

The State of CHP: Wisconsin



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. For help with questions about specific CHP opportunities in Wisconsin, please consult with the [Midwest CHP Technical Assistance Partnership](#).

Installed CHP

CHP Technical Potential

CHP Economics

CHP Partners

Wisconsin Installed Base of CHP

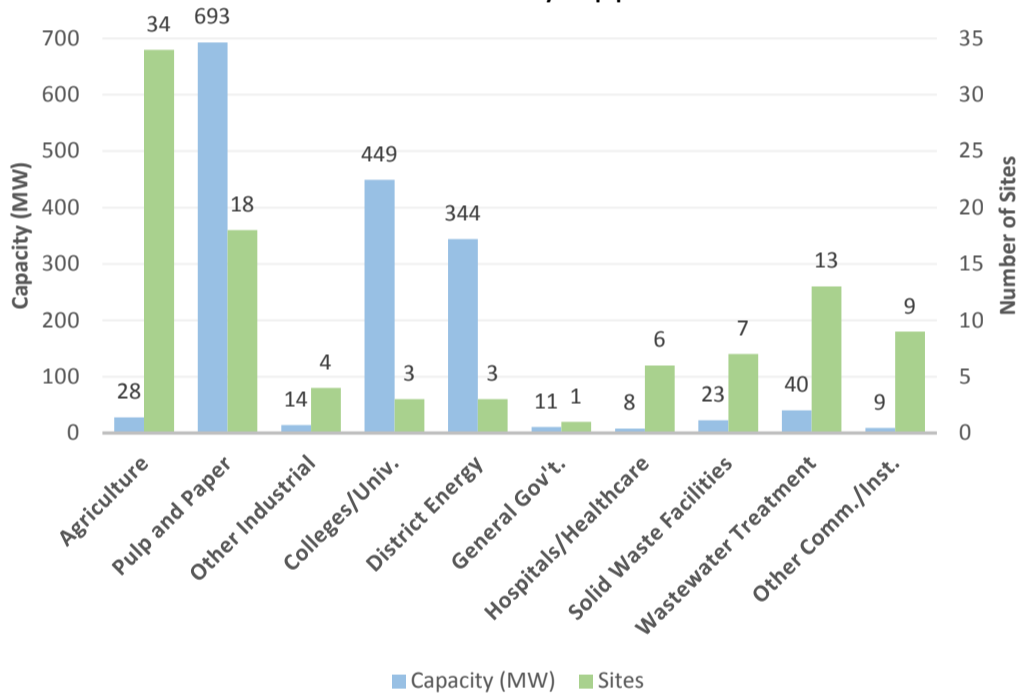
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	22	707
Commercial/Institutional	42	885
Other	34	28
Total	98	1,619



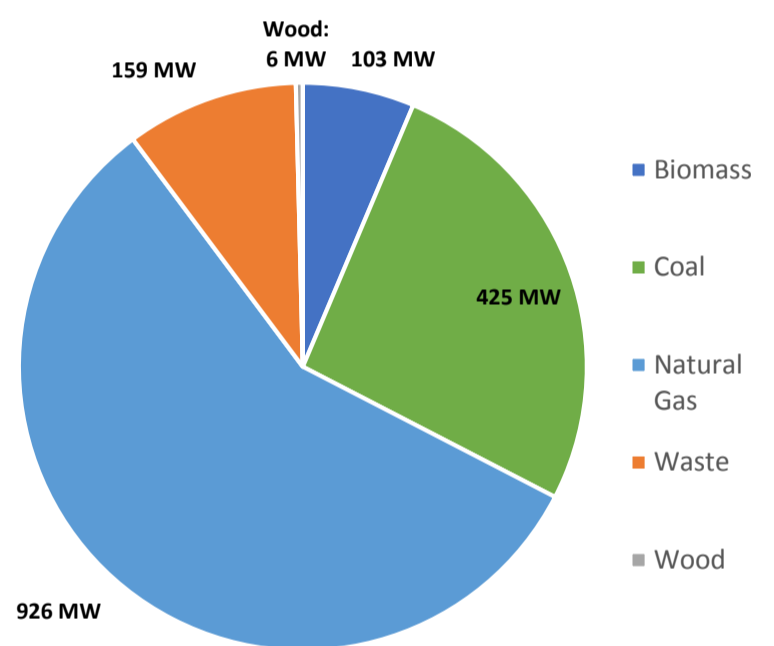
The Midwest CHP Technical Assistance Partnership has compiled information on certain illustrative CHP projects in Wisconsin. You can access these by visiting the Department of Energy's [CHP Project Profiles Database](#).

Wisconsin CHP by Application



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

Wisconsin CHP Capacity (MW) by Fuel Type



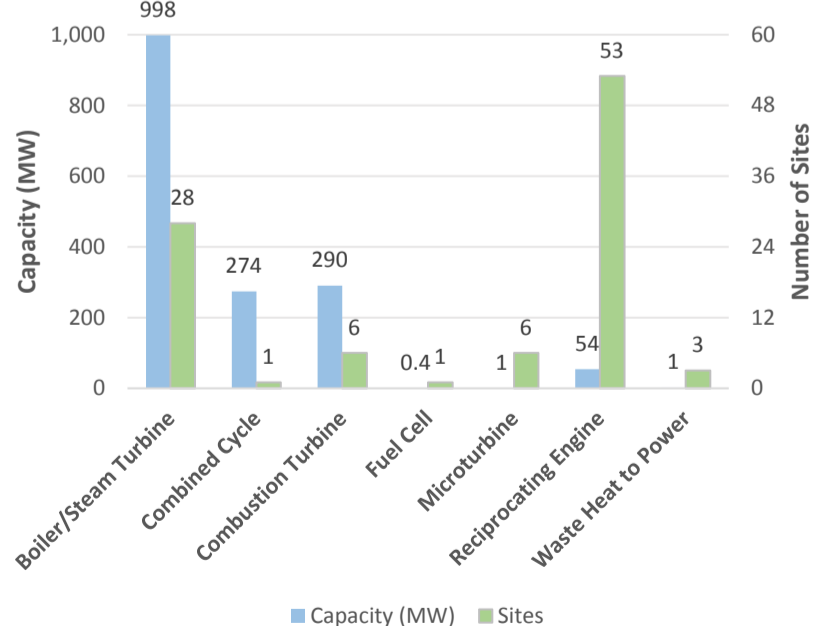
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Wisconsin CHP by Size Range



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

Wisconsin 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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CHP Technical Potential

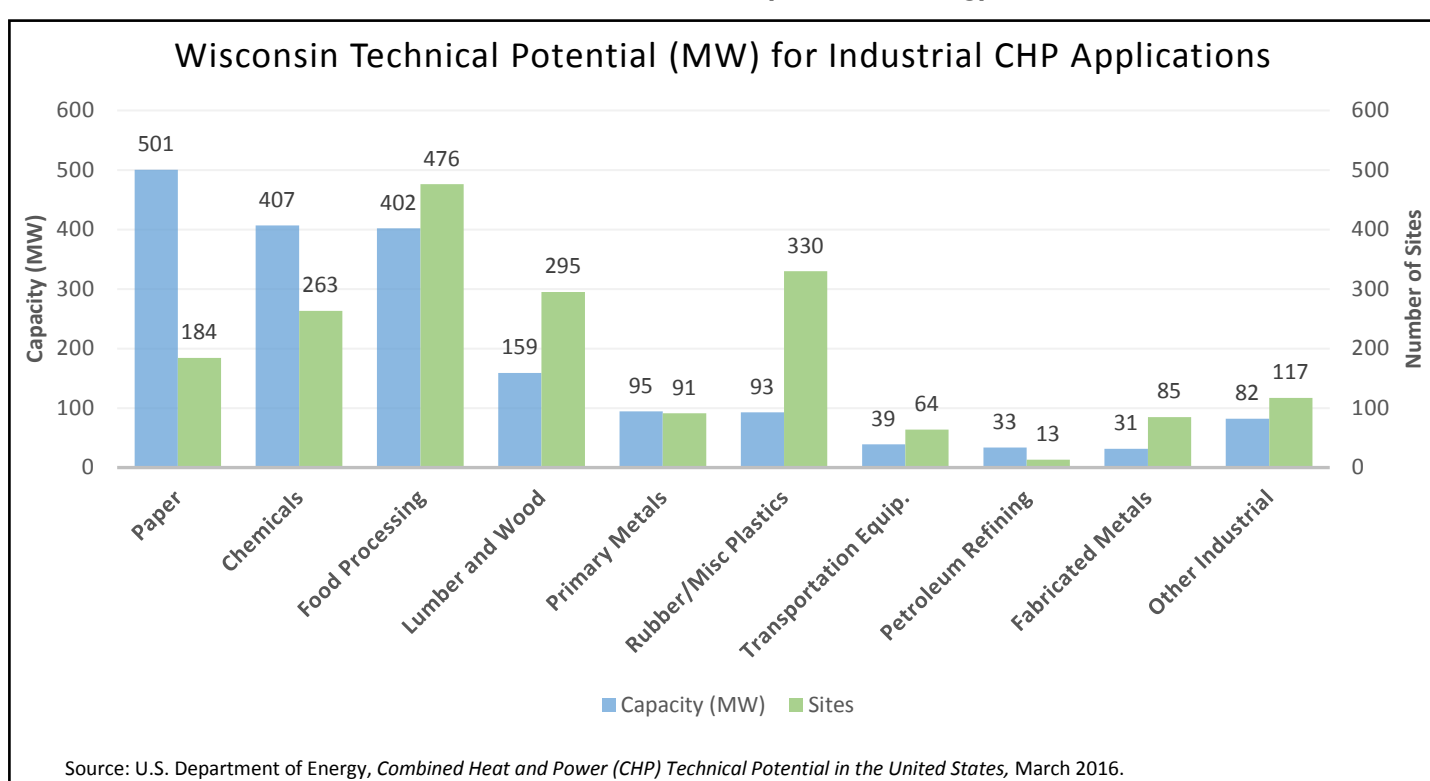
CHP Economics

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Wisconsin Technical Potential for New CHP Installations

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

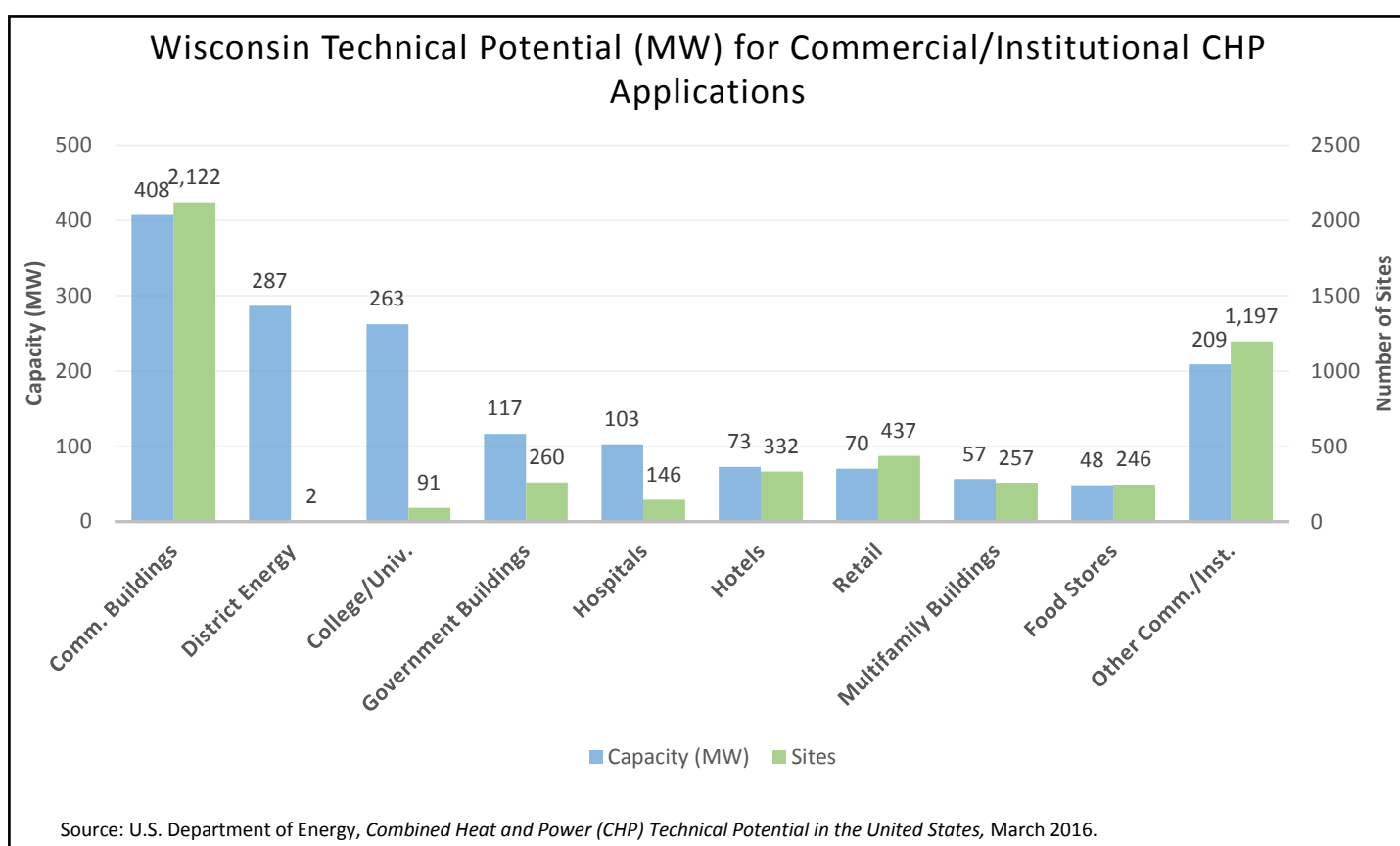
Sector	Potential Sites	Potential Capacity (MW)
Industrial	1,918	1,840
Commercial/Institutional	5,090	1,633
Total	7,008	3,474



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
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

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	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

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

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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.

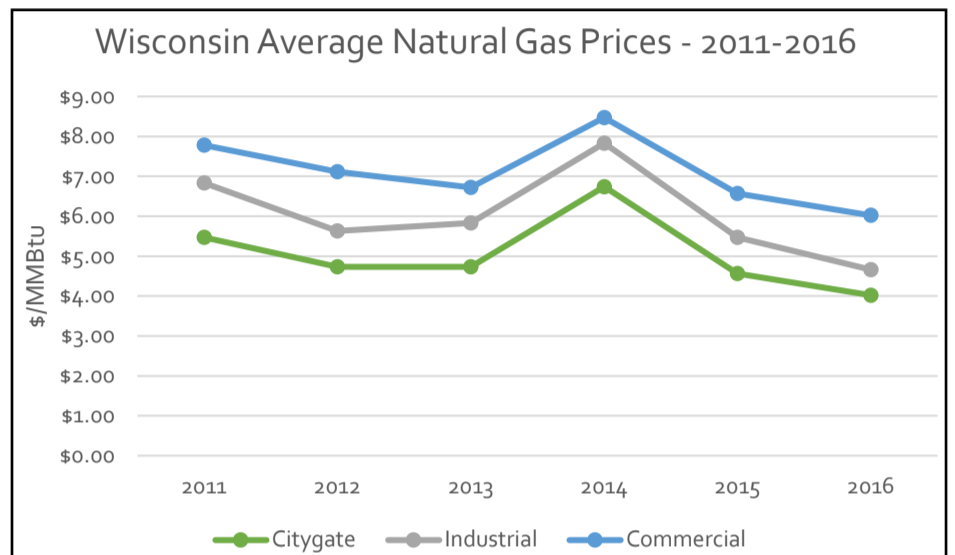
Wisconsin Natural Gas Prices

Wisconsin Average Gas Prices - 2016

Sector	WI Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	4.02	3.75
Industrial	4.66	3.39
Commercial	6.02	7.22

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



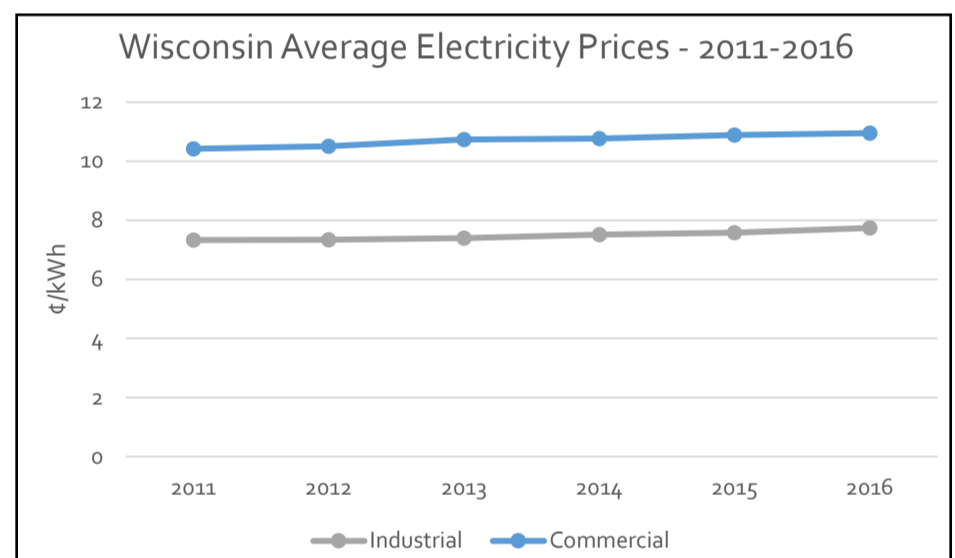
Wisconsin Electricity Prices

Wisconsin Average Electricity Prices - 2016

Sector	WI Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	7.74	6.75
Commercial	10.95	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.



Wisconsin Average Delivered Electricity Prices by Utility

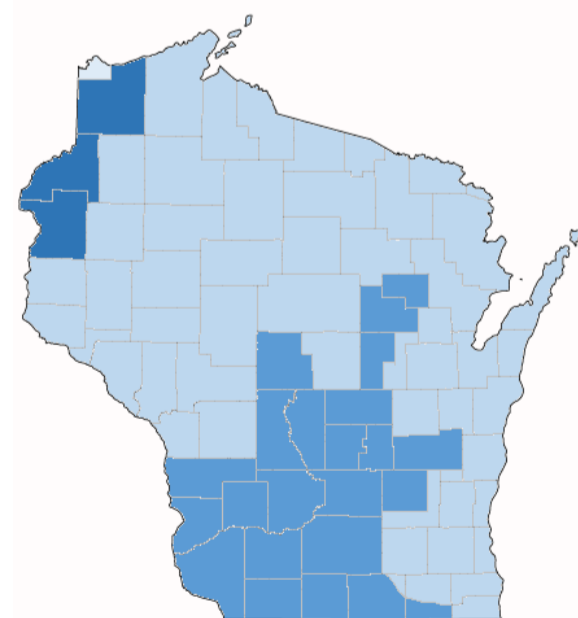
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Dahlberg Light & Power	9.24	12.42	10.83
Northwestern WI Elec Co	8.63	11.52	10.08
Madison Gas & Electric	8.16	11.52	9.84
Alliant Energy	7.68	10.90	9.29
Wisconsin Electric Power	6.07	11.79	8.93
Xcel Energy	7.29	9.96	8.63
Wisconsin Public Service	6.72	9.62	8.17
Superior Water and Light	6.63	8.56	7.59

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.

Wisconsin Electricity Prices – Heat Map



- Superior Water and Light
- Wisconsin Electric Power / Xcel Energy / Wisconsin Public Service
- Madison Gas & Electric / Alliant Energy
- Dahlberg Light & Power / Northwestern WI Elec Co

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Potential

CHP Economics

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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 Wisconsin.

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U.S. DEPARTMENT OF ENERGY
CHP Technical Assistance Partnerships