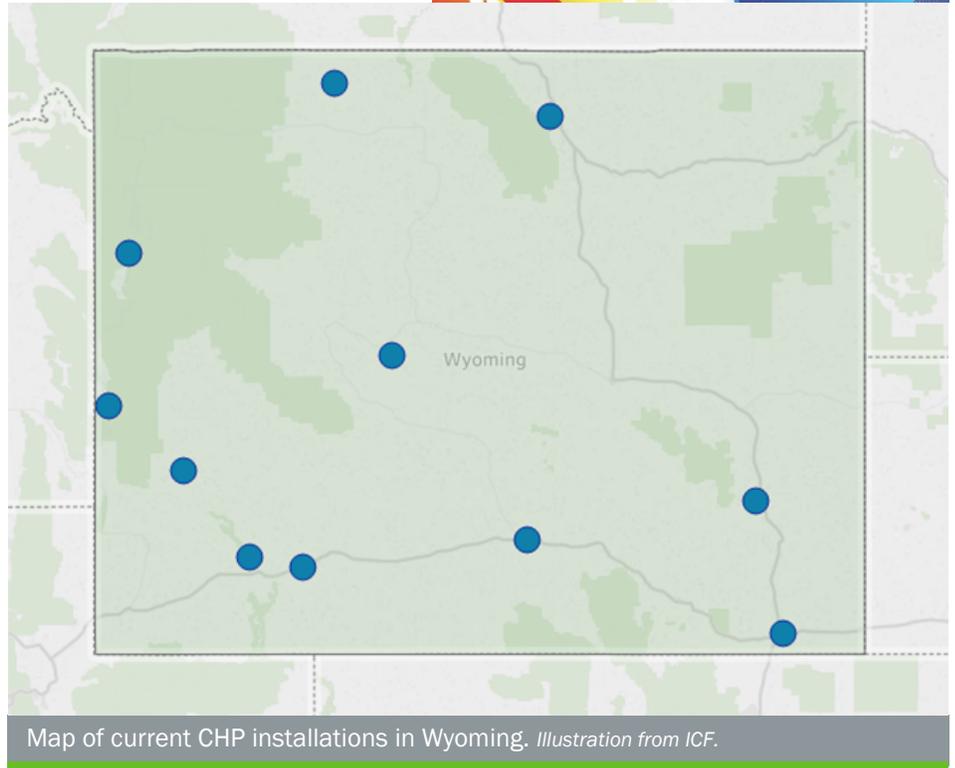


The State of CHP: Wyoming



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 Wyoming, with data on current installations, technical potential, and economics for CHP.

Wyoming: 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 Wyoming, and can be accessed by visiting energy.gov/chp-installs.

CHP Project Profiles

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

Upper-West CHP Technical Assistance Partnership

For assistance with questions about specific CHP opportunities in Wyoming, please consult with the Upper-West CHP TAP by visiting uwchptap.org or contacting the CHP TAP director.

Wyoming Existing CHP

Sector	Sites	Capacity (MW)
Industrial	5	49
Commercial/Institutional	2	0.4
Other	4	121
Total	11	170

Upper-West CHP TAP Director

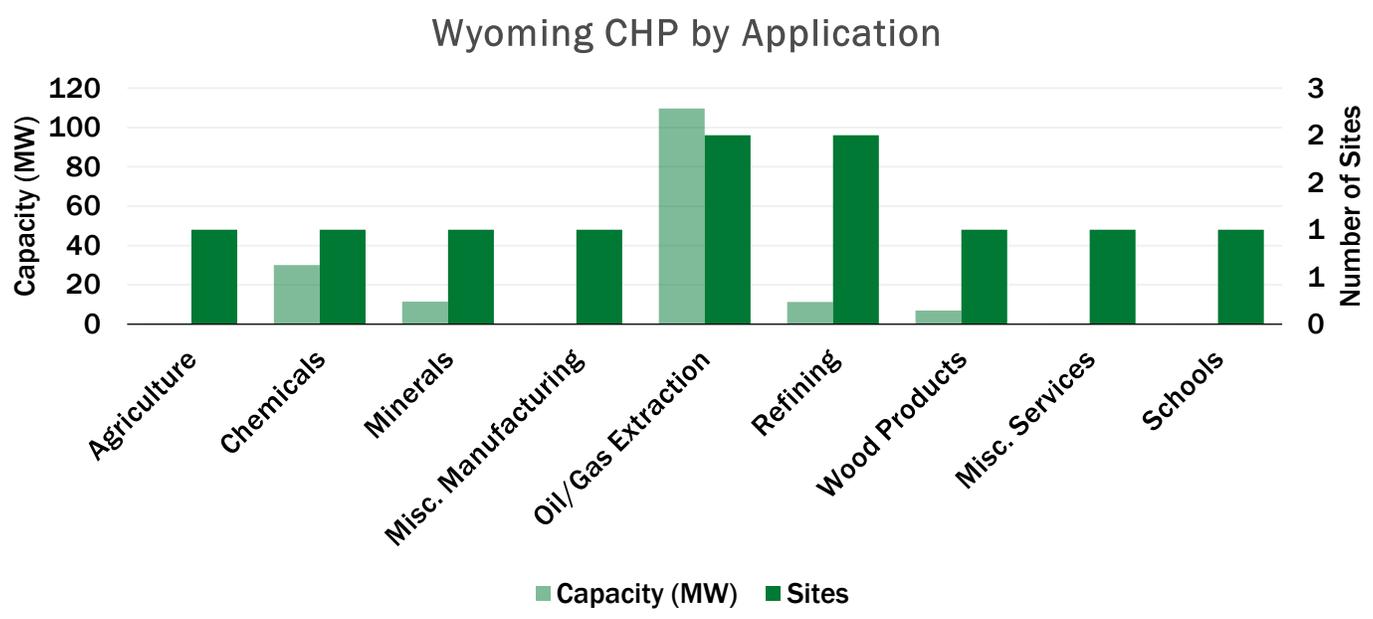
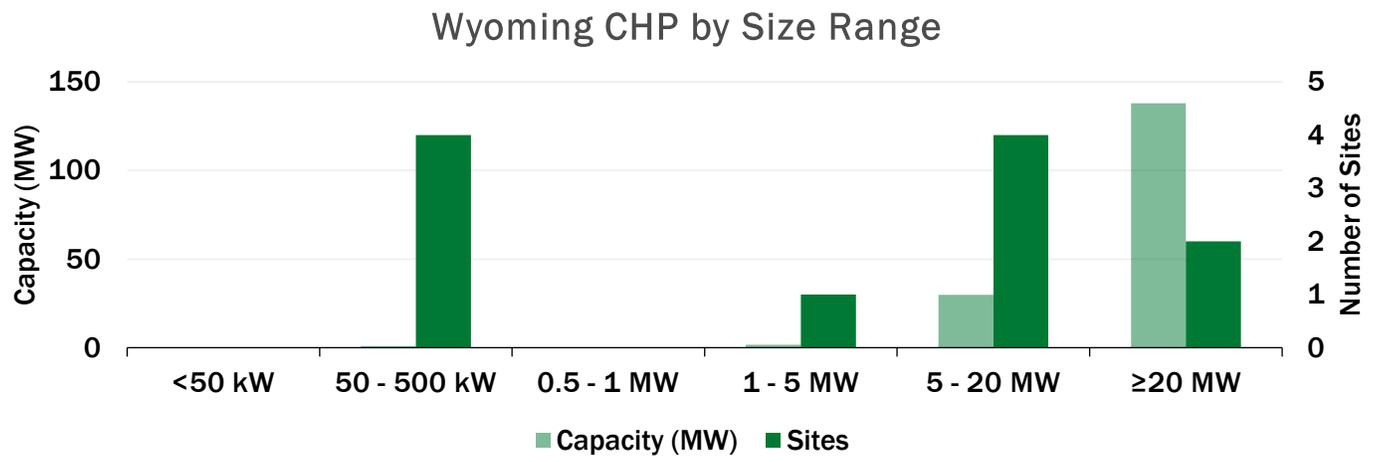
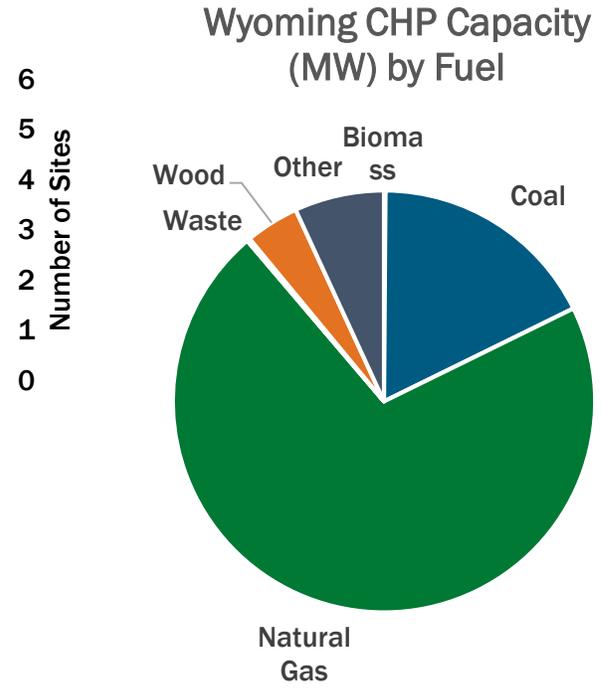
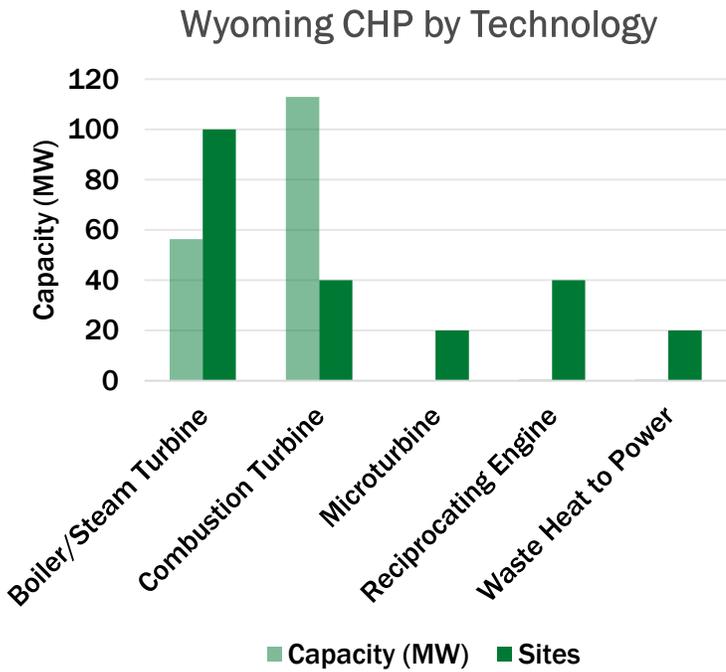
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UPPER-WEST



CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS



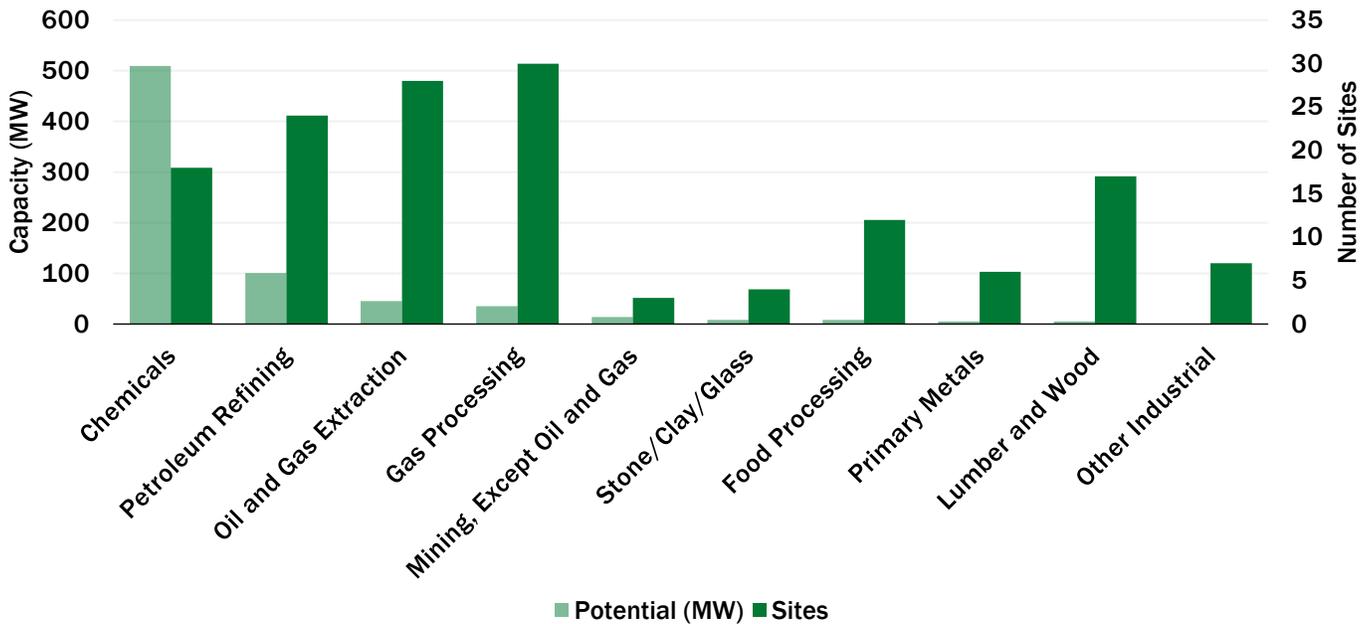
Wyoming: Technical Potential for New CHP Installations

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.

Wyoming CHP Technical Potential

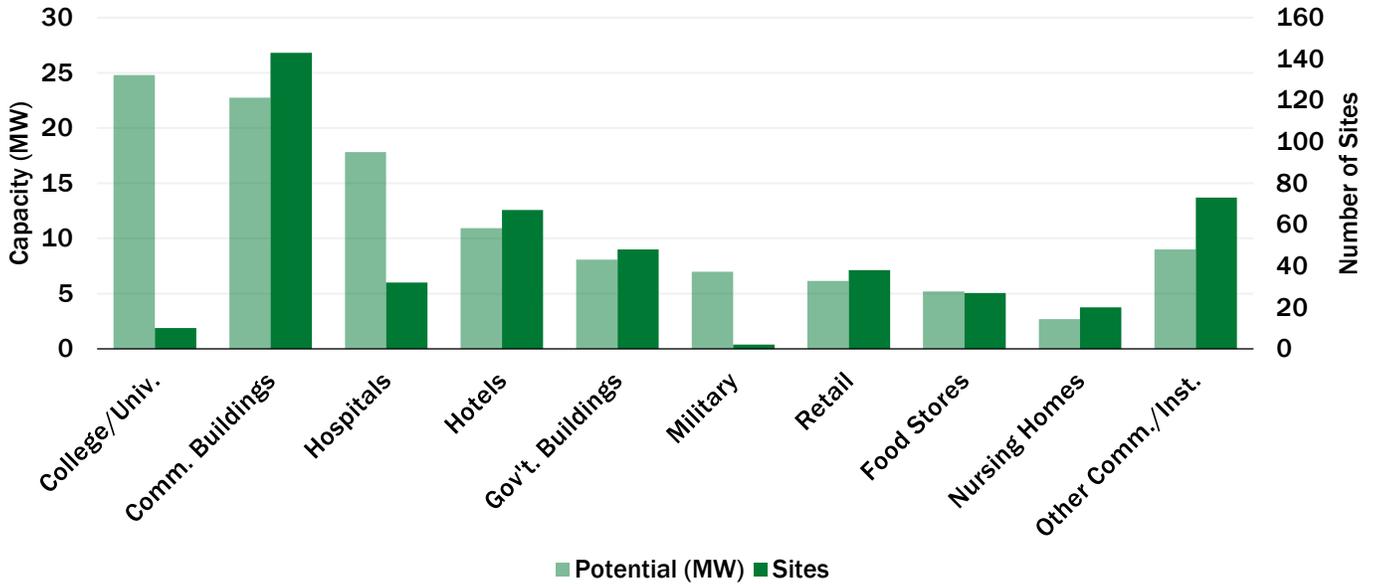
Sector	Potential Sites	Potential MW
Industrial	149	733
Commercial/Institutional	460	115
Total	609	847

Wyoming 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
Chemicals	7	2	2	2	4	6	2	26	3	475	18	510
Petroleum Refining	0	0	5	4	14	34	4	36	1	26	24	101
Oil and Gas Extraction	11	3	2	1	12	23	3	18	0	0	28	45
Gas Processing	14	3	5	4	10	23	1	6	0	0	30	35
Mining	0	0	0	0	1	1	2	13	0	0	3	14
Other Industrial	33	6	4	3	9	19	0	0	0	0	46	28
Total	65	13	18	14	50	106	12	99	4	501	149	733

Wyoming 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
College/Univ.	2	1	3	2	4	7	1	15	0	0	10	25
Commercial Buildings	103	5	32	13	8	5	0	0	0	0	143	23
Hospitals	18	4	9	6	5	7	0	0	0	0	32	18
Hotels	63	8	3	2	1	1	0	0	0	0	67	11
Government Buildings	46	6	2	2	0	0	0	0	0	0	48	8
Other Comm./Inst.	152	18	6	3	1	2	1	6	0	0	160	30
Total	384	42	55	28	19	22	2	22	0	0	460	115

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>

Wyoming: 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.

Wyoming Natural Gas Prices

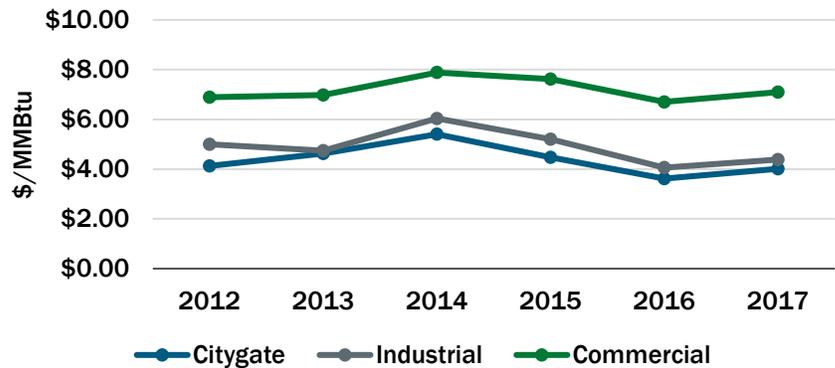
The EIA industrial natural gas price is a full tariff rate, and most large consumers are purchasing gas commodities from marketers at a lower rate.

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

Sector	WY Price	U.S. Price
Citygate*	4.02	4.26
Industrial	4.39	4.20
Commercial	7.09	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.

Wyoming Average Natural Gas Prices



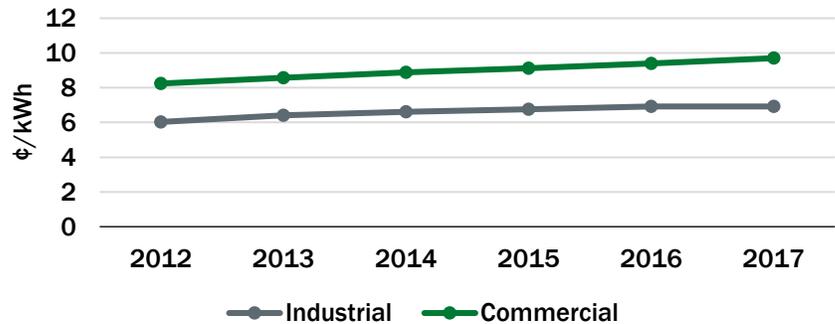
Wyoming Electricity Prices

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

Wyoming Average Electricity Prices (¢/kWh) - 2017

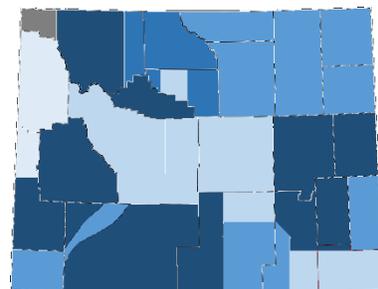
Sector	WY Price	U.S. Price
Industrial	6.92	6.88
Commercial	9.70	10.66

Wyoming Average Electricity Prices



Wyoming Average Delivered Electricity Prices by Utility

Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price (¢/kWh)
Rocky Mountain Power	13.49	14.97	14.23
Big Horn Rural Electric	11.19	15.02	13.11
Powder River Energy Corp.	7.43	16.73	12.08
Wyrulec Company	13.37	9.72	11.55
Bridger Valley Elec Assn.	11.40	11.35	11.37
Carbon Power & Light	10.34	11.83	11.08
High Plains Power	8.11	10.57	9.34
Black Hills Power	7.01	10.82	8.92
Montana-Dakota Utilities	5.92	8.34	7.13
Lower Valley Energy	4.36	6.35	5.36



- Lower Valley Energy
- Black Hills / High Plains / Montana-Dakota
- Bridger Valley / Carbon / Powder River / Wyrulec
- Big Horn Rural Electric
- Rocky Mountain Power