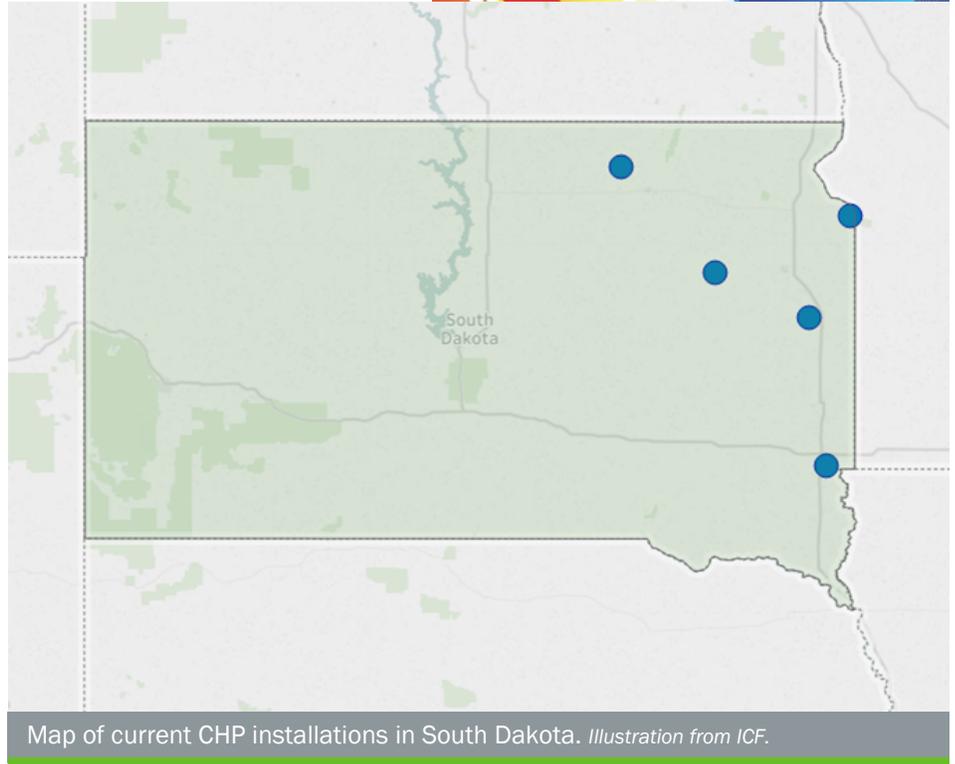




Combined heat and power (CHP) – also referred to as cogeneration – is an efficient and clean approach to generating on-site electric power and useful thermal energy from a single fuel source. The information in this document provides a general overview of the state of CHP in South Dakota, with data on current installations, technical potential, and economics for CHP.



## South Dakota: 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 South Dakota, and can be accessed by visiting [energy.gov/chp-installs](http://energy.gov/chp-installs).

### CHP Project Profiles

The Upper-West CHP TAP has compiled information on certain illustrative CHP projects in South Dakota. You can access these by visiting the Department of Energy’s CHP Project Profiles Database at [energy.gov/chp-projects](http://energy.gov/chp-projects).

### Upper-West CHP Technical Assistance Partnership

For assistance with questions about specific CHP opportunities in South Dakota, please consult with the Upper-West CHP TAP by visiting [uwchptap.org](http://uwchptap.org) or contacting the CHP TAP director.

### South Dakota Existing CHP

Sector	Sites	Capacity (MW)
Industrial	1	5
Commercial/Institutional	4	19
Other	0	0
<b>Total</b>	<b>5</b>	<b>24</b>

**Upper-West CHP TAP  
Director**

Gavin Dillingham, Ph.D.

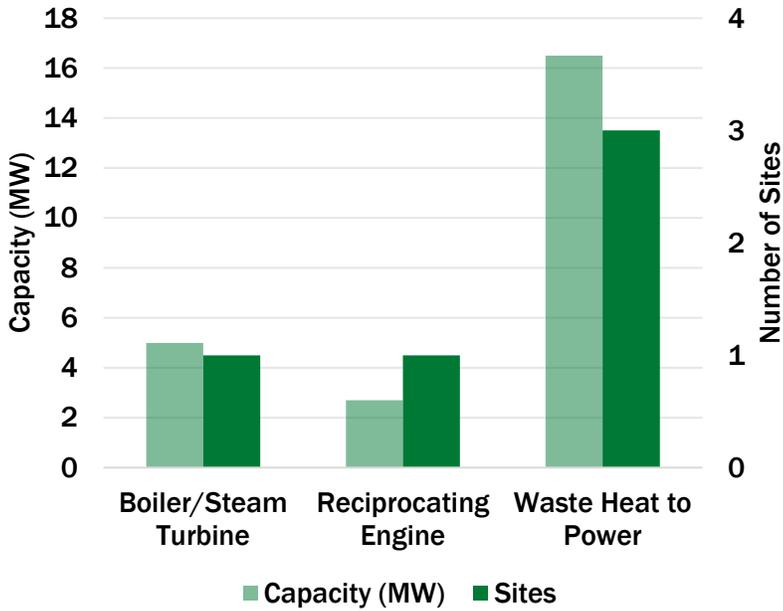
- HARC
- [gdillingham@harcresearch.org](mailto:gdillingham@harcresearch.org)
- 281-216-7147

UPPER-WEST

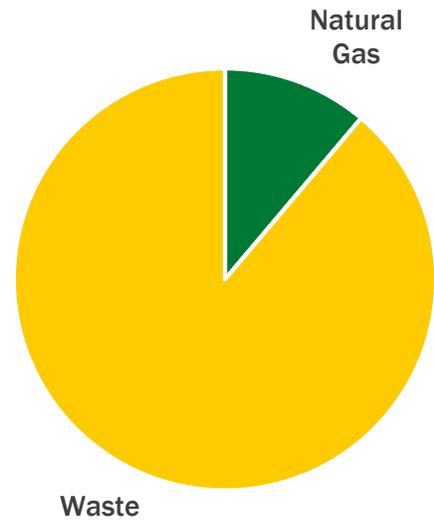


**CHP  
TECHNICAL ASSISTANCE  
PARTNERSHIPS**

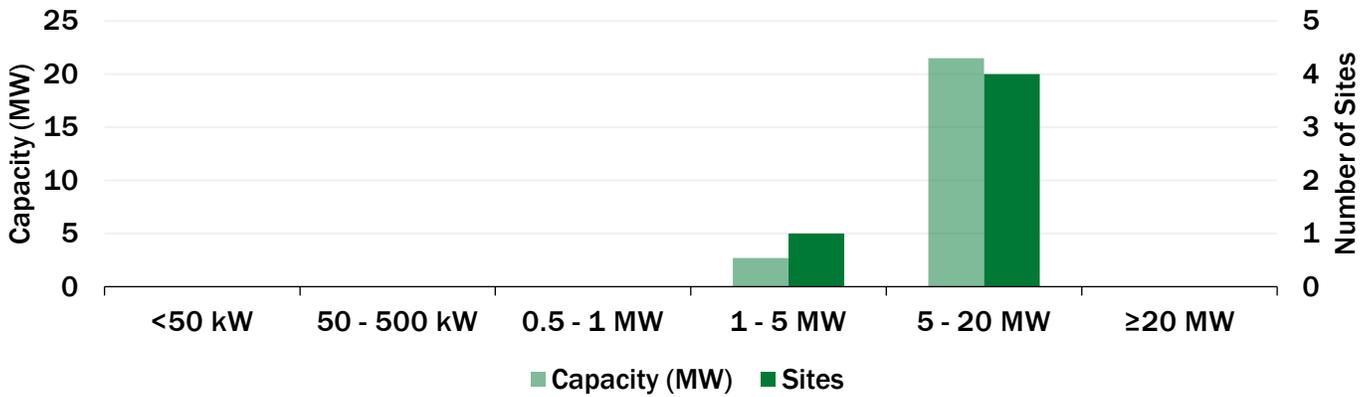
South Dakota CHP by Technology



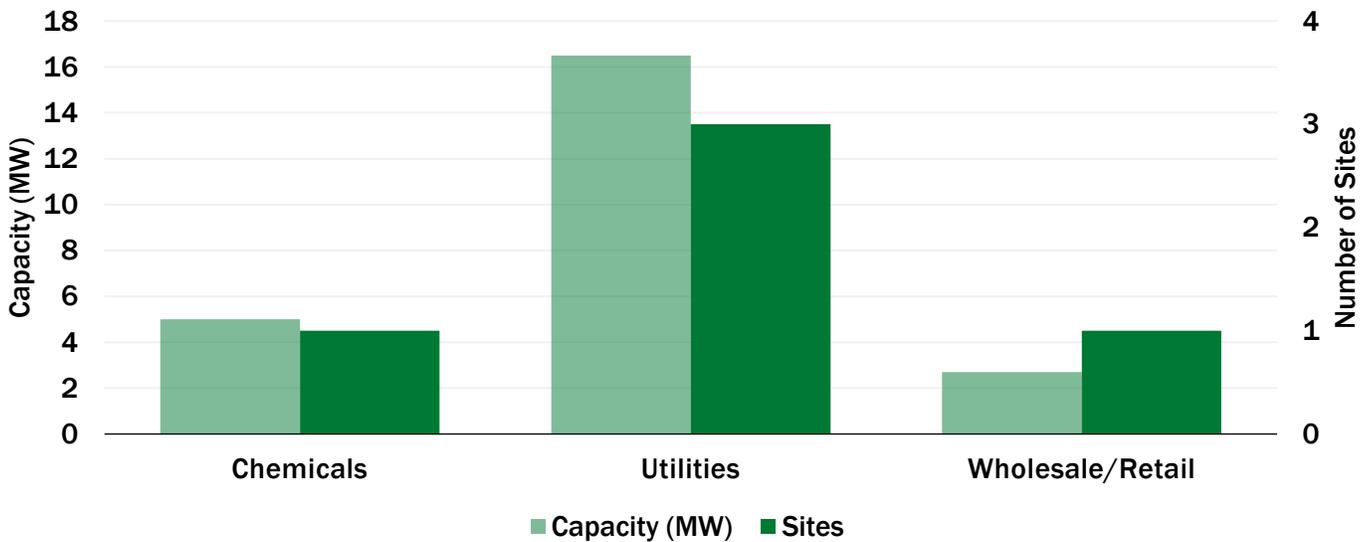
South Dakota CHP Capacity (MW) by Fuel



South Dakota CHP by Size Range



South Dakota CHP by Application



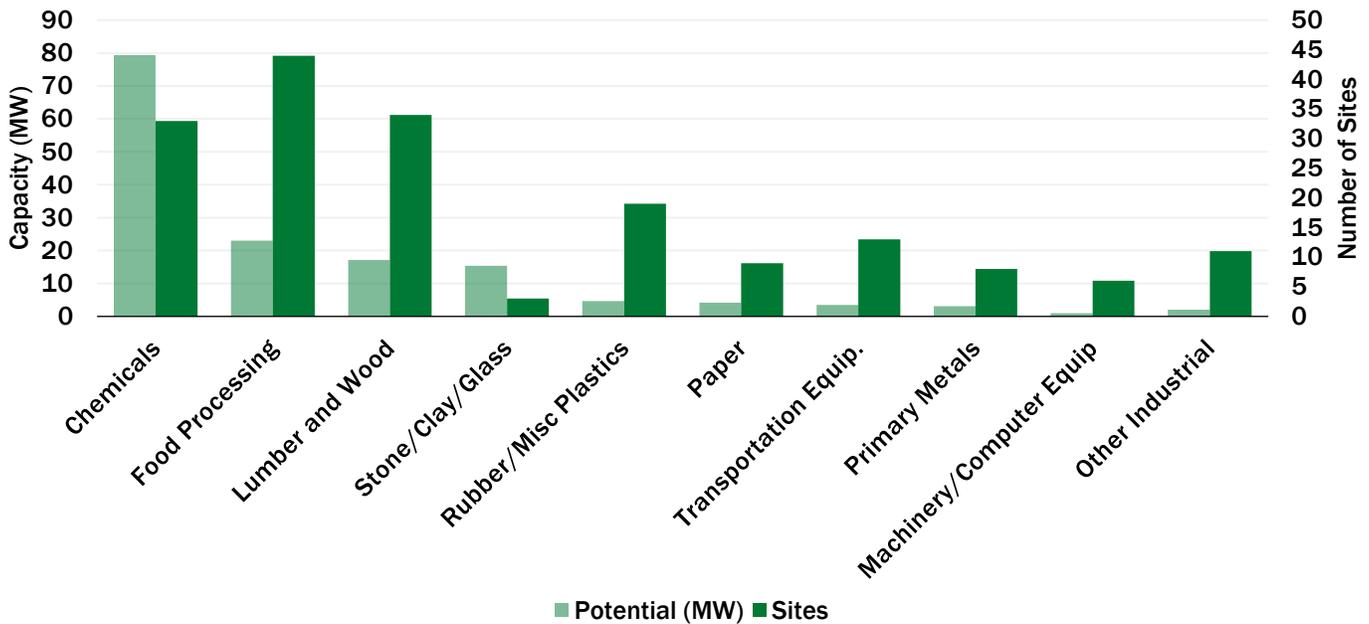
## South Dakota: Technical Potential for New CHP Installations

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](http://energy.gov/chp-potential).

## South Dakota CHP Technical Potential

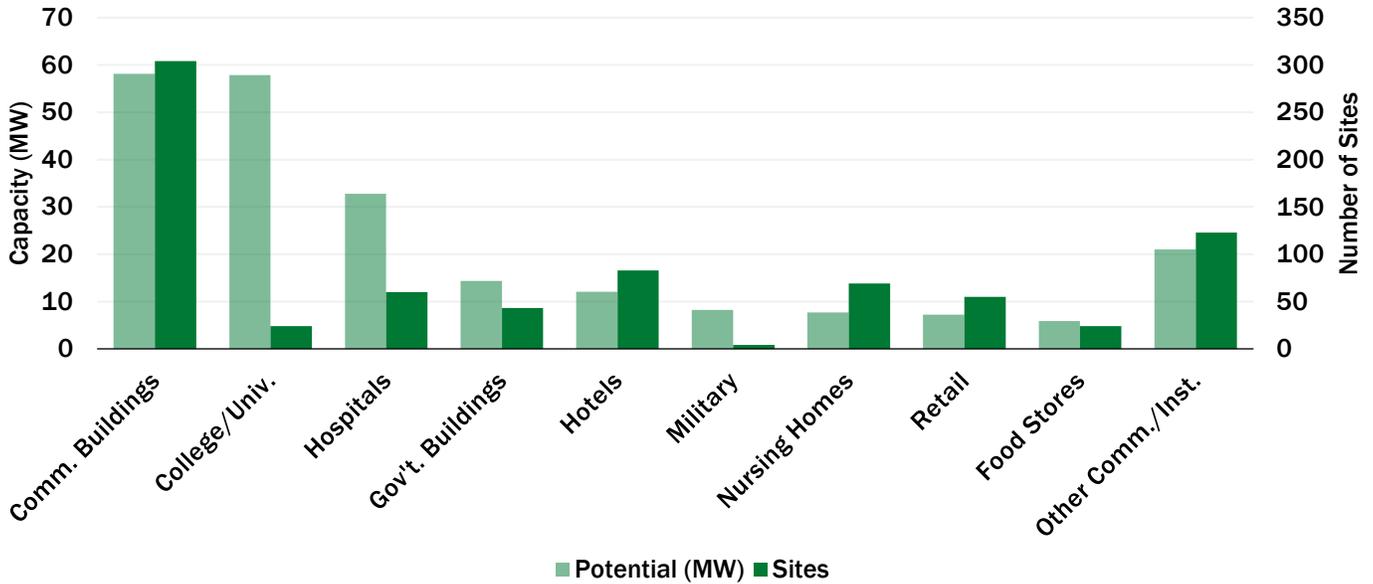
Sector	Potential Sites	Potential MW
Industrial	180	153
Commercial/Institutional	789	225
<b>Total</b>	<b>969</b>	<b>378</b>

South Dakota 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	11	2	1	1	18	46	3	31	0	0	33	79
Food Processing	32	6	5	3	7	14	0	0	0	0	44	23
Lumber and Wood	25	4	5	4	4	9	0	0	0	0	34	17
Stone/Clay/Glass	0	0	0	0	2	6	1	9	0	0	3	15
Rubber/Misc Plastics	16	2	2	1	1	1	0	0	0	0	19	5
Other Industrial	39	7	5	3	3	3	0	0	0	0	47	14
<b>Total</b>	<b>123</b>	<b>21</b>	<b>18</b>	<b>12</b>	<b>35</b>	<b>80</b>	<b>4</b>	<b>40</b>	<b>0</b>	<b>0</b>	<b>180</b>	<b>153</b>

## South Dakota 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.	11	3	3	2	6	14	4	39	0	0	24	58
Commercial Buildings	195	10	85	34	24	14	0	0	0	0	304	58
Hospitals	42	8	10	7	8	18	0	0	0	0	60	33
Government Buildings	38	4	4	3	0	0	1	7	0	0	43	14
Hotels	79	9	3	2	1	1	0	0	0	0	83	12
Other Comm./Inst.	257	29	13	8	4	6	1	7	0	0	275	50
<b>Total</b>	<b>622</b>	<b>63</b>	<b>118</b>	<b>56</b>	<b>43</b>	<b>53</b>	<b>6</b>	<b>53</b>	<b>0</b>	<b>0</b>	<b>789</b>	<b>225</b>

### 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>

## South Dakota: 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.

### South Dakota Natural Gas Prices

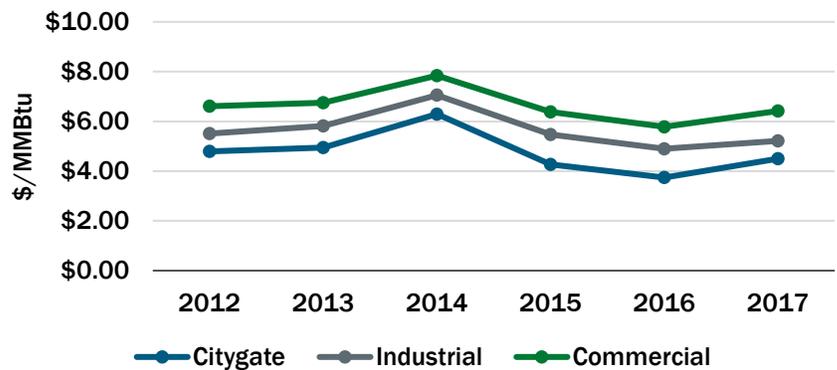
The EIA industrial natural gas price is a full tariff rate, and most large consumers are purchasing gas commodities from marketers at a lower rate.

#### South Dakota Average Gas Prices (\$/MMBtu) - 2017

Sector	SD Price	U.S. Price
Citygate*	4.50	4.26
Industrial	5.22	4.20
Commercial	6.42	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.

South Dakota Average Natural Gas Prices



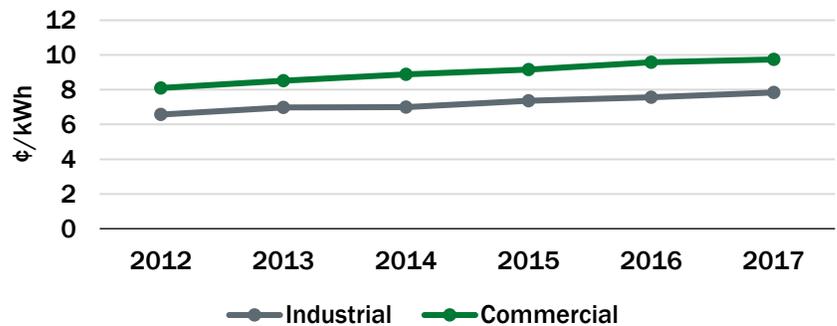
### South Dakota Electricity Prices

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

#### South Dakota Average Electricity Prices (¢/kWh) - 2017

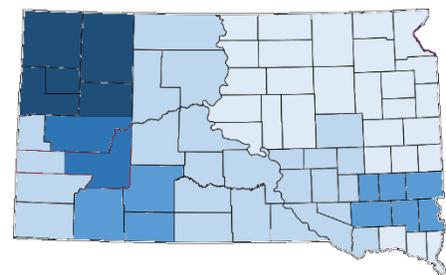
Sector	SD Price	U.S. Price
Industrial	7.84	6.88
Commercial	9.74	10.66

South Dakota Average Electricity Prices



#### South Dakota Average Delivered Electricity Prices by Utility

Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price (¢/kWh)
Grand Electric Coop	-	19.74	19.74
West River Electric Assn.	9.95	12.19	11.07
LaCreek Electric Assn.	10.48	9.25	9.86
Xcel Energy	7.84	10.80	9.32
Black Hills Power	7.01	10.82	8.92
NorthWestern Energy	7.01	10.41	8.71
Montana-Dakota Utilities	5.92	8.34	7.13
Otter Tail Power	5.44	8.46	6.95
MidAmerican Energy	5.42	7.94	6.68



- Montana-Dakota / MidAmerican / Otter Tail
- Black Hills Power / NorthWestern Energy
- Xcel Energy / LaCreek Electric
- West River Electric
- Grand Electric Coop