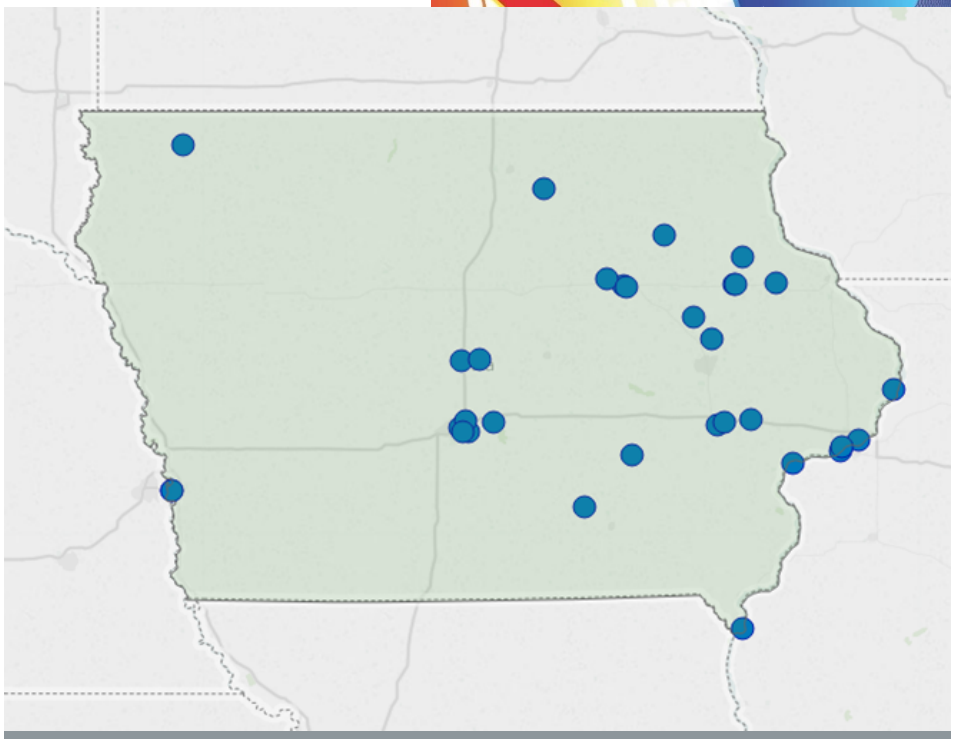
U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

The State of CHP: Iowa

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



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

Iowa: 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 Iowa, and can be accessed by visiting https://doe.icfwebservices.com/chp.

CHP Project Profiles

The Central CHP TAP has compiled information on certain illustrative CHP projects in Iowa. 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.

Central CHP Technical Assistance Partnership

For assistance with questions about specific CHP opportunities in Iowa, please consult with the Central CHP TAP by visiting cchptap.org or contacting the CHP TAP director.

Iowa Existing CHP

Sector	Sites	Capacity (MW)
Industrial	12	616
Commercial/Institutional	16	112
Other	4	22
Total	32	749

Central CHP TAP Director

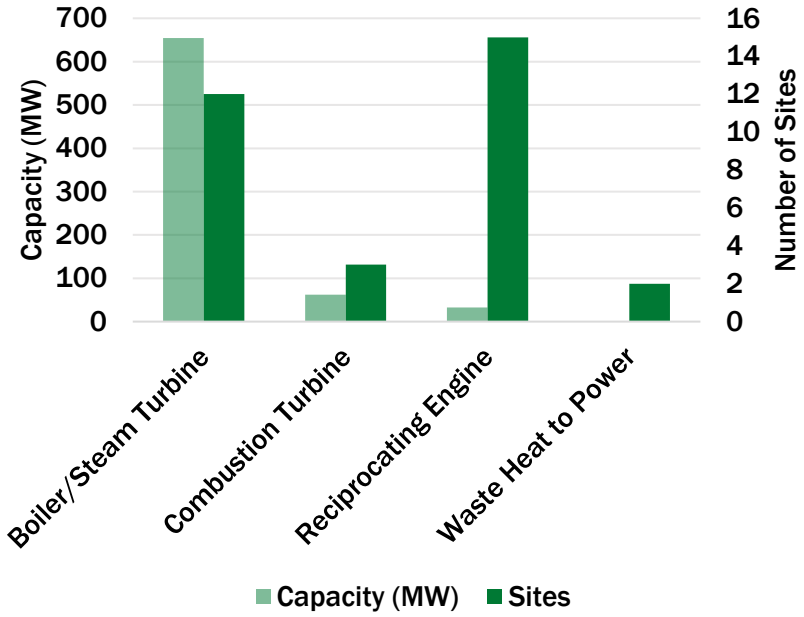
Cliff Haefke

- University of Illinois at Chicago
- chaefk1@uic.edu
- 312-355-3476

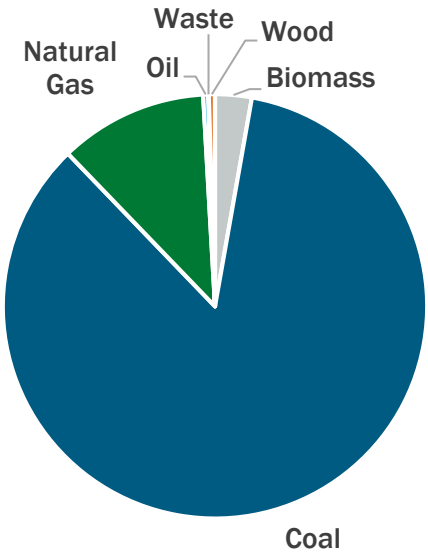
CENTRAL CHP Technical Assistance Partnerships

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

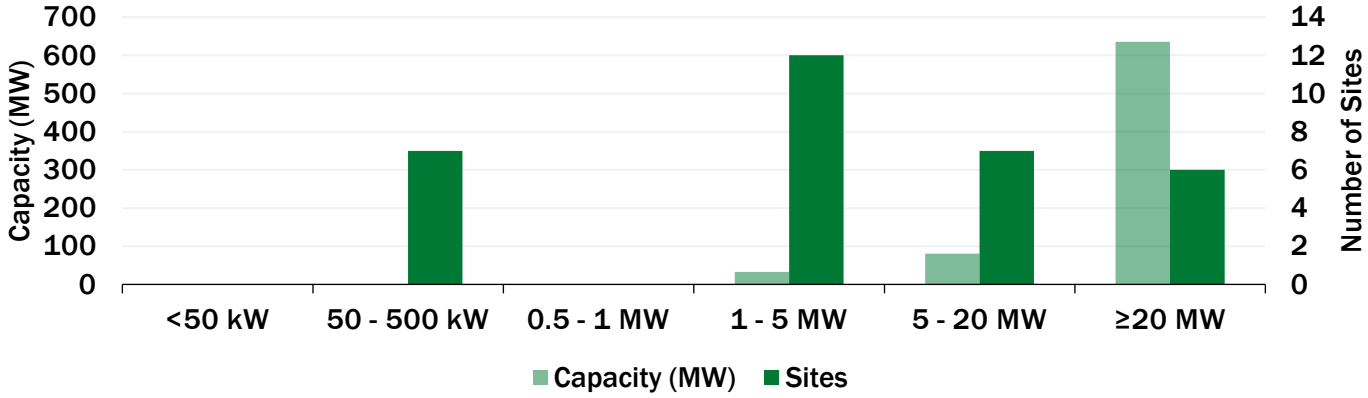
Iowa CHP by Technology



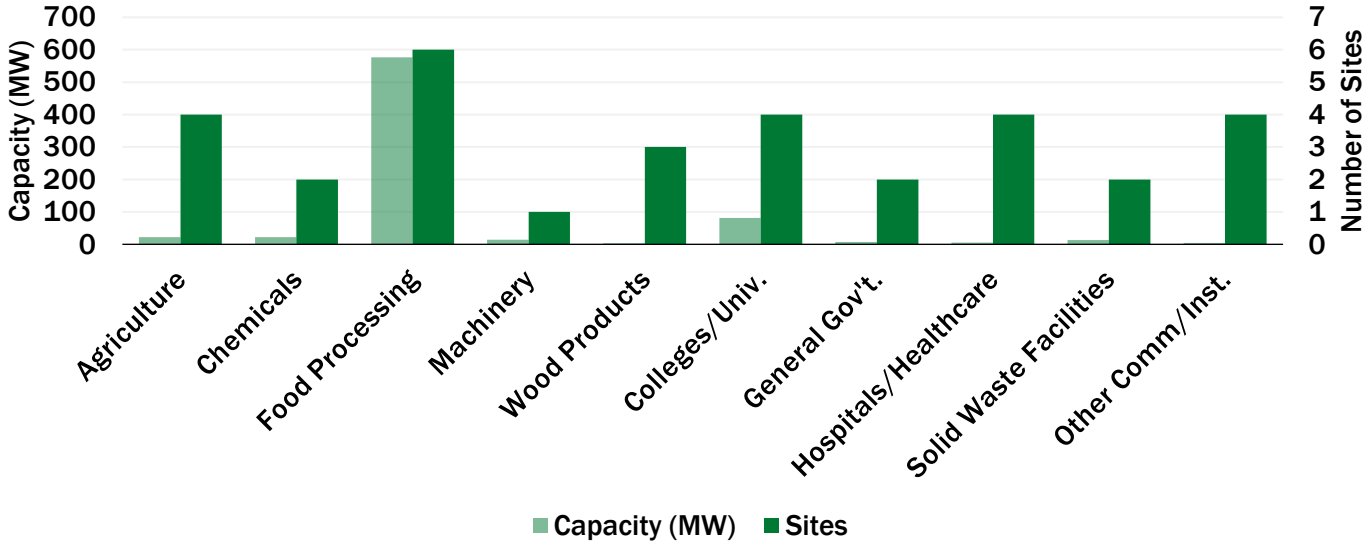
Iowa CHP Capacity (MW) by Fuel



Iowa CHP by Size Range



Iowa CHP by Application

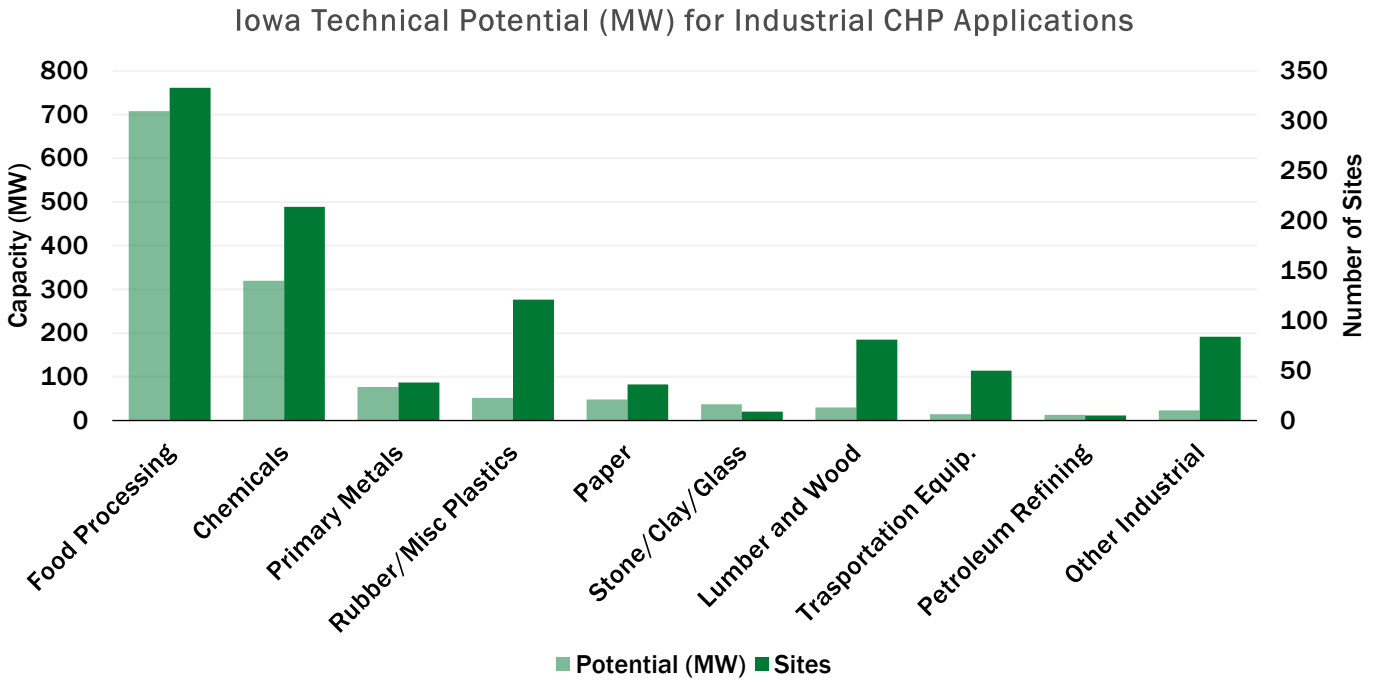


Iowa: Technical Potential for New CHP Installations

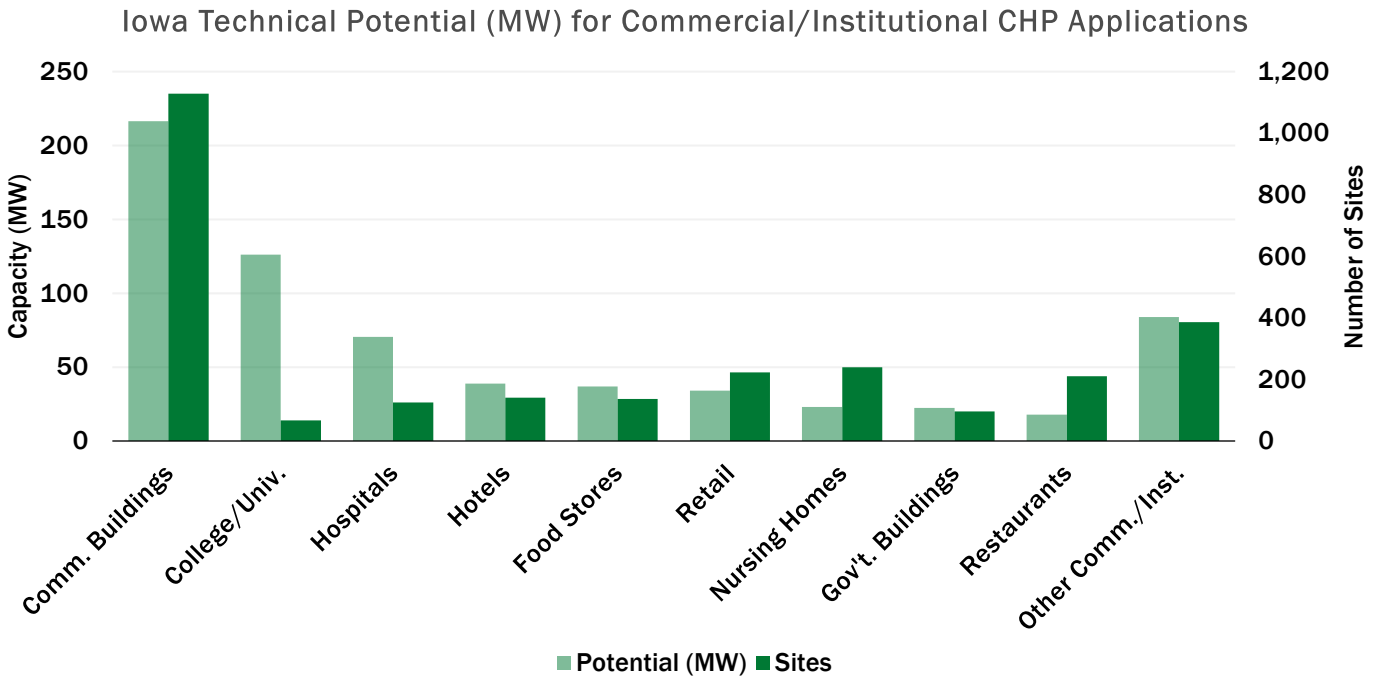
The "Combined Heat and Power (CHP) Technical Potential in the United States" market analysis report provides data on the technical potential in industrial facilities and commercial buildings for "topping cycle" CHP, waste heat to power (WHP) CHP, and district energy CHP in the U.S. Read the report **here**.

Iowa CHP Technical Potential

Sector	Potential Sites	Potential MW
Industrial	971	1,323
Commercial/Institutional	2,752	670
Total	3,723	1,993



	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
Food Processing	201	44	47	36	70	149	9	91	6	390	333	708
Chemicals	121	20	17	12	58	140	17	126	1	21	214	320
Primary Metals	21	4	3	2	11	22	2	21	1	28	38	77
Rubber/Misc Plastics	107	18	8	5	4	6	2	22	0	0	121	52
Paper	21	5	6	4	7	15	2	24	0	0	36	48
Other Industrial	177	28	23	16	27	58	2	16	0	0	229	118
Total	648	119	104	76	177	391	34	299	8	439	971	1,323



	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
Commercial Buildings	722	36	316	126	90	54	0	0	0	0	1,128	217
College/Univ.	33	7	7	4	21	47	5	45	1	23	67	126
Hospitals	83	17	23	14	19	40	0	0	0	0	125	70
Hotels	127	15	5	3	9	21	0	0	0	0	141	39
Food Stores	125	29	12	8	0	0	0	0	0	0	137	37
Other Comm./Inst.	1,094	120	36	21	23	36	1	5	0	0	1,154	181
Total	2,184	224	399	176	162	197	6	50	1	23	2,752	670

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

Iowa: 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.

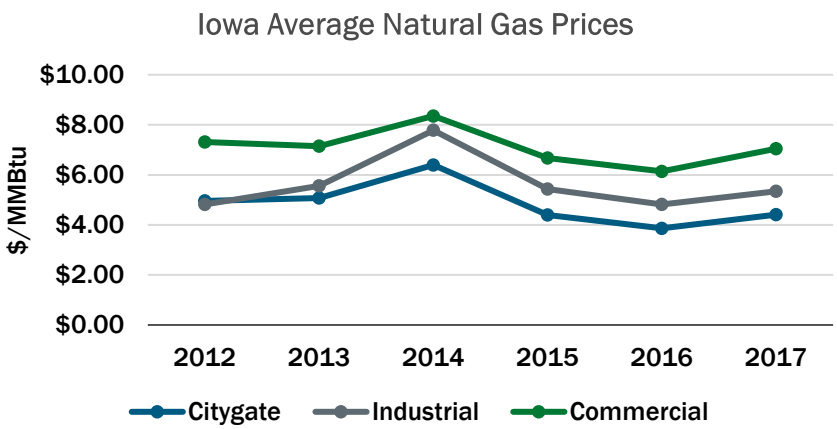
Iowa Natural Gas Prices

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.

Iowa Average Gas Prices ($/MMBtu) - 2017

Sector	IA Price	U.S. Price
Citygate*	4.41	4.26
Industrial	5.34	4.20
Commercial	7.04	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.

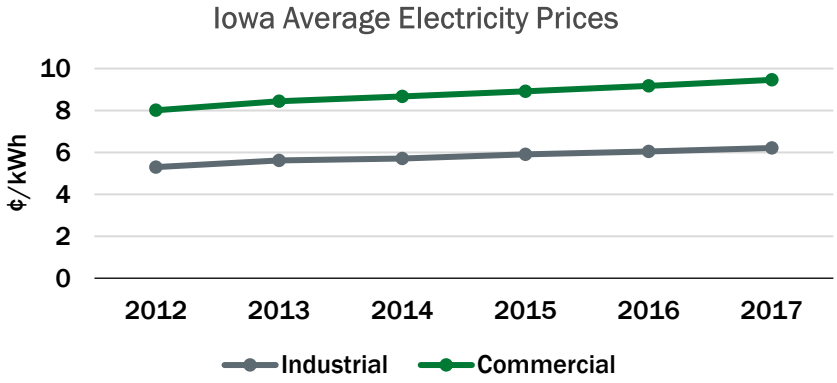


Iowa Electricity Prices

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

Iowa Average Electricity Prices (¢/kWh) - 2017

Sector	IA Price	U.S. Price
Industrial	6.21	6.88
Commercial	9.46	10.66



Iowa Average Delivered Electricity Prices by Utility

Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price (¢/kWh)
Alliant Energy	6.83	11.18	9.00
MidAmerican Energy	5.42	7.94	6.68