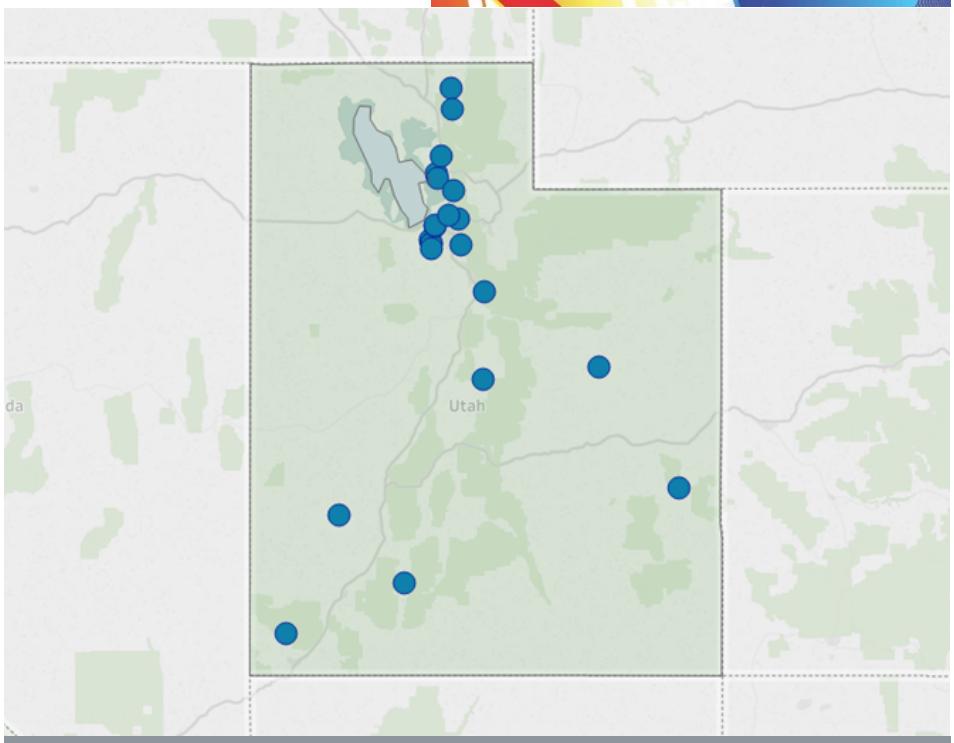
U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

The State of CHP: Utah



Map of current CHP installations in Utah. *Illustration from ICF.*

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

Utah: 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 Utah, 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 Utah. You can access these by visiting the Department of Energy's CHP Project Profiles Database at https://betterbuildingssolutioncenter.energy.gov/chp/chp-project-profiles-database.

Upper-West CHP Technical Assistance Partnership

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

Utah Existing CHP

Sector	Sites	Capacity (MW)
Industrial	5	135
Commercial/Institutional	15	137
Other	3	15
Total	23	287

Upper-West CHP TAP Director

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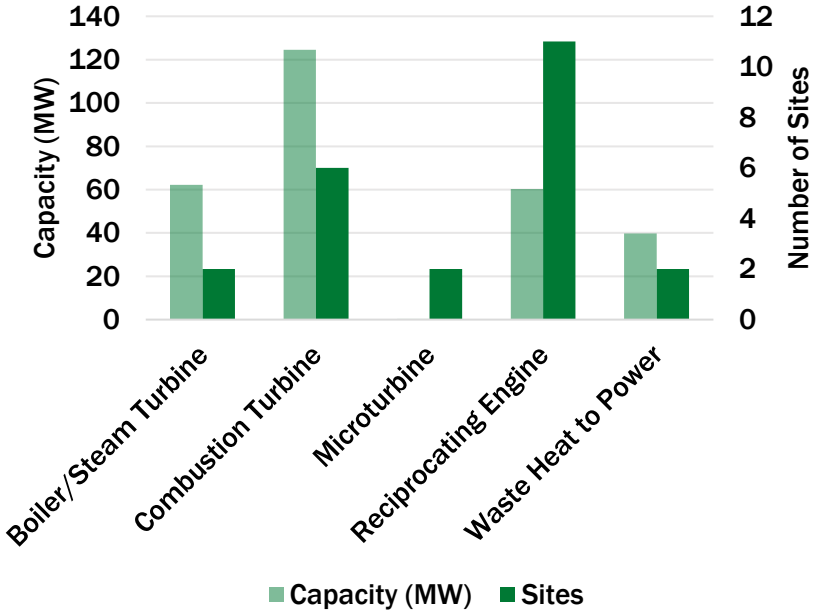
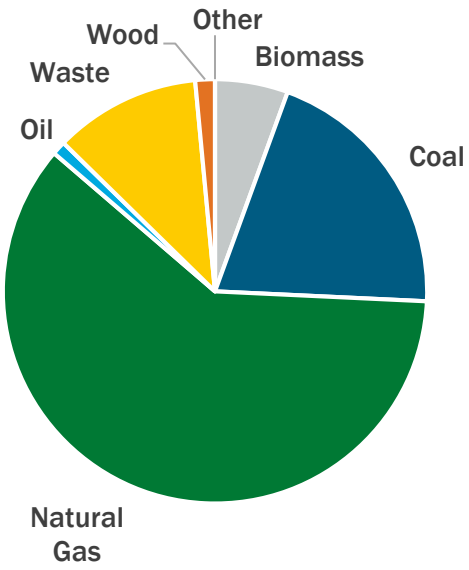
UPPER-WEST CHP Technical Assistance Partnerships

DOE CHP Installation Database (U.S. installations as of Dec. 31, 2017)

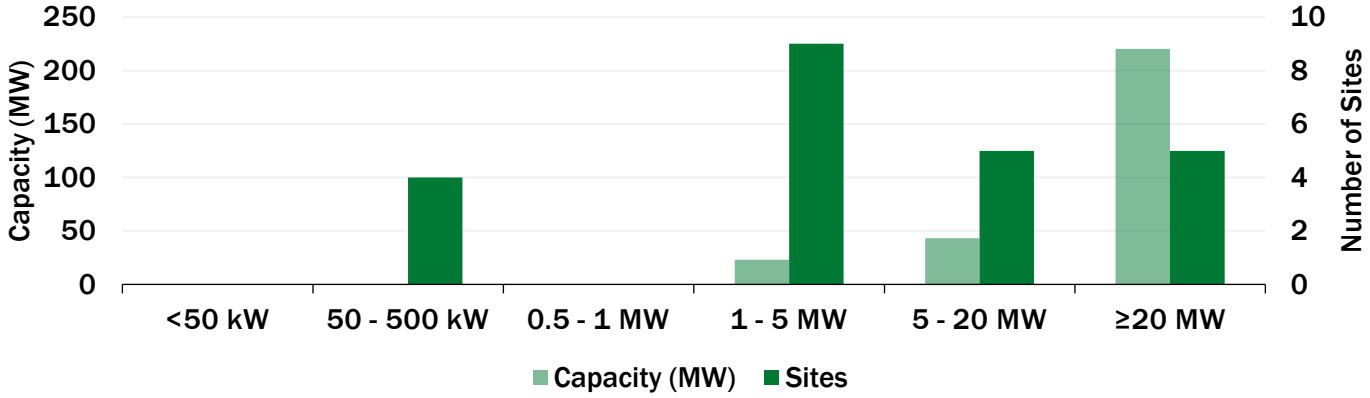
Utah CHP by Technology



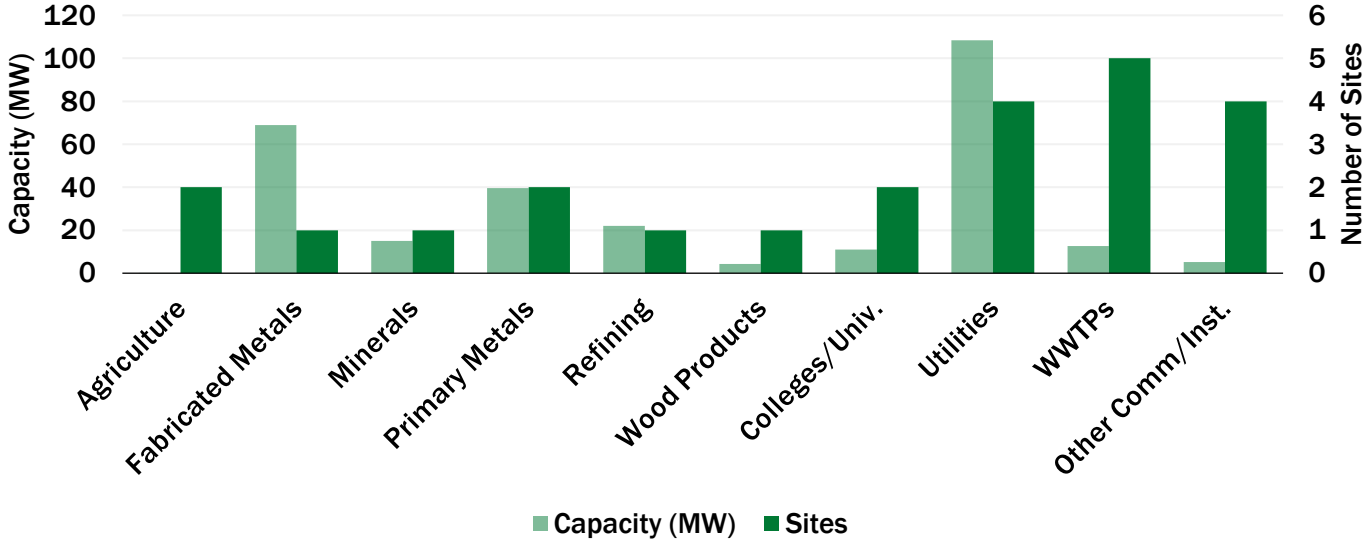
Utah CHP Capacity (MW) by Fuel



Utah CHP by Size Range



Utah CHP by Application

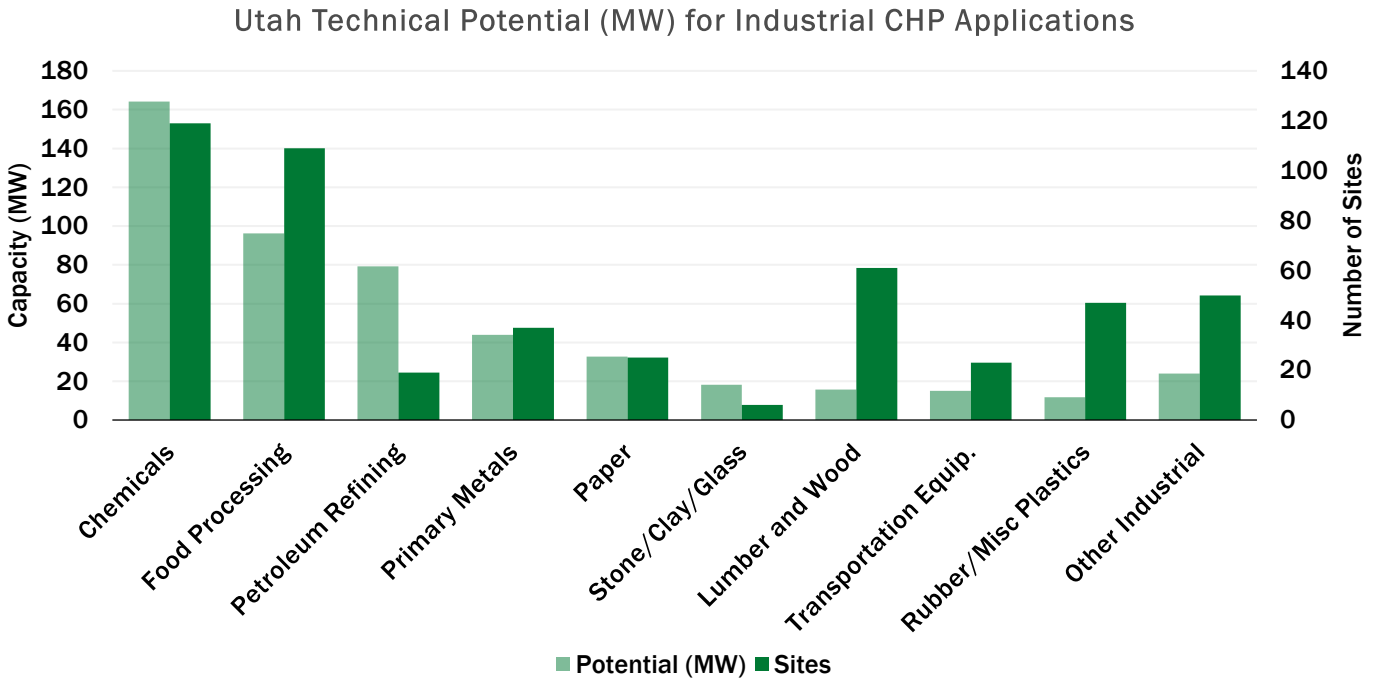


Utah: Technical Potential for New CHP Installations

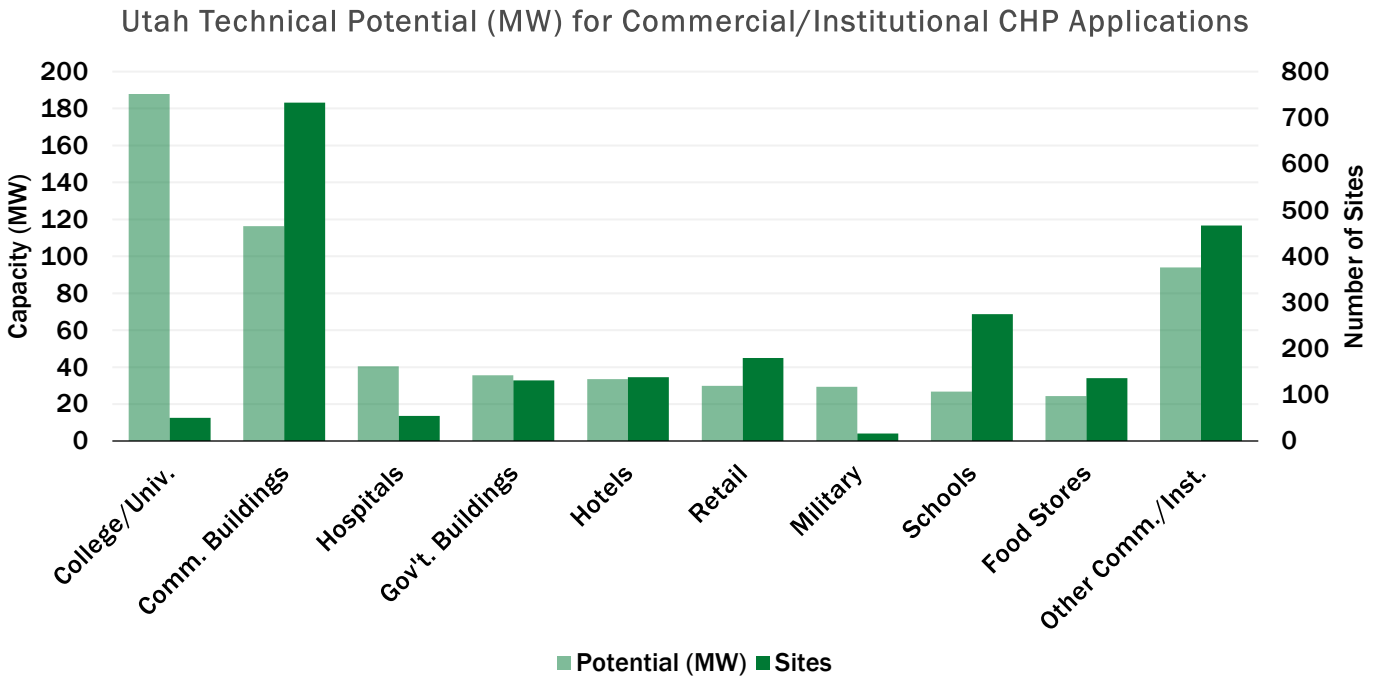
The "Combined Heat and Power (CHP) Technical Potential in the United States" market analysis report provides data on the technical potential in industrial facilities and commercial buildings for "topping cycle" CHP, waste heat to power (WHP) CHP, and district energy CHP in the U.S. Read the report **here**.

Utah CHP Technical Potential

Sector	Potential Sites	Potential MW
Industrial	496	501
Commercial/Institutional	2,180	618
Total	2,676	1,119



	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	68	12	14	11	30	68	6	50	1	24	119	164
Food Processing	73	16	13	10	18	40	5	30	0	0	109	96
Petroleum Refining	2	1	4	3	8	20	5	56	0	0	19	79
Primary Metals	24	5	7	5	5	9	0	0	1	25	37	44
Paper	15	4	6	5	2	3	2	21	0	0	25	33
Other Industrial	152	23	20	14	13	33	2	14	0	0	187	84
Total	334	61	64	47	76	174	20	170	2	48	496	501



	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.	32	5	3	2	7	17	5	49	3	116	50	188
Commercial Buildings	529	26	163	65	41	25	0	0	0	0	733	116
Hospitals	29	6	13	10	12	25	0	0	0	0	54	40
Government Buildings	116	17	7	4	8	15	0	0	0	0	131	36
Hotels	125	15	3	2	10	17	0	0	0	0	138	34
Other Comm./Inst.	1,018	121	40	23	10	17	4	43	0	0	1,072	204
Total	1,851	189	229	105	88	116	9	92	3	116	2,180	618

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

Utah: 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.

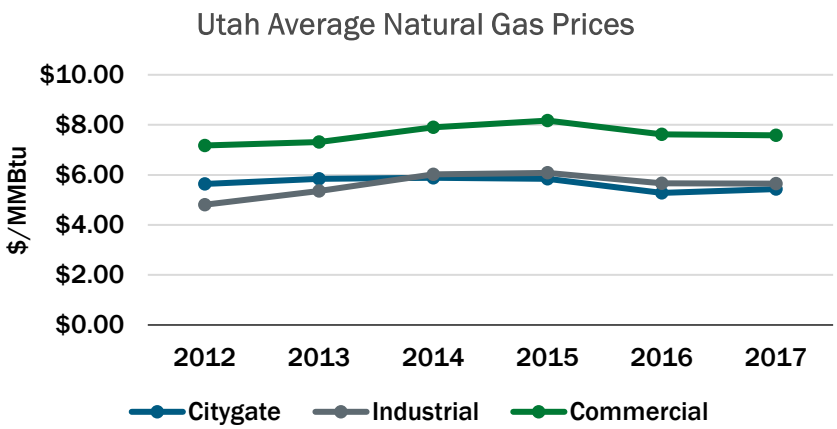
Utah Natural Gas Prices

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.

Utah Average Gas Prices ($/MMBtu) - 2017

Sector	UT Price	U.S. Price
Citygate*	5.43	4.26
Industrial	5.65	4.20
Commercial	7.59	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.

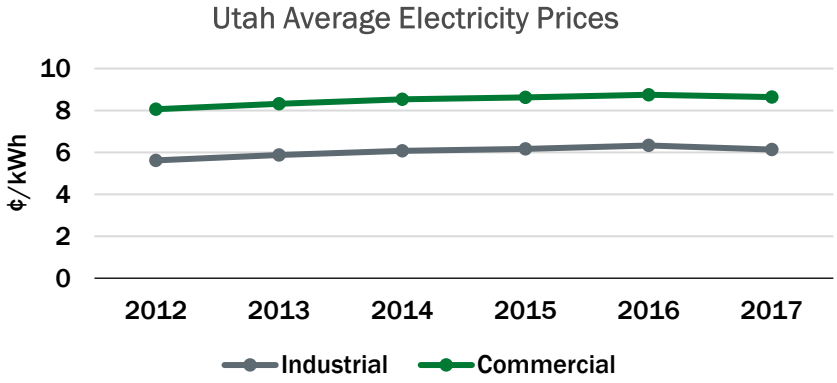


Utah Electricity Prices

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

Utah Average Electricity Prices (¢/kWh) - 2017

Sector	UT Price	U.S. Price
Industrial	6.13	6.88
Commercial	8.64	10.66



Utah 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
City of St. George	-	9.18	9.18
Empire Electric Assn.	7.27	10.59	8.93
Garkane Energy Coop	6.88	9.49	8.18
Dixie Escalante REA	8.14	7.86	8.00
Provo City Corp.	6.52	8.92	7.72
City of Logan	6.53	8.57	7.55
Moon Lake Electric Assn.	6.92	7.66	7.29
City of Murray	6.20	8.26	7.23
Mt. Wheeler Power	6.10	7.95	7.03
Raft Rural Elec Coop	5.16	5.42	5.29