

The State of CHP: Ohio



The information in this document provides a general overview of the state of CHP in Ohio, with data on current installations, technical potential, and economics for CHP. For help with questions about specific CHP opportunities in Ohio, please consult with the [Midwest CHP Technical Assistance Partnership](#).

Installed CHP

CHP Technical Potential

CHP Economics

CHP Partners

Ohio Installed Base of CHP

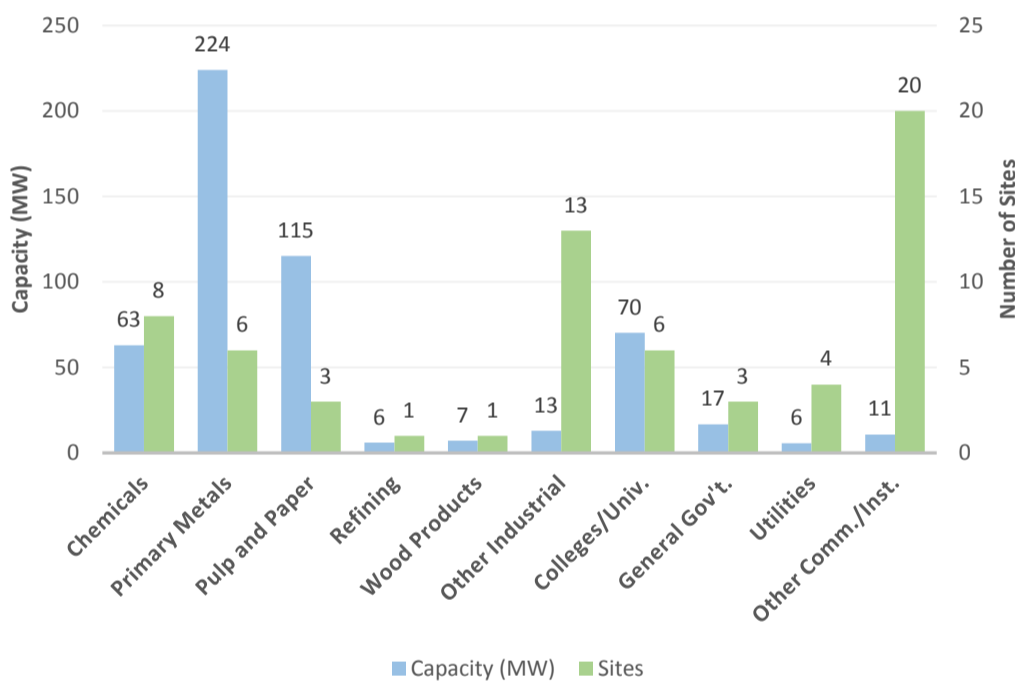
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	26	424
Commercial/Institutional	33	103
Other	6	4
Total	65	532

The Midwest CHP Technical Assistance Partnership has compiled information on certain illustrative CHP projects in Ohio. You can access these by visiting the Department of Energy's [CHP Project Profiles Database](#).

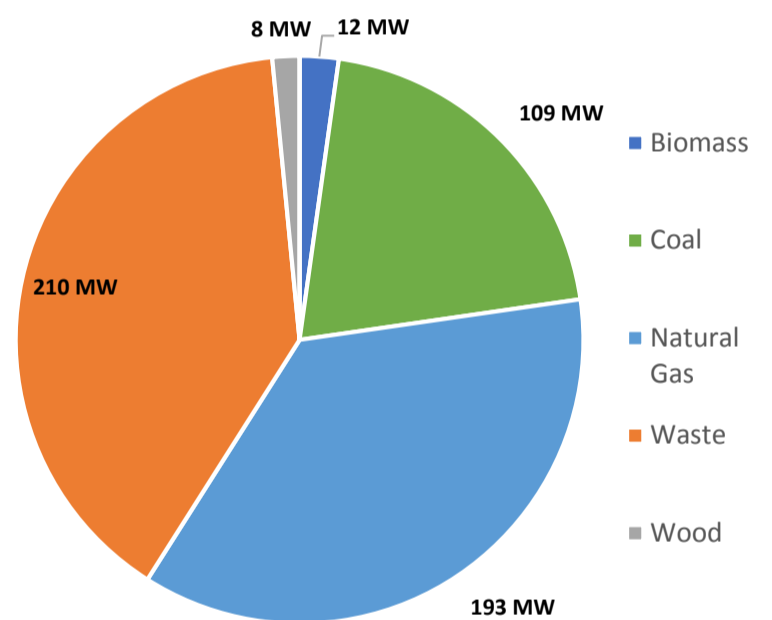


Ohio CHP by Application



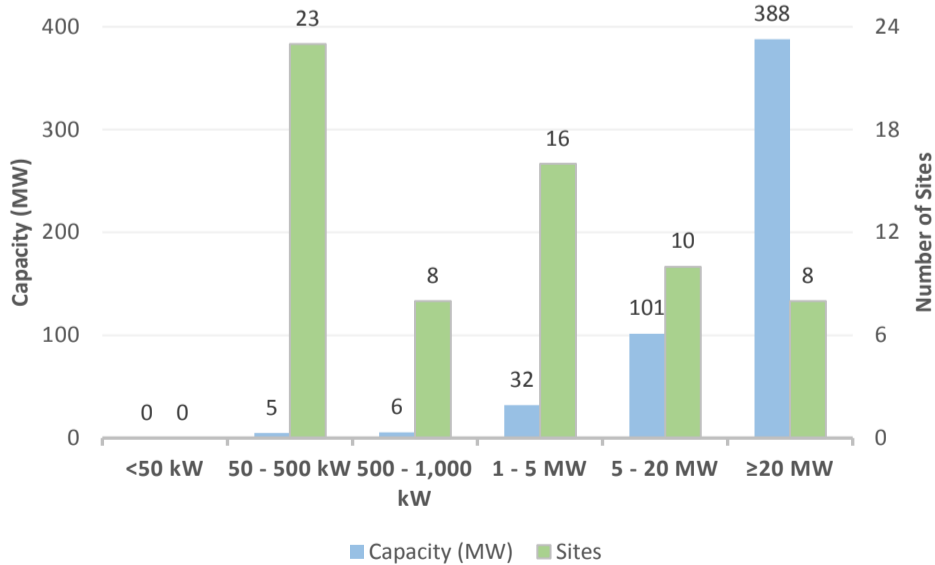
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Ohio CHP Capacity (MW) by Fuel Type



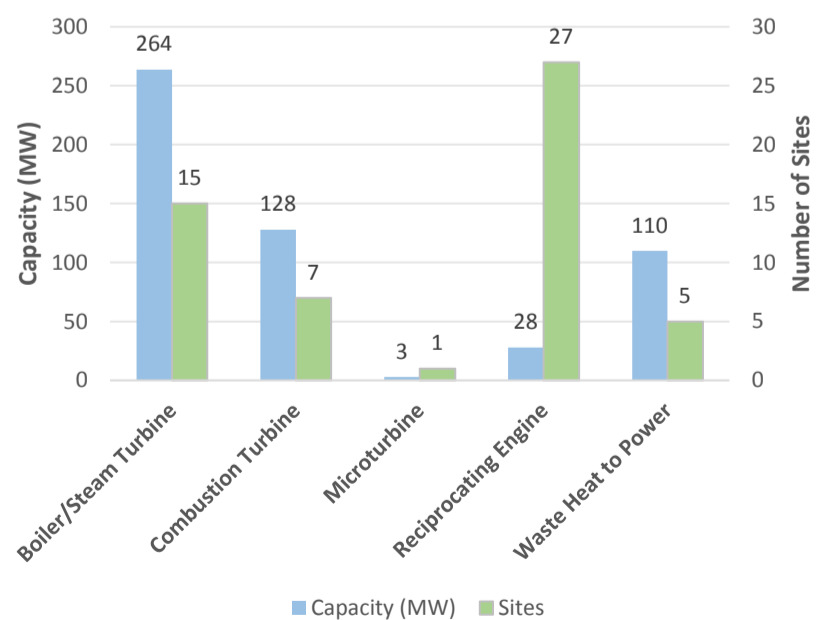
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Ohio CHP by Size Range



Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Ohio CHP by Technology



Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Combined Heat and Power (CHP) – sometimes referred to as cogeneration – is an efficient and clean approach to generating on-site electric power and useful thermal energy from a single fuel source.



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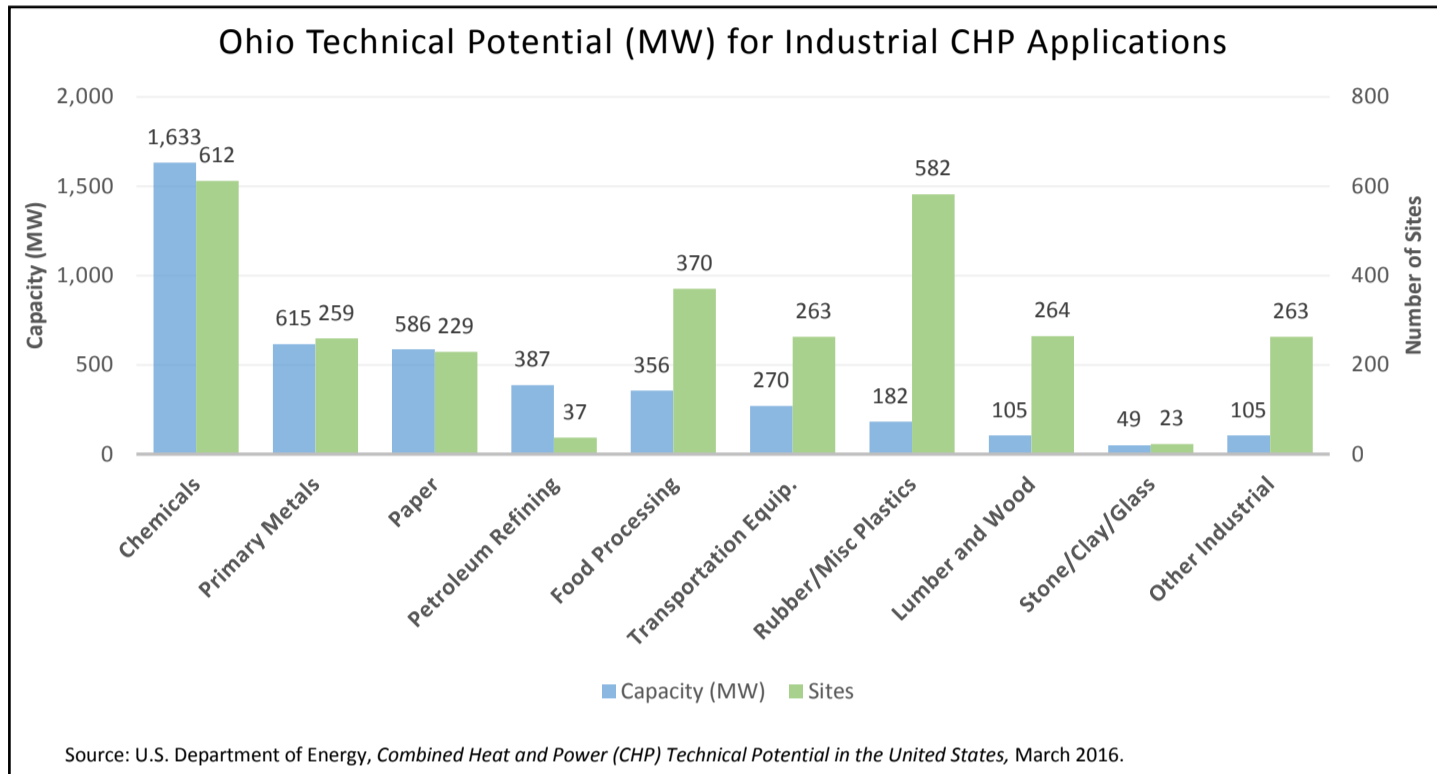
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Ohio Technical Potential for New CHP Installations

[U.S. DOE Analysis: Combined Heat and Power \(CHP\) Technical Potential in the United States](#)

Sector	Potential Sites	Potential Capacity (MW)
Industrial	2,902	4,288
Commercial/Institutional	10,292	3,000
Total	13,194	7,288

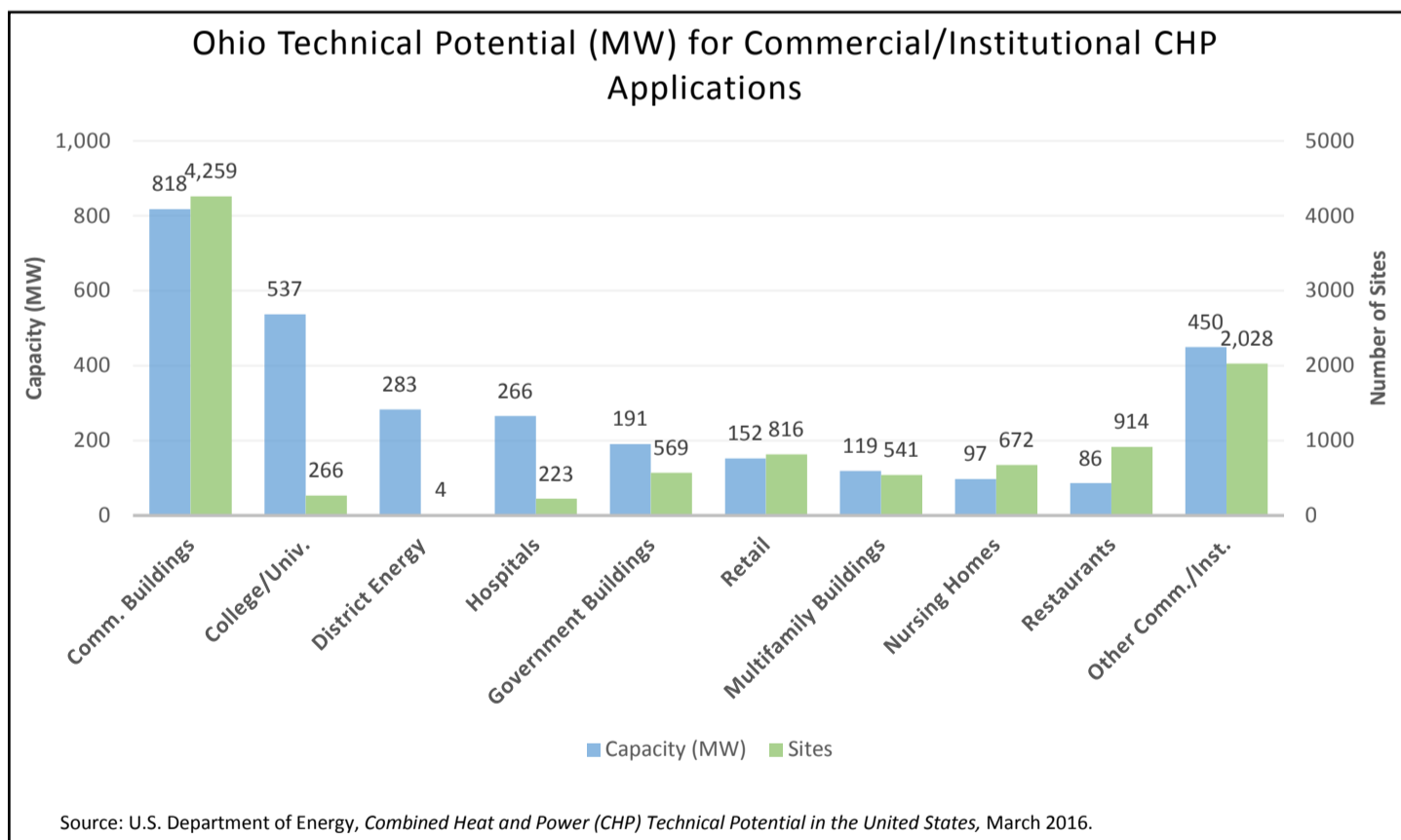


Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

Technical Potential by CHP Size Range for Top Five Industrial Sectors

Application	50-500 kW		0.5 - 1 MW		1 - 5 MW		5 - 20 MW		>20 MW		Total	
	Sites	MW	Sites	MW	Sites	MW	Sites	MW	Sites	MW	Total Sites	Total MW
Chemicals	272	51	106	78	153	362	68	625	13	516	612	1,633
Primary Metals	123	29	55	40	53	124	21	199	7	224	259	615
Paper	121	32	41	29	44	94	17	173	6	258	229	586
Petroleum Refining	2	0	15	10	12	25	2	29	6	322	37	387
Food Processing	252	47	38	29	70	136	8	67	2	78	370	356
Other Industrial	1,122	183	135	93	113	208	25	227	0	0	1,395	711
Total	1,892	343	390	277	445	950	141	1,320	34	1,398	2,902	4,288

Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.



Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

Technical Potential by CHP Size Range for Top Five Commercial/Institutional Sectors

Application	50-500 kW		0.5 - 1 MW		1 - 5 MW		5 - 20 MW		>20 MW		Total	
	Sites	MW	Sites	MW	Sites	MW	Sites	MW	Sites	MW	Total Sites	Total MW
Commercial Buildings	2,726	136	1,192	477	341	205	0	0	0	0	4,259	818
College/Univ.	167	28	9	6	66	176	18	157	6	170	266	537
Hospitals	99	25	30	21	87	175	7	44	0	0	223	266
Government Buildings	484	70	34	23	49	83	2	14	0	0	569	191
Retail	756	108	47	28	13	16	0	0	0	0	816	152
Other Comm./Inst.	3,862	469	206	113	82	139	4	33	4	283	4,159	1,036
Total	8,094	836	1,518	668	638	794	31	248	10	453	10,292	3,000

Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

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Ohio CHP Economics

The most important indicators for CHP economics are electricity and gas prices. For most potential CHP installations, natural gas and electricity rates for host facilities will fall within the range of average commercial and industrial prices. Lower energy prices may be possible for large CHP applications.

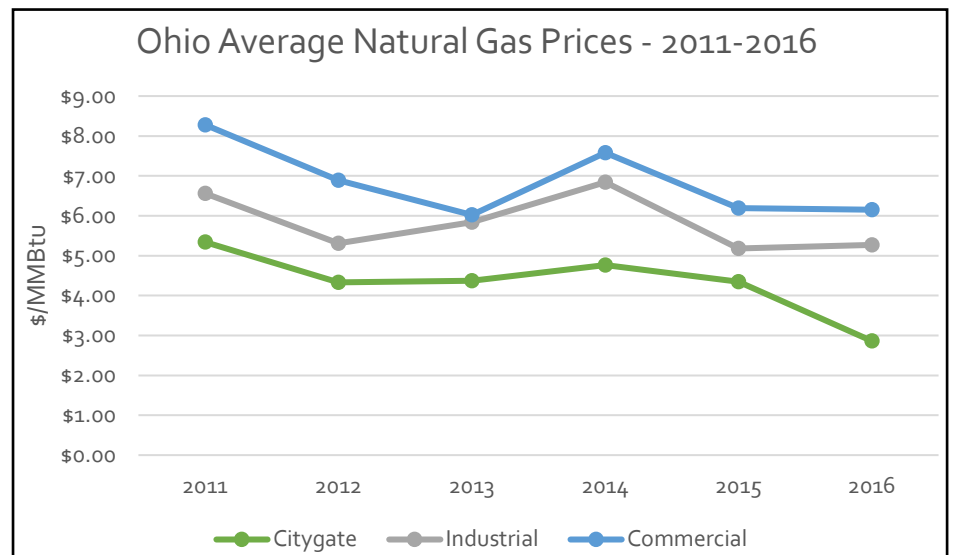
Ohio Natural Gas Prices

Ohio Average Gas Prices - 2016

Sector	OH Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	2.86	3.75
Industrial	5.27	3.39
Commercial	6.15	7.22

Source: U.S. Energy Information Administration, "Natural Gas Prices", https://www.eia.gov/dnav/ng/ng_pri_sum_dcu_SOH_a.htm

The EIA industrial natural gas price is a full tariff rate, and most large consumers are purchasing gas commodities from marketers at a lower rate.



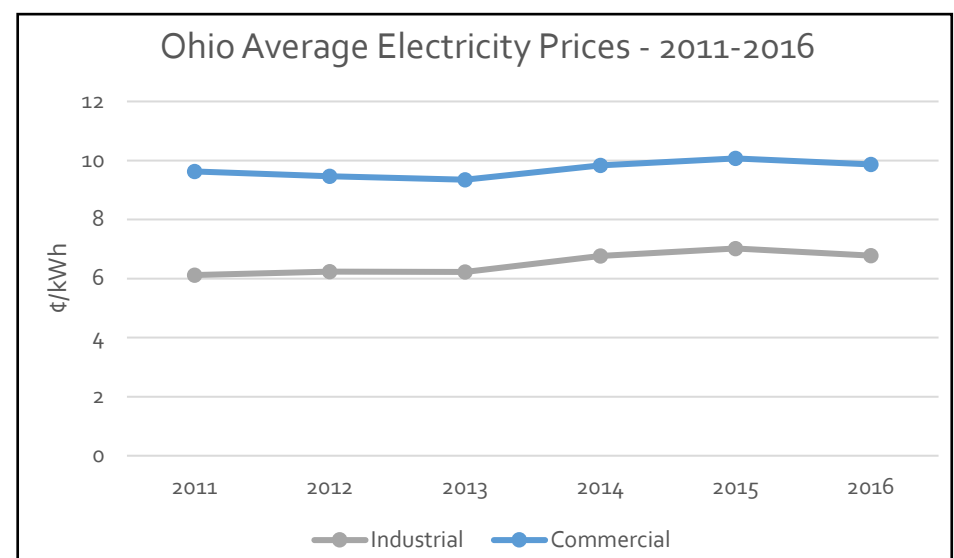
Ohio Electricity Prices

Ohio Average Electricity Prices - 2016

Sector	OH Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	6.78	6.75
Commercial	9.87	10.37

Source: U.S. Energy Information Administration, "Electricity Data Browser", <https://www.eia.gov/electricity/data.cfm>

Electricity rates can vary greatly by utility and facility size range. The rates below from EIA represent general averages; individual facility rates may vary.



Ohio Average Delivered Electricity Prices by Utility

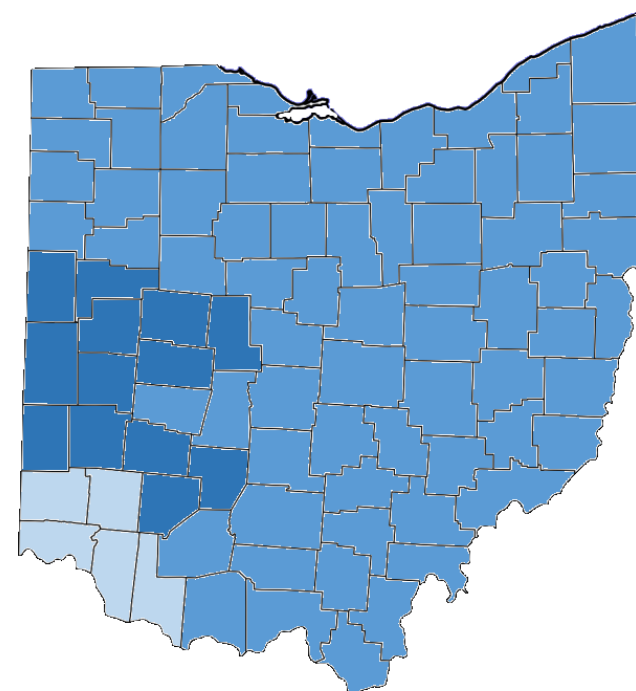
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Dayton Power & Light	10.48	9.97	10.22
Cleveland Electric Illum.	6.28	12.68	9.48
AEP Ohio	7.04	11.52	9.28
Ohio Edison	6.69	11.68	9.18
Toledo Edison	5.16	12.96	9.06
Duke Energy Ohio	6.52	10.51	8.52

Source: U.S. Energy Information Administration, "Annual retail price of electricity by utility", <https://www.eia.gov/electricity/data.cfm>

*Citygate is a point or measuring station at which a distributing gas utility receives gas from a NG pipeline company or transmission system.

**Average of commercial and industrial electricity prices as reported by EIA.

Ohio Electricity Prices – Heat Map



Legend for Heat Map:

- Duke Energy Ohio (Light Blue)
- Cleveland Illum. / AEP Ohio / Ohio Edison / Toledo Edison (Medium Blue)
- Dayton Power & Light (Dark Blue)

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Potential

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Department of Energy CHP Partnerships

Midwest CHP Technical Assistance Partnership



U.S. DEPARTMENT OF ENERGY
CHP Technical Assistance Partnerships
MIDWEST

Midwest CHP TAP Director: Cliff Haefke
Phone: 312-355-3476
Email: chaefk1@uic.edu

CHP for Resiliency Accelerator

The U.S. DOE is collaborating with a group of cities, states, and utilities who are actively pursuing CHP as a consideration in resiliency planning for critical infrastructure in their jurisdictions. This has included defining resiliency, identifying critical infrastructure, and assessing CHP opportunities. This process is being documented in a Resiliency Planning Tool. For more information: [CHP for Resiliency Accelerator Website](#).

- Currently, there are no CHP for Resiliency Accelerator partners in Ohio.

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