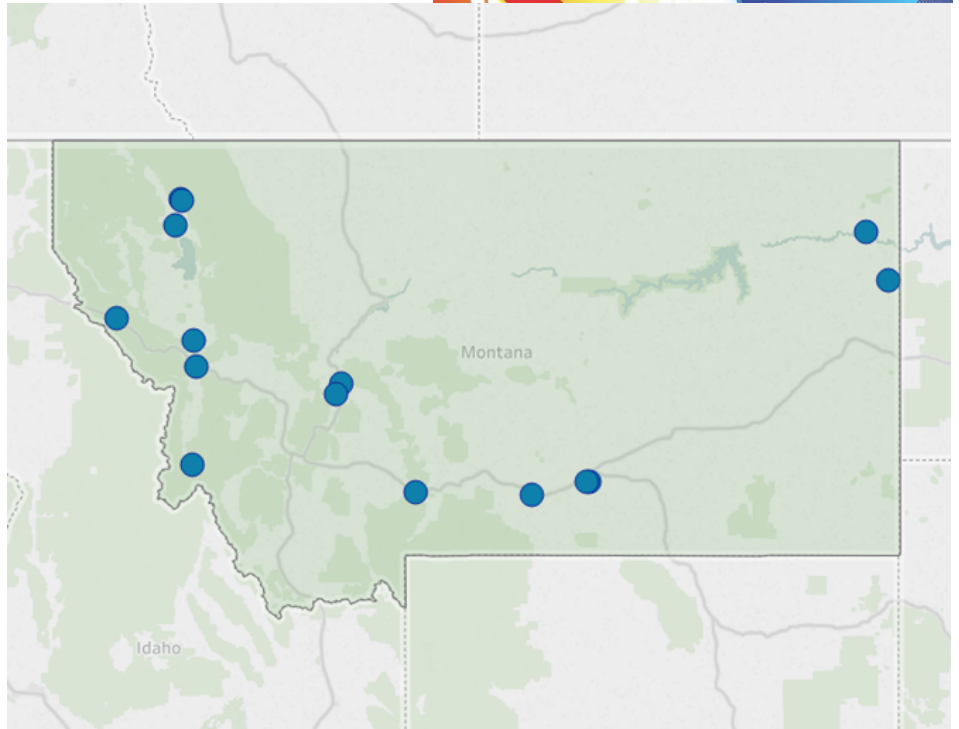


The State of CHP: Montana



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



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

Montana: 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 Montana, and can be accessed by visiting <https://doe.icfwebservices.com/chp>.

CHP Project Profiles

The Upper-West CHP TAP has compiled information on certain illustrative CHP projects in Montana. You can access these by visiting the Department of Energy’s CHP Project Profiles Database at <https://betterbuildingsolutioncenter.energy.gov/chp/chp-project-profiles-database>.

Upper-West CHP Technical Assistance Partnership

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

Montana Existing CHP

Sector	Sites	Capacity (MW)
Industrial	5	63
Commercial/Institutional	8	10
Other	2	0.1
Total	15	72

Upper-West CHP TAP Director

Gavin Dillingham, Ph.D.

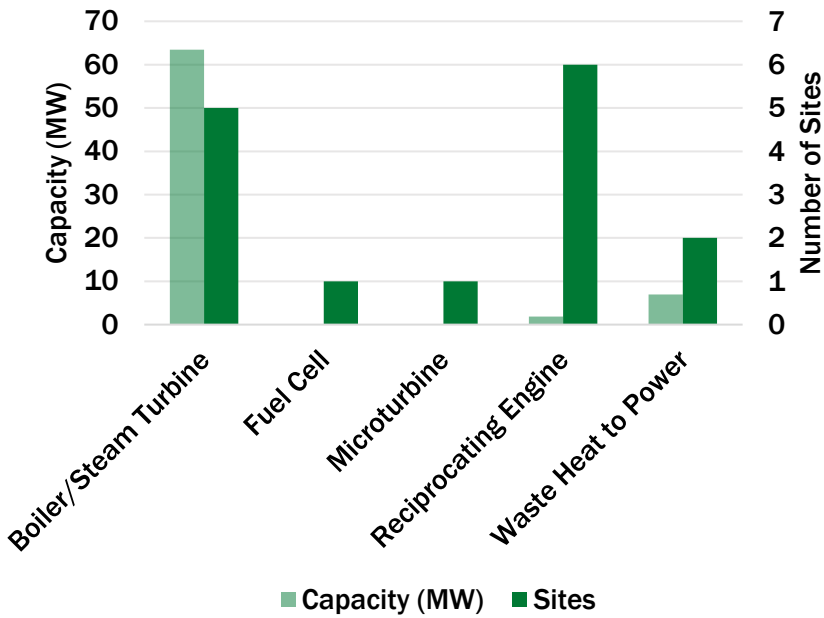
- HARC
- gdillingham@harcresearch.org
- 281-216-7147

UPPER-WEST

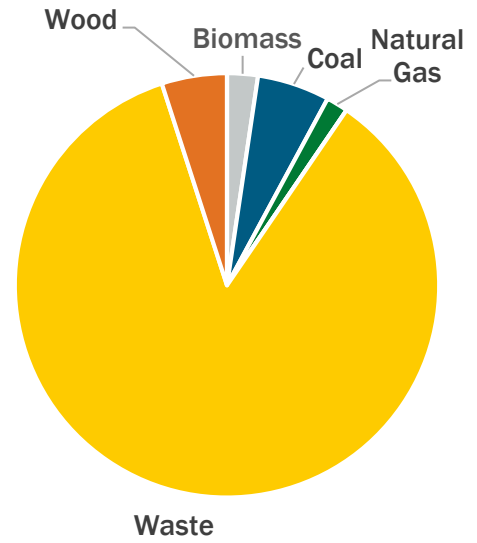


CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS

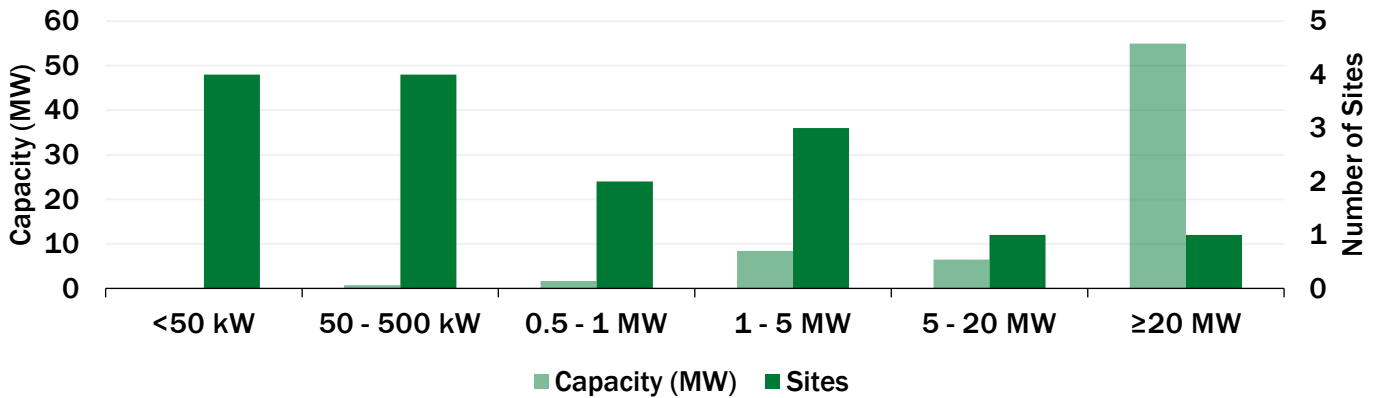
Montana CHP by Technology



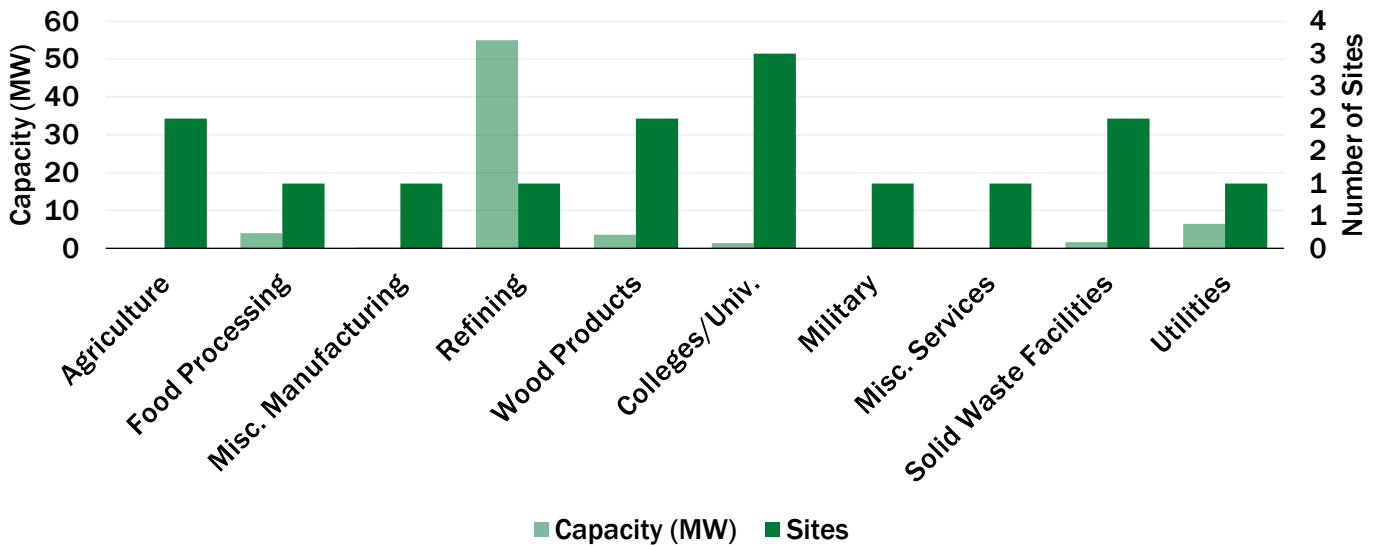
Montana CHP Capacity (MW) by Fuel



Montana CHP by Size Range



Montana CHP by Application



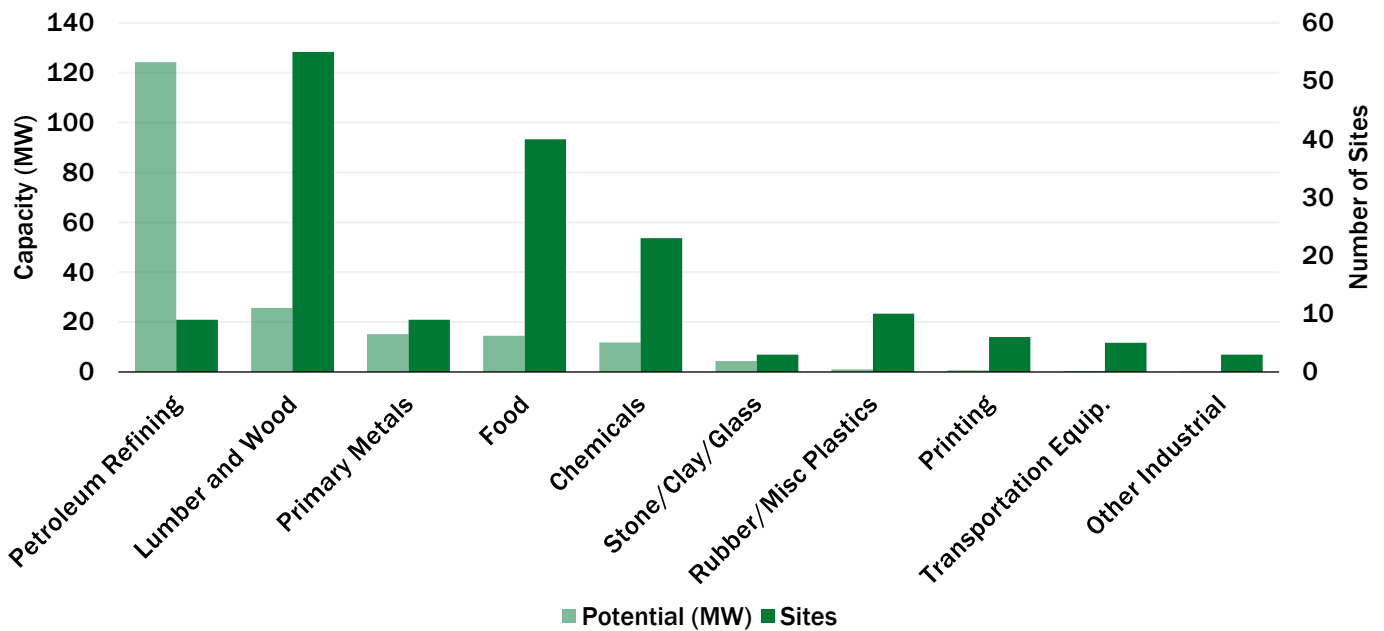
Montana: Technical Potential for New CHP Installations

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. Read the report [here](#).

Montana CHP Technical Potential

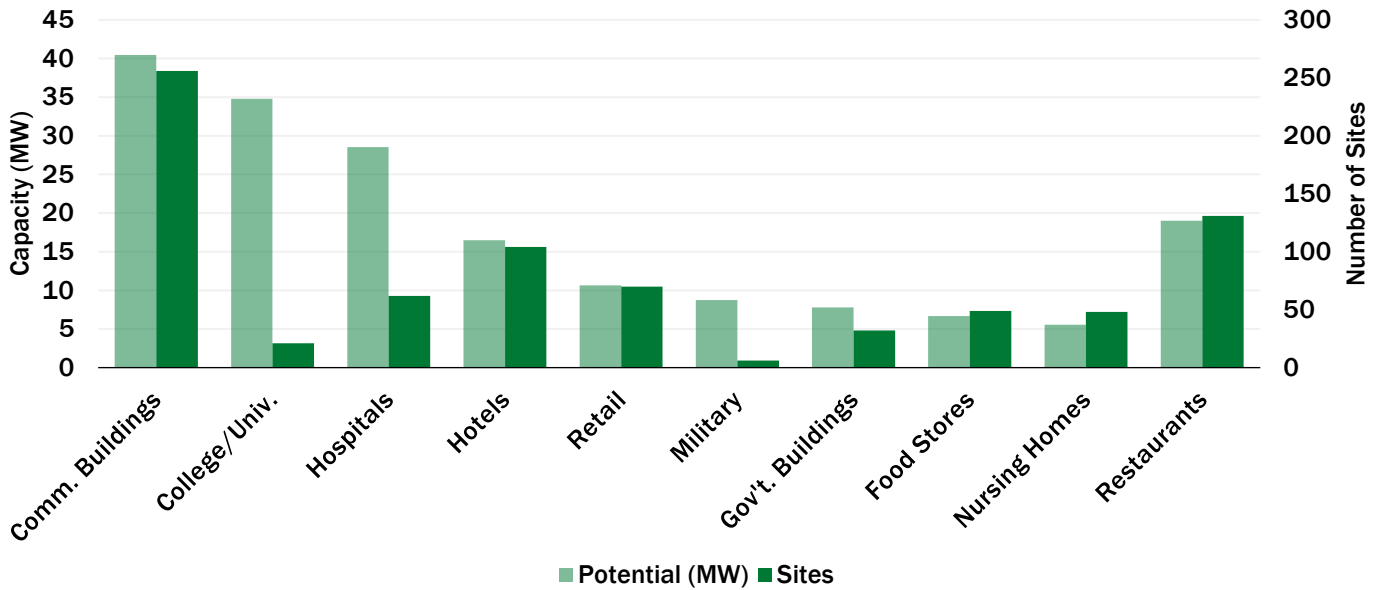
Sector	Potential Sites	Potential MW
Industrial	163	198
Commercial/Institutional	779	179
Total	942	377

Montana 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
Petroleum Refining	0	0	1	1	3	6	2	25	3	92	9	124
Lumber and Wood	44	8	1	1	9	12	1	5	0	0	55	26
Primary Metals	5	1	1	1	2	5	1	8	0	0	9	15
Food	33	6	3	2	4	6	0	0	0	0	40	15
Chemicals	17	2	4	3	1	2	1	5	0	0	23	12
Other Industrial	25	3	0	0	2	4	0	0	0	0	27	7
Total	124	20	10	7	21	35	5	44	3	92	163	198

Montana 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	185	9	57	23	14	8	0	0	0	0	256	40
College/Univ.	12	2	0	0	7	14	2	19	0	0	21	35
Hospitals	43	9	14	10	5	10	0	0	0	0	62	29
Hotels	102	10	0	0	1	1	1	5	0	0	104	16
Retail	68	9	2	1	0	0	0	0	0	0	70	11
Other Comm./Inst.	249	29	13	9	3	4	1	7	0	0	266	48
Total	659	69	86	43	30	36	4	31	0	0	779	179

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://betterbuildingssolutioncenter.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://betterbuildingssolutioncenter.energy.gov/accelerators/combined-heat-and-power-resiliency>

Montana: 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.

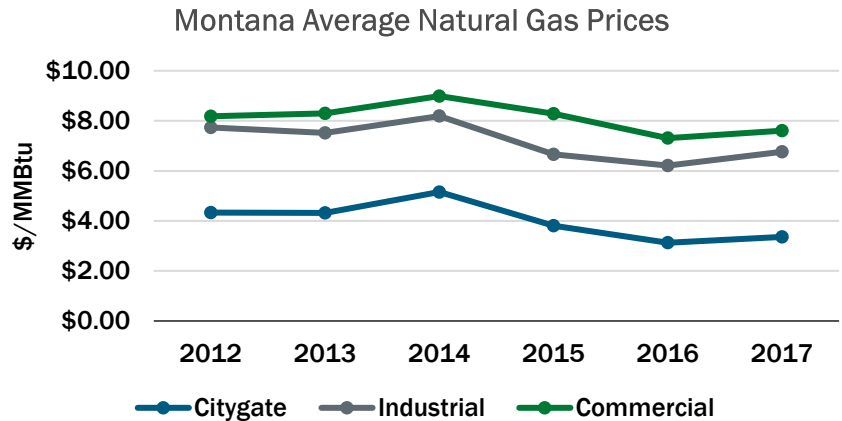
Montana Natural Gas Prices

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.

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

Sector	MT Price	U.S. Price
Citygate*	3.36	4.26
Industrial	6.77	4.20
Commercial	7.61	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.

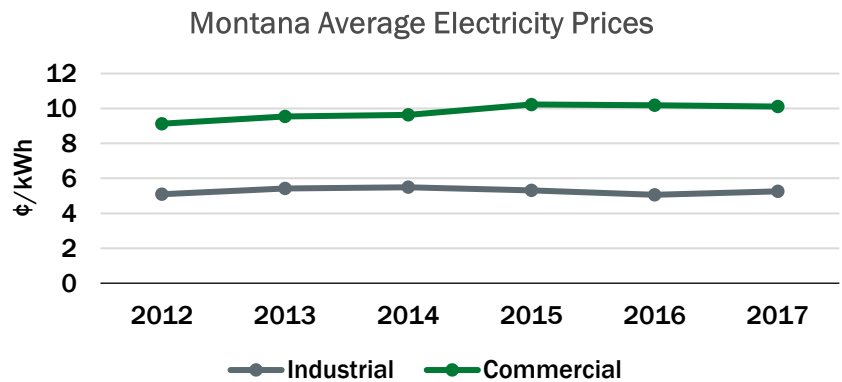


Montana Electricity Prices

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

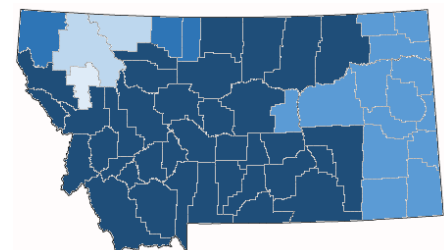
Montana Average Electricity Prices (¢/kWh) - 2017

Sector	MT Price	U.S. Price
Industrial	5.25	6.88
Commercial	10.12	10.66



Montana Average Delivered Electricity Prices by Utility

Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price (¢/kWh)
NorthWestern Energy	9.06	11.37	10.22
Glacier Electric Coop	7.64	8.51	8.08
Marias River Electric Coop	-	7.93	7.93
Northern Lights	5.19	10.53	7.86
Montana-Dakota Utilities	5.92	8.34	7.13
Flathead Electric Coop	5.29	6.99	6.14
Mission Valley Power	5.01	5.92	5.47



- Mission Valley Power
- Flathead Electric Coop
- Montana-Dakota Utilities
- Glacier / Marias River / Northern Lights
- NorthWestern Energy