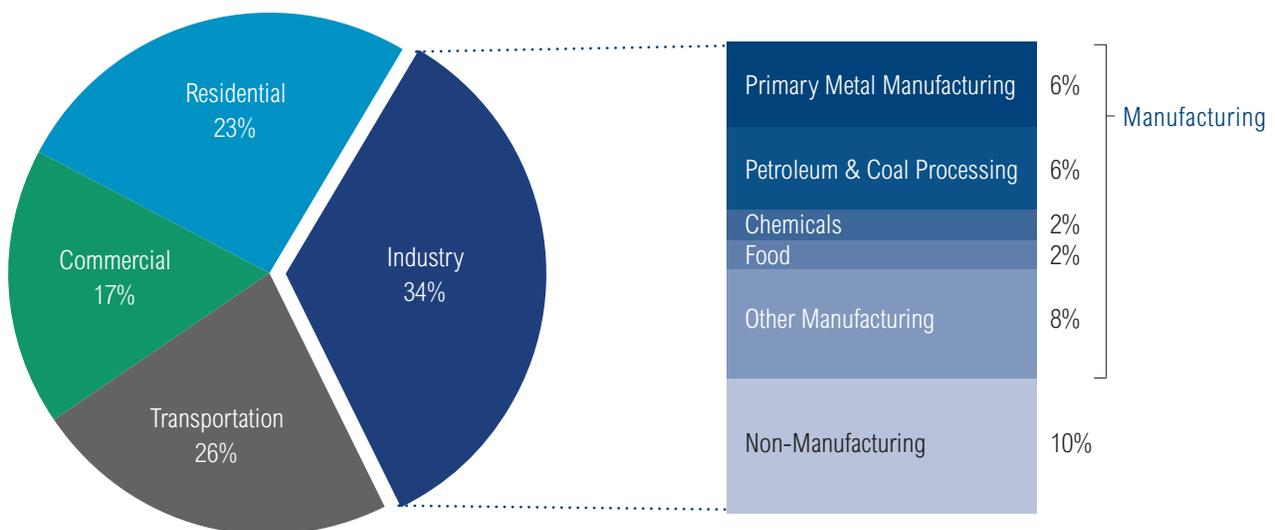
Ohio’s manufacturing energy expenditures (shown by “cost of fuels & electricity” in Figure OH-2) have fluctuated over the past 10 years (Figure OH-2). After peaking in 2008, the index of manufacturing energy costs dropped below 2000 levels in 2009, while both energy costs and the value of shipments index rebounded to roughly 2000 levels in 2010. The average difference between these two series over the period is only 4%, relative to year 2000 levels. Between 2001 and 2010, Ohio manufacturing energy expenditures increased an average 4.3% more than

Table OH-1 | **Ohio Industry Delivered Energy Annual Average Prices (2010)**

	ELECTRICITY (cents/kWh)	NATURAL GAS (\$/1,000 ft ³)	COAL (\$/short ton)
Ohio	6.40	7.40	80.59
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.

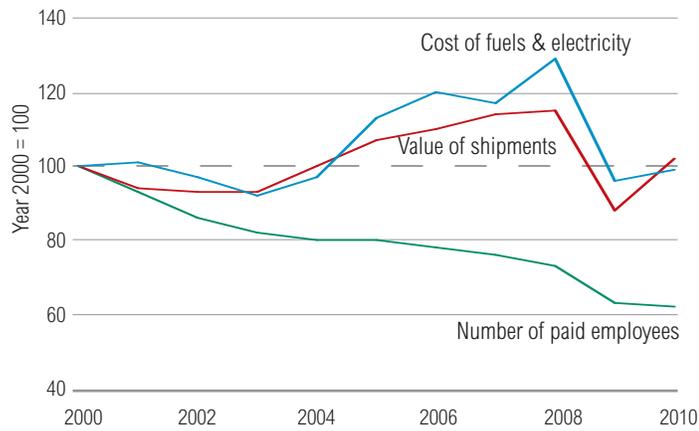
Figure OH-1 | **Ohio Total Energy Use, 2006**



Total Energy Use: 3.9 Quads

SOURCES: MECS; ASM; SEDS.

Figure OH-2 | **Index of Ohio 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.

the value of shipments, relative to year 2000 levels. Over the same ten-year period, Ohio manufacturing employment dropped by 38%—from 1,050,000 to 649,000, compared to the national manufacturing employment decline of 37% over the same period (Figure 1).

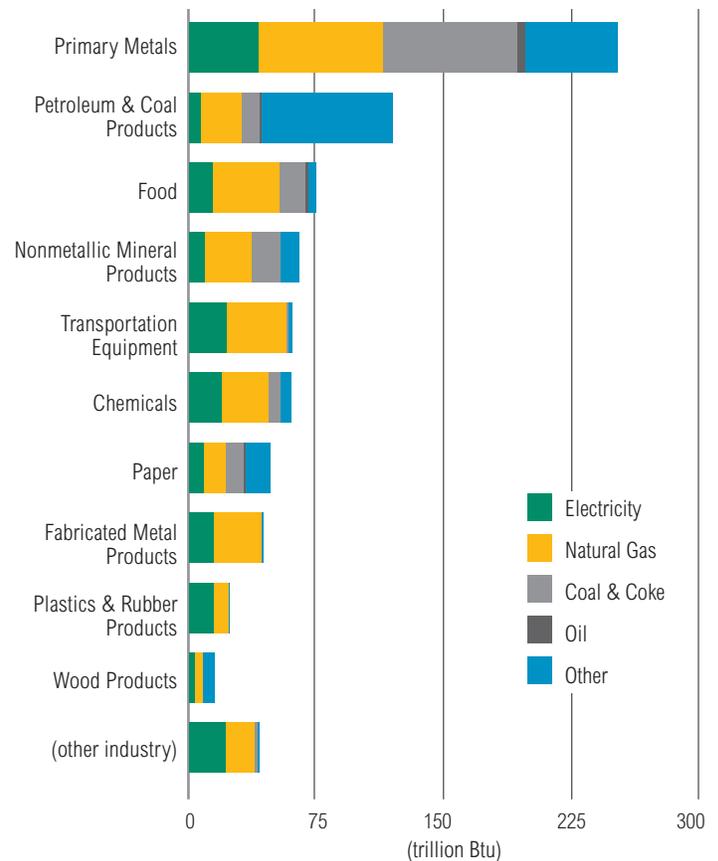
Energy prices (Table OH-1) influence demand and end-use efficiency. Reported Ohio delivered natural gas and coal prices were 35% and 36% higher than the national average, respectively, while electricity prices were slightly lower than the national average. Prices vary by end user and time of use, but this snapshot of 2009 and 2010 prices suggests that Ohio industry faces a mixed picture among different fuels.

In 2006 Ohio manufacturing consumed 830 trillion Btu^{OH-2} of energy for fuel use—more than the manufacturing sector of any other Midwestern state. Figure OH-3 shows the breakdown of Ohio manufacturing fuel use by subsector. Primary metals manufacturing and petroleum and coal products manufacturing accounted for 46% of Ohio manufacturing fuel use in 2006.

In 2008 the Ohio legislature passed S.B. 221, which requires utilities to meet the state’s Alternative Energy Portfolio Standard and Energy Efficiency Portfolio

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

Figure OH-3 | **Ohio Industry Fuel Use by Sector, 2006**



SOURCES: MECS; ASM.

Standard. This legislation also established utility-run EE programs, funded through a surcharge on customer electricity bills. There are also technical assistance services available through the Ohio Center for Industrial Energy Efficiency and the University of Dayton’s DOE Industrial Assessment Center.

Primary metals and petroleum and coal products accounted for the largest share of Ohio manufacturing energy use in 2006, followed by food.

Table OH-2 | **Ohio Key Energy and Environmental Policies**

OHIO	
REGULATORY ENVIRONMENT	
Renewable energy standard	In the state's Alternative Energy Portfolio Standard (S.B. 221, enacted in 2008), CHP qualifies as an eligible advanced energy resource. However, there is no clear mandate for utilities to meet this portion of the standard prior to the year 2025. ^a
Energy efficiency resource standard	The state's Energy Efficiency Portfolio Standard (S.B. 221, enacted in 2008) requires investor-owned utilities to implement energy efficiency and peak demand reduction programs that achieve 22% in cumulative electric savings by 2025. ^b
Emissions control programs	Under CAIR, Ohio sets aside NO _x allowances for CHP and other eligible highly efficient distributed electric generation projects. ^c These rules are to be phased out in 2012. ^d
Alternative business models	The Public Utilities Commission of Ohio (PUCO) has the authority to approve revenue decoupling mechanisms proposed by utilities. In November 2011, Duke Energy and AEP proposed a decoupling mechanism for rate recovery from residential and commercial customers that is currently under consideration by the PUCO (ACEEE).
Grid access	Ohio's interconnection standards (adopted 2007) are applicable to CHP units up to 20 MW. The standards include a three-tier structure that is consistent with the IEEE 1547 model (ACEEE).
FINANCIAL AND TECHNICAL ASSISTANCE	
Tax incentives	The Ohio Air Quality Development Authority can provide industry up to a 100% exemption from various state taxes for any projects that reduce air pollutants, including through conservation or energy efficiency. ^e
Grants or loans	Although the Ohio Advanced Energy Fund (established in 1999) supported an EE revolving loan fund administered by the state, directing \$160 million to electricity and natural gas programs in 2010 (ACEEE), the \$0.09 per month, per customer electric utility bill rider was not renewed after 2010. The program will continue to issue loans for as long as funds are available. ^f
Technical assistance	The Ohio Center for Industrial Energy Efficiency has a technical assistance program that encourages systematic energy management planning, provides site assessments, and offers related financial incentives (Boyd, 2011). The University of Dayton houses an Industrial Assessment Center, which provides qualified manufacturers with free assessments and recommendations to improve energy efficiency. ^g
UTILITY PROGRAMS	
Customer EE programs, with cost-recovery	Pursuant to S.B. 221, Ohio's investor-owned electric utilities established EE programs to serve multiple customer classes to help achieve required energy savings and peak demand reductions. Duke Energy's Smart Saver Incentive program, for example, offers rebates for a range of energy saving technology investments. Customers support these programs, which are overseen by PUCO, through surcharges on their electricity bills; opt-out or "self-direct" provisions, which exempt large energy consumers from the surcharge, vary depending on which utility serves the facility. ^h
EE as a resource	Since 2009, investor-owned utilities are required to submit to PUCO long-term forecast reports annually, including resource plans that consider the role of EE as a resource (ACEEE).

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 Chittum and Kaufman, 2011.

b <http://www.development.ohio.gov/Energy/Tools/AdvancedEnergyPortfolioStandard.htm#EEPS>. (February, 2012).

c <http://www.epa.ohio.gov/portals/27/files/OhioGuidanceFINAL.pdf>. (February, 2012).

d The first compliance phase for CAIR's replacement, the Cross-State Air Pollution Rule (CSAPR), had been scheduled to go into effect in January 2012. In December 2011, the United States Court of Appeals for the D.C. Circuit stayed CSAPR and is scheduled to hear the case in April 2012. Meanwhile, EPA is facilitating a transition back to CAIR. <http://epa.gov/airtransport/>

e http://www.ohioairquality.org/clean_air/large_bus_financial_benefits.asp. (February, 2012).

f <http://www.development.ohio.gov/Energy/Incentives/AdvancedEnergyFundGrants.htm>. (February, 2012).

g <http://academic.udayton.edu/kissock/http/iac/> (February, 2012).

h See more details on page 37 of the following report: <http://www.aceee.org/research-report/ie112>. (February, 2012).



Copyright 2012 World Resources Institute. This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivative Works 3.0 License. To view a copy of the license, visit <http://creativecommons.org/licenses/by-nc-nd/3.0/>