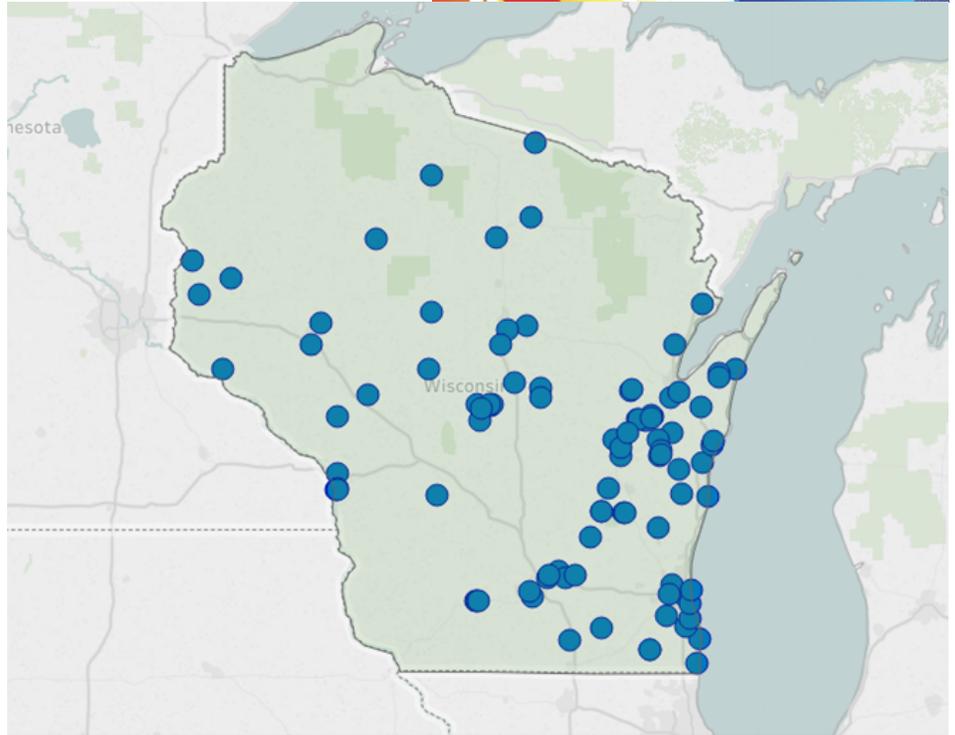




Combined heat and power (CHP) – also referred to as cogeneration – is an efficient and clean approach to generating on-site electric power and useful thermal energy from a single fuel source. The information in this document provides a general overview of the state of CHP in Wisconsin, with data on current installations, technical potential, and economics for CHP.



Map of current CHP installations in Wisconsin. Illustration from ICF.

Wisconsin: Installed CHP

U.S. DOE Combined Heat and Power Installation Database

The DOE CHP Installation Database is a data collection effort sponsored by the U.S. Department of Energy. The database contains a comprehensive listing of combined heat and power installations throughout the country, including those in Wisconsin, and can be accessed by visiting energy.gov/chp-installs.

CHP Project Profiles

The Midwest CHP TAP has compiled information on certain illustrative CHP projects in Wisconsin. You can access these by visiting the Department of Energy’s CHP Project Profiles Database at energy.gov/chp-projects.

Midwest CHP Technical Assistance Partnership

For assistance with questions about specific CHP opportunities in Wisconsin, please consult with the Midwest CHP TAP by visiting mwchptap.org or contacting the CHP TAP director.

Wisconsin Existing CHP

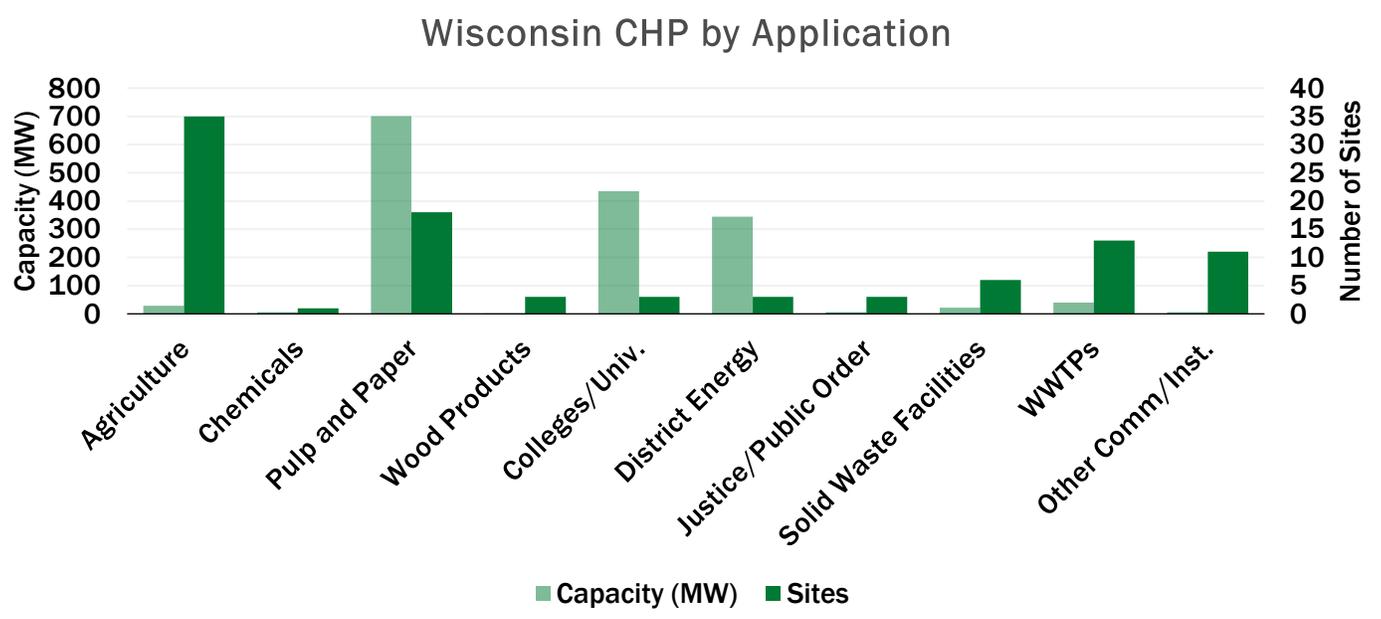
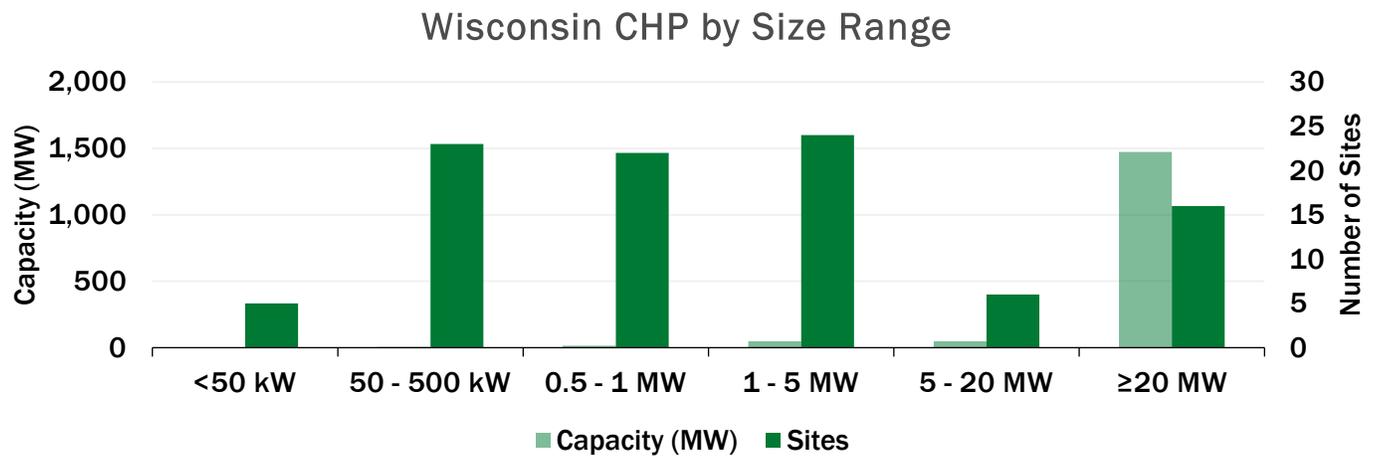
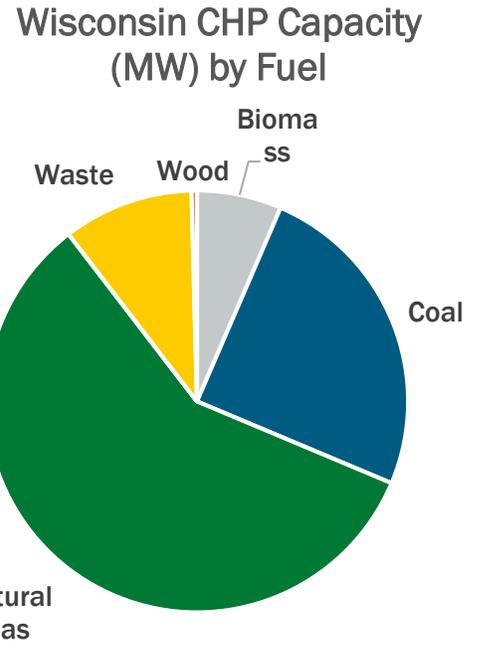
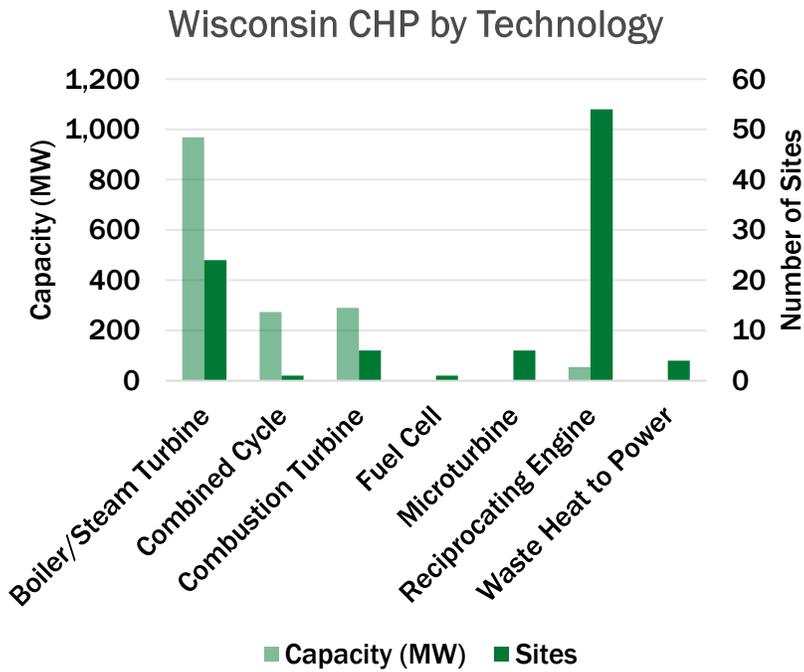
Sector	Sites	Capacity (MW)
Industrial	22	709
Commercial/Institutional	39	853
Other	35	29
Total	96	1,590

Midwest CHP TAP Director

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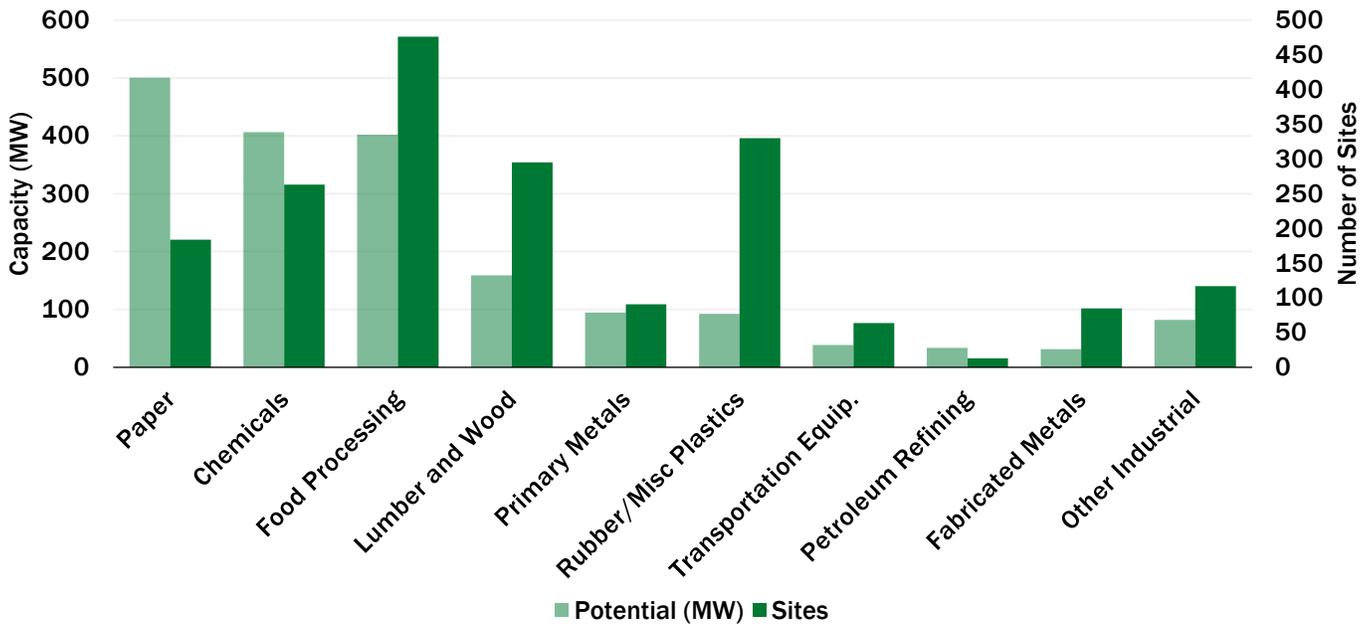
Wisconsin: Technical Potential for New CHP Installations

The “Combined Heat and Power (CHP) Technical Potential in the United States” market analysis report provides data on the technical potential in industrial facilities and commercial buildings for “topping cycle” CHP, waste heat to power (WHP) CHP, and district energy CHP in the U.S. This report can be accessed at energy.gov/chp-potential.

Wisconsin CHP Technical Potential

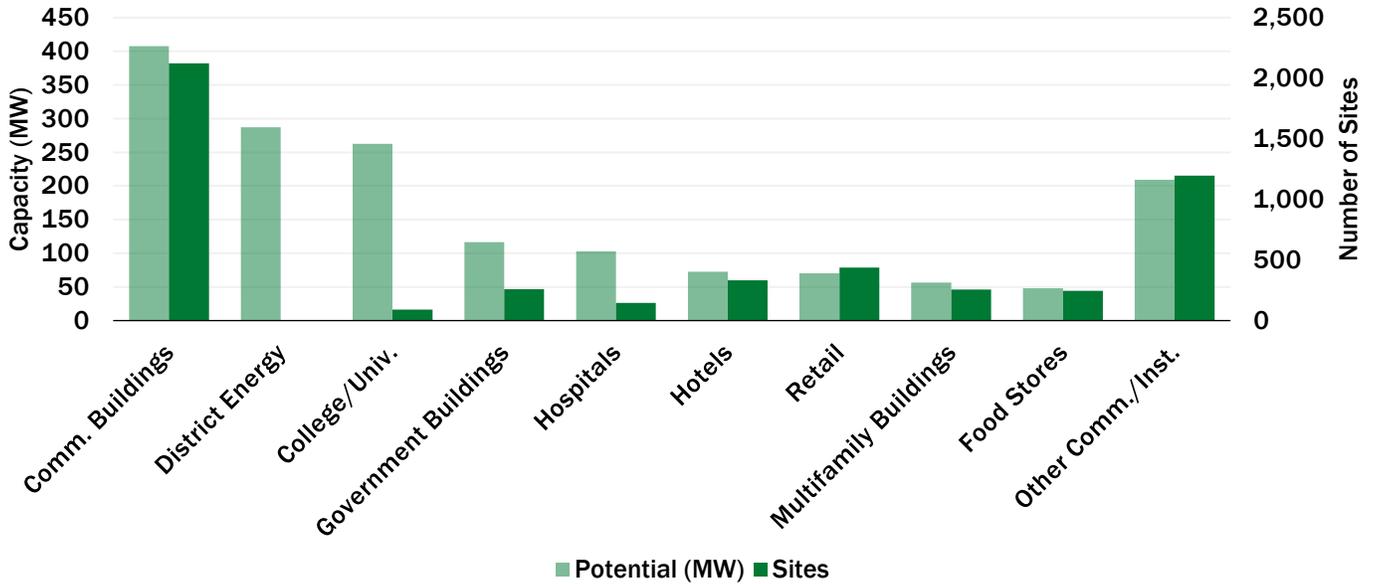
Sector	Potential Sites	Potential MW
Industrial	1,918	1,840
Commercial/Institutional	5,090	1,633
Total	7,008	3,474

Wisconsin Technical Potential (MW) for Industrial CHP Applications



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
Paper	89	23	26	19	44	110	21	218	4	131	184	501
Chemicals	142	27	42	29	55	120	22	173	2	58	263	407
Food Processing	322	68	75	58	66	131	11	93	2	51	476	402
Lumber and Wood	229	43	34	23	29	55	2	15	1	22	295	159
Primary Metals	58	13	16	12	13	30	4	40	0	0	91	95
Other Industrial	490	80	56	40	57	110	6	48	0	0	609	278
Total	1,330	255	249	181	264	556	66	586	9	262	1,918	1,840

Wisconsin Technical Potential (MW) for Commercial/Institutional CHP Applications



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	1,358	68	594	238	170	102	0	0	0	0	2,122	408
College/Univ.	46	9	7	5	21	61	16	152	1	37	91	263
Government Buildings	207	31	25	17	23	34	5	34	0	0	260	117
Hospitals	85	20	21	13	39	65	1	5	0	0	146	103
Hotels	301	33	16	10	14	24	1	5	0	0	332	73
Other Comm./Inst.	1,982	240	113	63	39	54	3	27	2	287	2,139	671
Total	3,979	401	776	345	306	340	26	223	3	324	5,090	1,633

Department of Energy CHP Accelerators

Packaged CHP Accelerator

Standardized packaged CHP systems can reduce risk for both CHP users and suppliers by reducing design errors, limiting uncertainty about performance, shortening project development time, and reducing overall costs. Accelerator partners will validate the installation, performance, and economic and resiliency benefits of packaged CHP systems, evaluate the integration of new technologies and packaged CHP, and identify R&D challenges. For more information, visit <https://betterbuildingsinitiative.energy.gov/accelerators/packaged-chp>

CHP for Resiliency Accelerator

The U.S. DOE collaborated with cities, states, utilities, and other stakeholders who are actively pursuing CHP as a consideration in resiliency planning for critical infrastructure in their jurisdictions. This included defining resiliency, identifying critical infrastructure, and assessing CHP opportunities. This process was documented in the DG for Resilience Planning Guide and the CHP for Resilience Screening Tool. For more information, visit <https://betterbuildingsinitiative.energy.gov/accelerators/combined-heat-and-power-resiliency>

Wisconsin: 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.

Wisconsin Natural Gas Prices

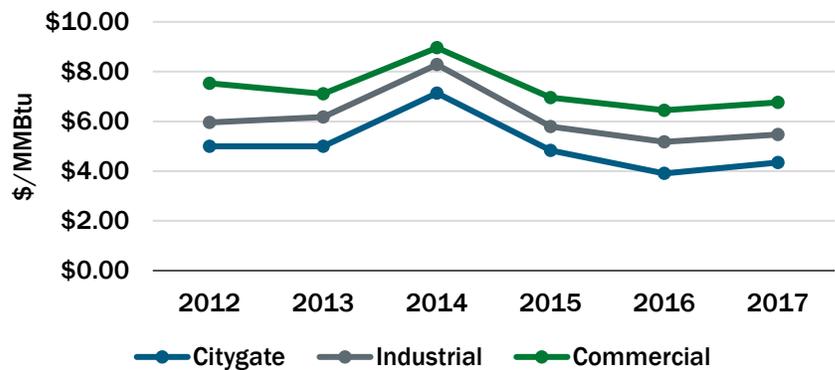
The EIA industrial natural gas price is a full tariff rate, and most large consumers are purchasing gas commodities from marketers at a lower rate.

Wisconsin Average Gas Prices (\$/MMBtu) - 2017

Sector	WI Price	U.S. Price
Citygate*	4.35	4.26
Industrial	5.47	4.20
Commercial	6.77	8.08

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

Wisconsin Average Natural Gas Prices



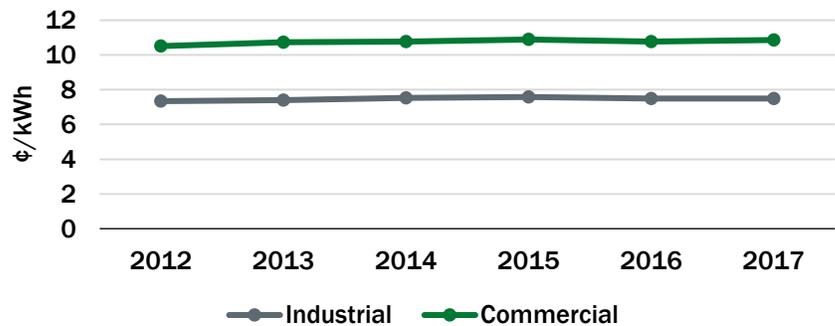
Wisconsin Electricity Prices

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

Wisconsin Average Electricity Prices (¢/kWh) - 2017

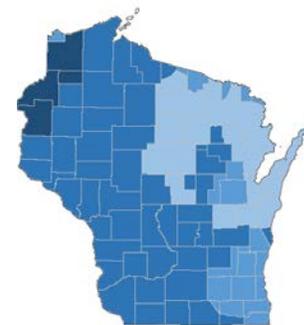
Sector	WI Price	U.S. Price
Industrial	7.49	6.88
Commercial	10.87	10.66

Wisconsin Average Electricity Prices



Wisconsin Average Delivered Electricity Prices by Utility

Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price (¢/kWh)
Northwestern WI Electric	9.36	14.05	11.71
Dahlberg Light & Power	9.89	12.79	11.34
Madison Gas & Electric	8.23	11.33	9.78
Xcel Energy	7.40	11.67	9.53
Alliant Energy	7.81	11.22	9.51
We Energies	5.81	11.64	8.73
Superior Water, Power & Light	7.06	9.43	8.24
Wisconsin Public Service	5.98	9.38	7.68



- Wisconsin Public Service
- Superior WLP / We Energies
- Alliant Energy / MGE / Xcel Energy
- Dahlberg Light & Power / NW WI Elec