The State of CHP: Wyoming

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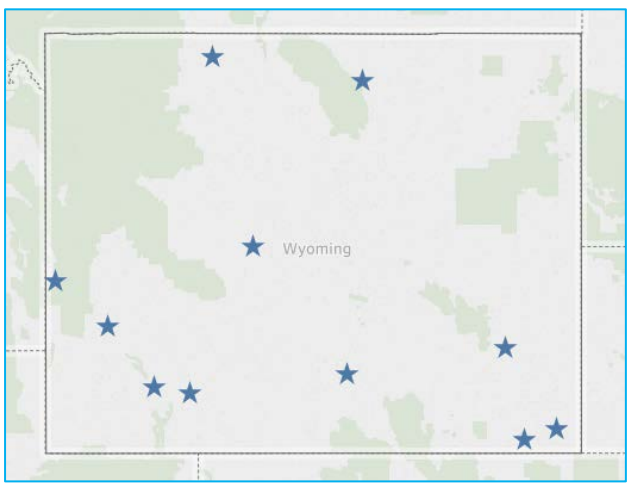
Wyoming Installed Base of CHP

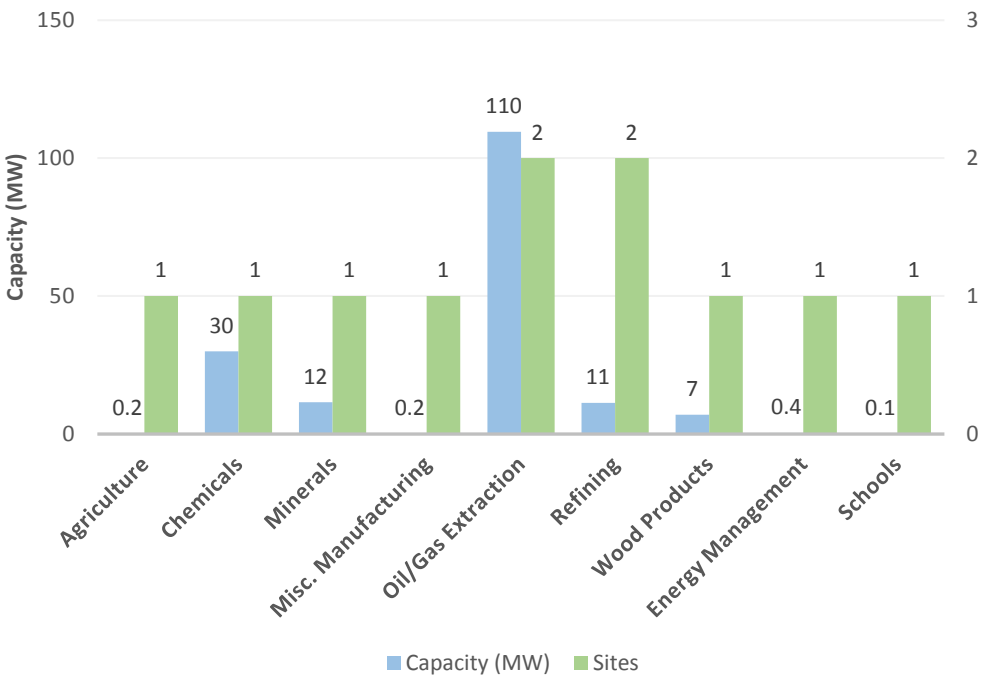
U.S. DOE Combined Heat and Power Installation Database

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

The Southwest CHP Technical Assistance Partnership 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.

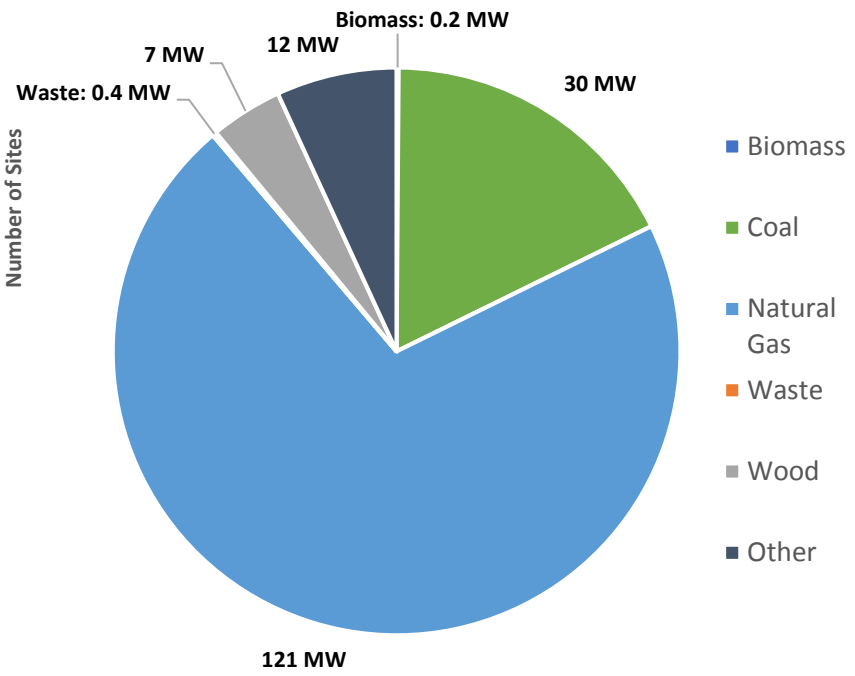


Wyoming CHP by Application



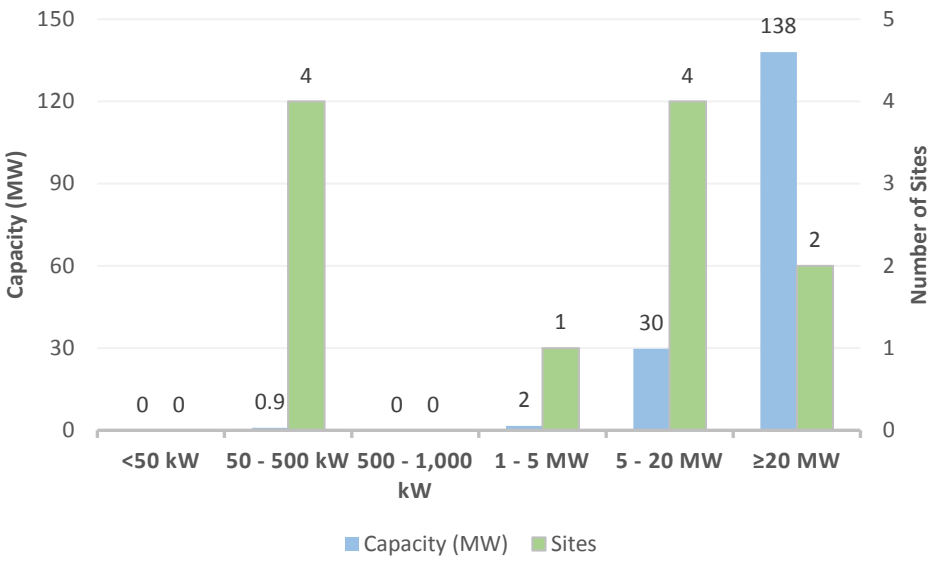
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Wyoming CHP Capacity (MW) by Fuel Type



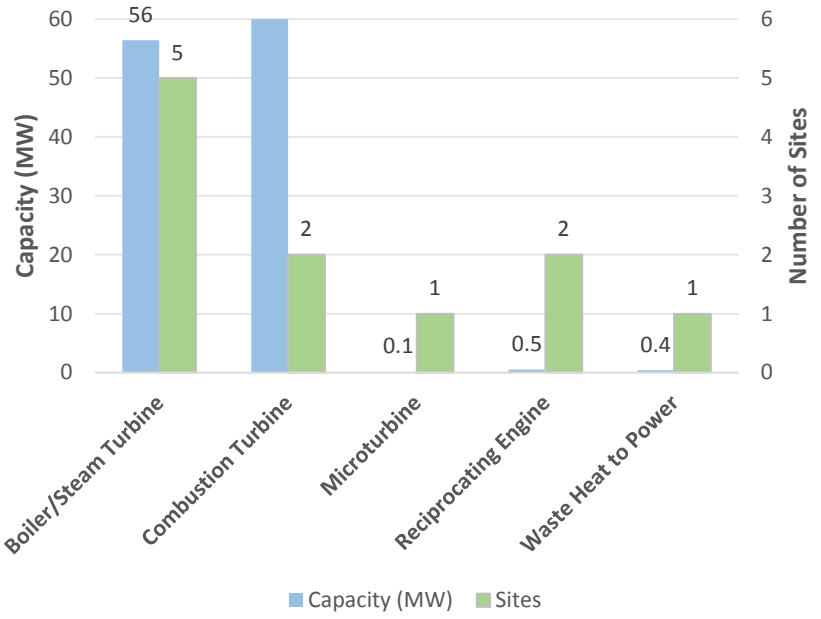
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Wyoming CHP by Size Range



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

Wyoming 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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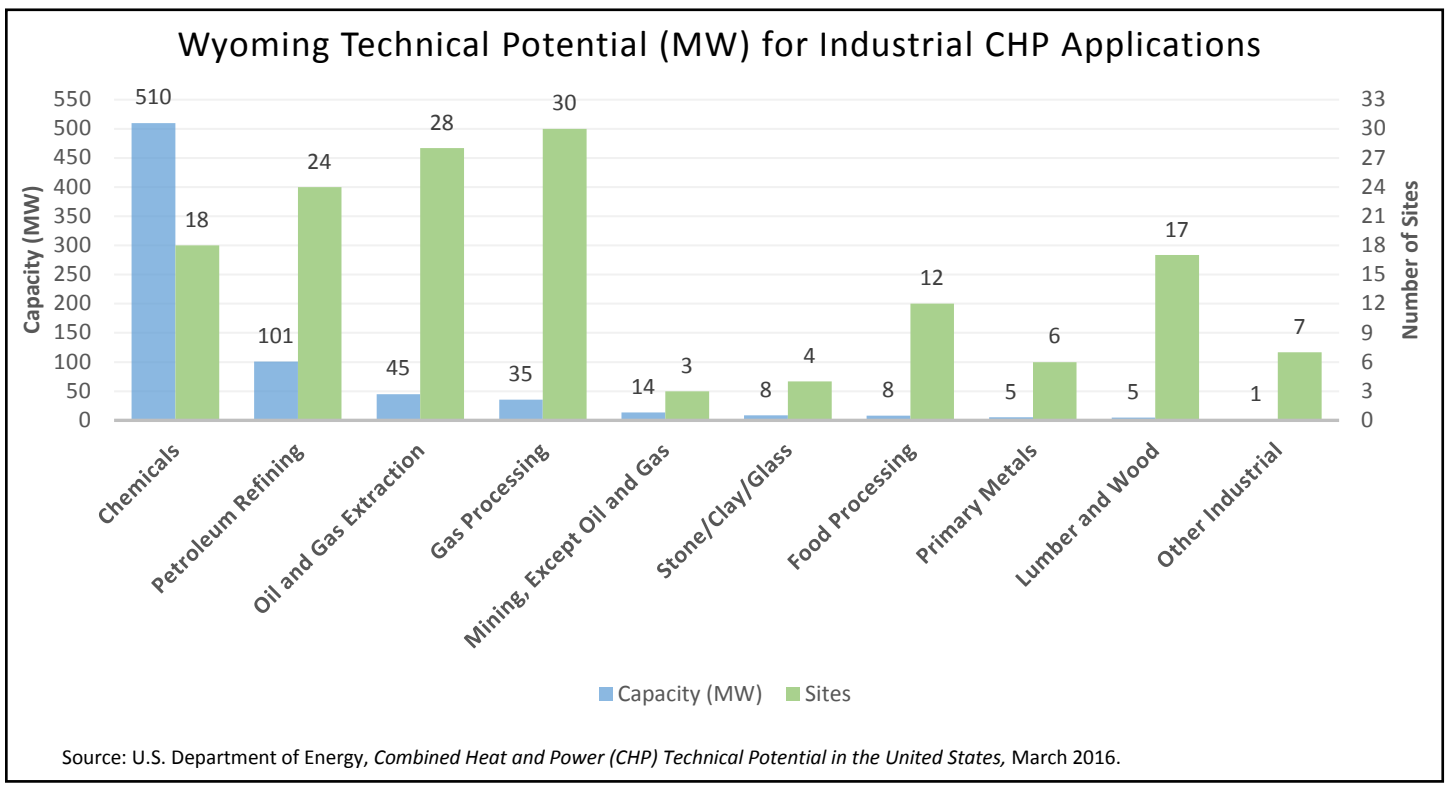
Installed CHP | CHP Technical Potential | CHP Economics | CHP Partners

Wyoming 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	149	733
Commercial/Institutional	460	115
Total	**609**	**847**

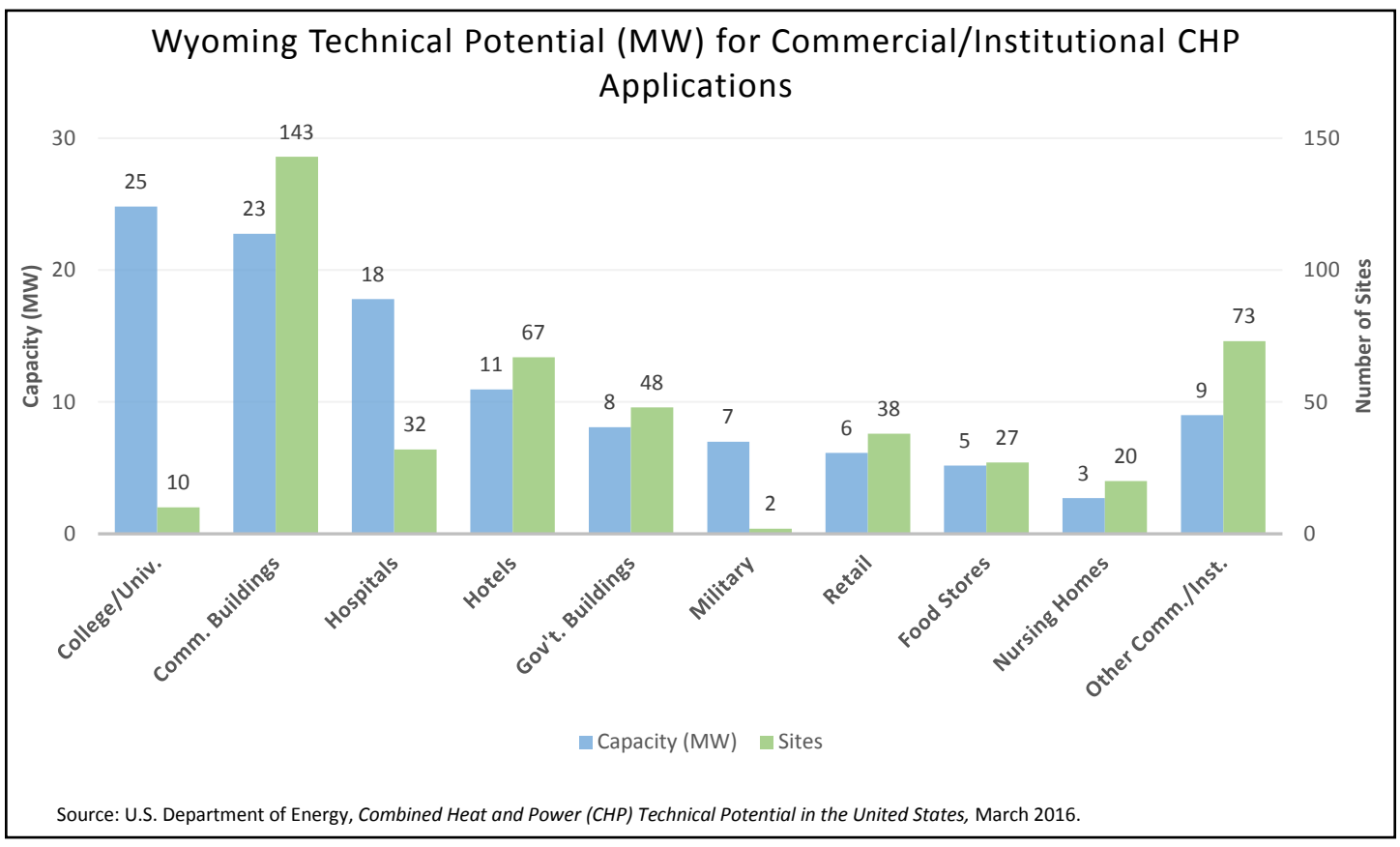


Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States,* March 2016.

Technical Potential by CHP Size Range for Top Five Industrial Sectors

	50-500 kW		0.5 - 1 MW		1 - 5 MW		5 - 20 MW		>20 MW		Total	
Application	**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

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

	50-500 kW		0.5 - 1 MW		1 - 5 MW		5 - 20 MW		>20 MW		Total	
Application	**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

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

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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.

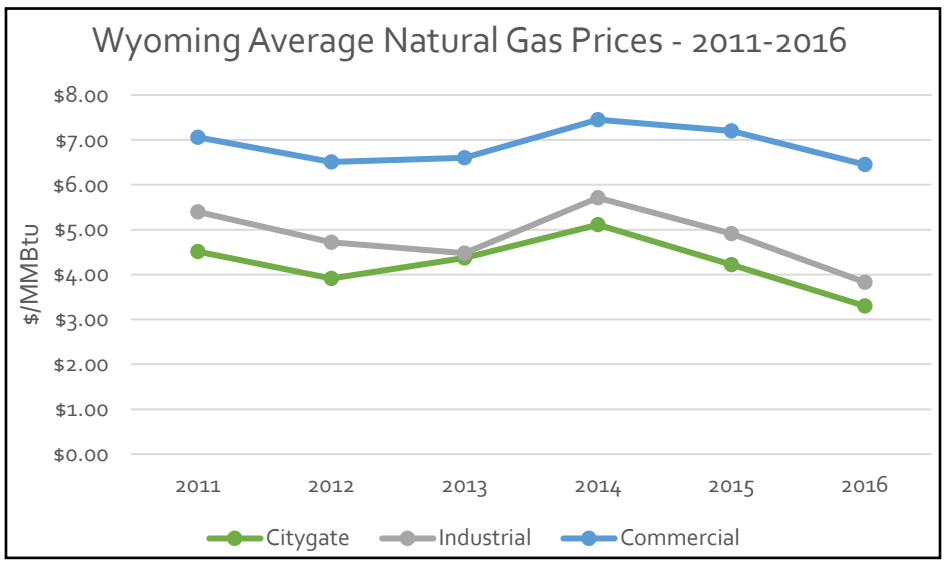
Wyoming Natural Gas Prices

Wyoming Average Gas Prices - 2016

Sector	*WY Price ($/MMBtu)*	*U.S. Price ($/MMBtu)*
Citygate*	3.30	3.75
Industrial	3.83	3.39
Commercial	6.45	7.22

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



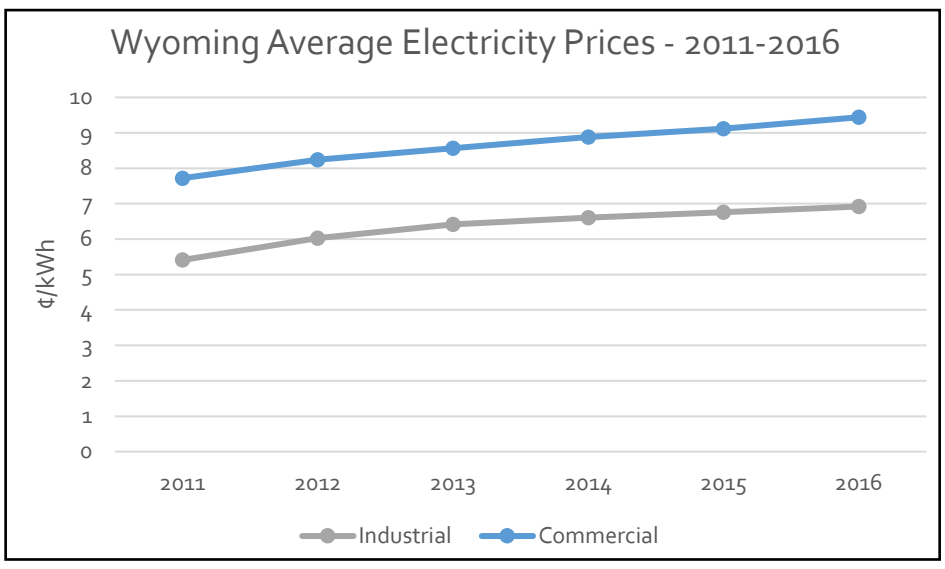
Wyoming Electricity Prices

Wyoming Average Electricity Prices - 2016

Sector	*WY Price (¢/kWh)*	*U.S. Price (¢/kWh)*
Industrial	6.92	6.75
Commercial	9.44	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.



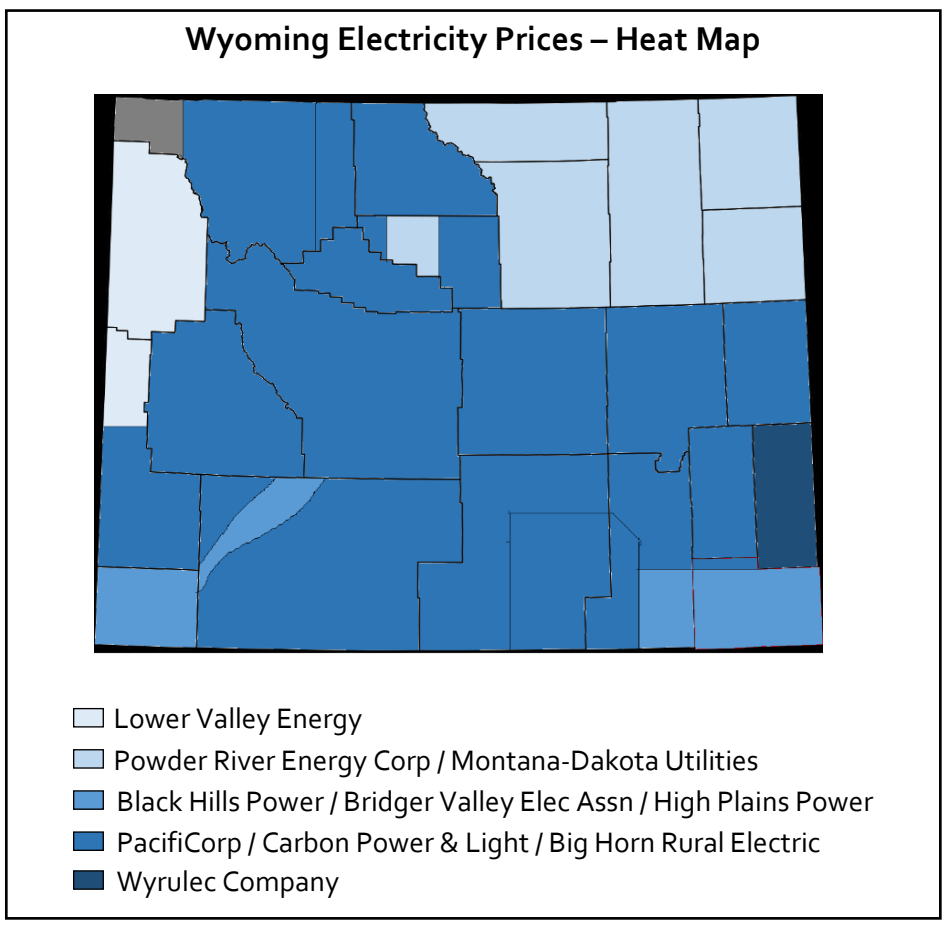
Wyoming Average Delivered Electricity Prices by Utility

Utility	*Industrial Price (¢/kWh)*	*Commercial Price (¢/kWh)*	*Average Price** (¢/kWh)*
Wyrulec Company	15.14	9.84	12.49
PacifiCorp	14.00	8.98	11.49
Carbon Power & Light	9.95	12.03	10.99
Big Horn Rural Electric	11.01	10.35	10.68
Black Hills Power	7.35	12.25	9.80
Bridger Valley Elec Assn	10.16	9.40	9.78
High Plains Power	7.57	9.64	8.60
Powder River Energy Corp	6.30	7.92	7.11
Montana-Dakota Utilities	5.67	7.45	6.56
Lower Valley Energy	4.15	6.00	5.07

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.



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Department of Energy CHP Partnerships

Southwest CHP Technical Assistance Partnership

U.S. Department of Energy
CHP Technical Assistance Partnerships
SOUTHWEST

Southwest CHP TAP Director: Gavin Dillingham
Phone: 281-216-7147
Email: gdillingham@harcresearch.org

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 Wyoming.

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