

# The State of CHP: North Dakota



The information in this document provides a general overview of the state of CHP in North Dakota, with data on current installations, technical potential, and economics for CHP. For help with questions about specific CHP opportunities in North Dakota, please consult with the [Midwest CHP Technical Assistance Partnership](#).

Installed CHP

CHP Technical Potential

CHP Economics

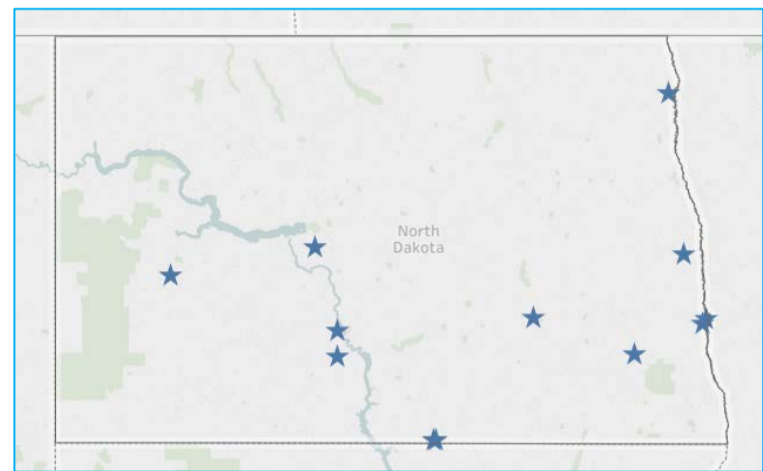
CHP Partners

## North Dakota Installed Base of CHP

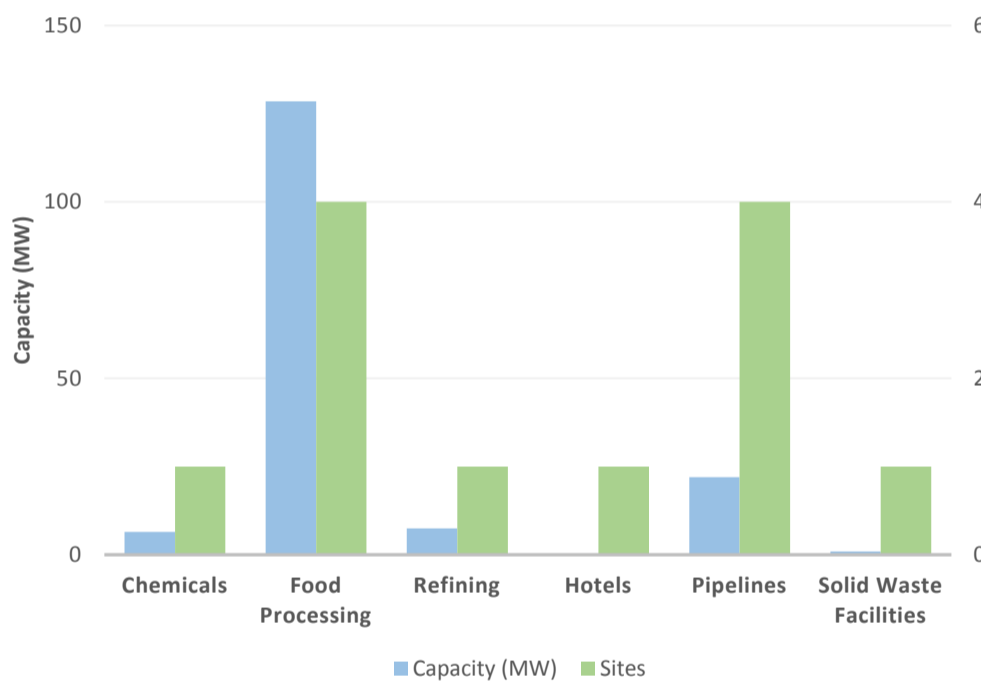
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	6	143
Commercial/Institutional	6	23
Other	0	0
<b>Total</b>	<b>12</b>	<b>165</b>

The Midwest CHP Technical Assistance Partnership has compiled information on certain illustrative CHP projects in North Dakota. You can access these by visiting the Department of Energy's [CHP Project Profiles Database](#).

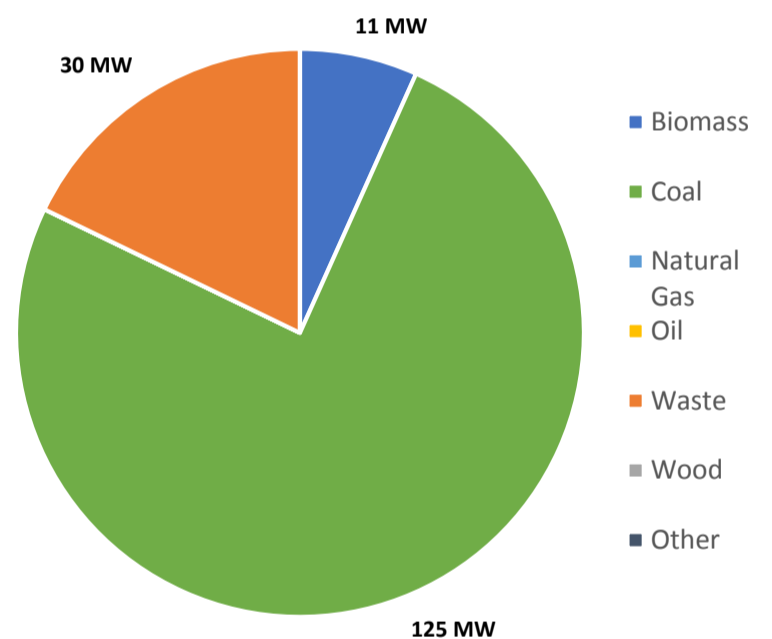


North Dakota CHP by Application



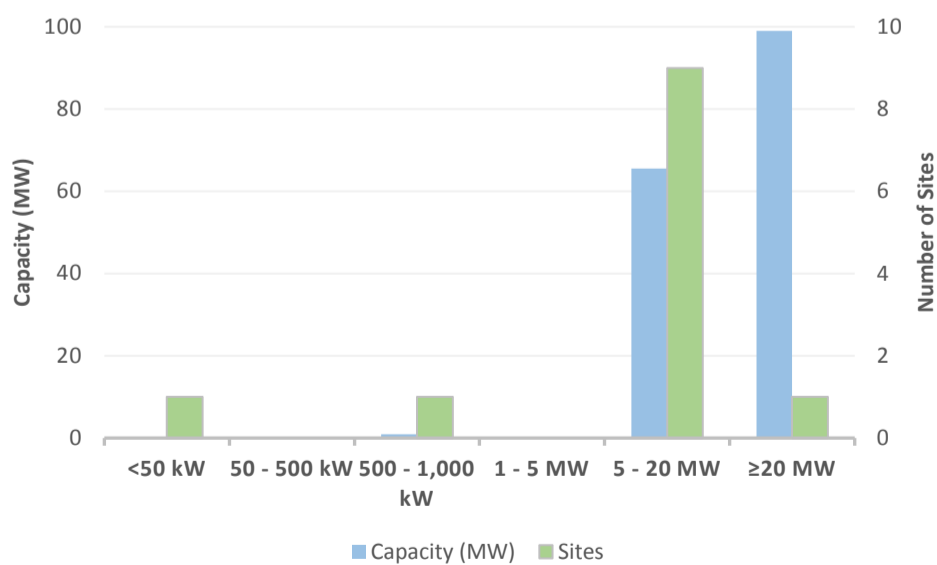
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

North Dakota CHP Capacity (MW) by Fuel Type



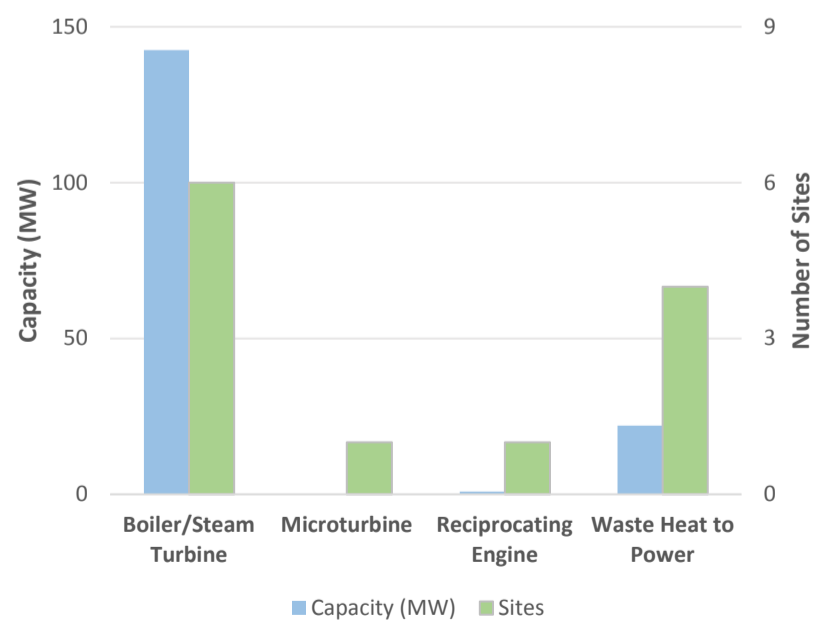
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

North Dakota CHP by Size Range



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

North Dakota 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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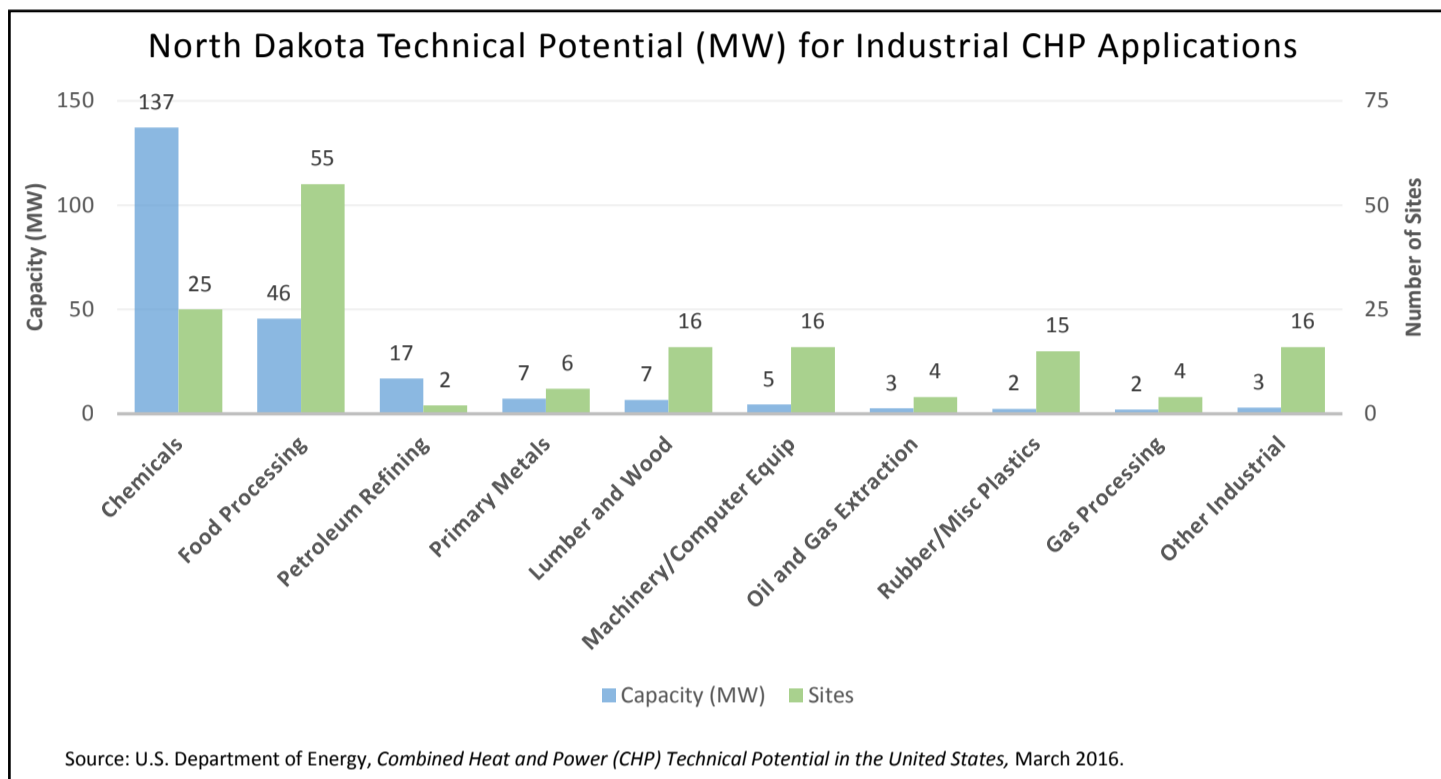
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## North Dakota Technical Potential for New CHP Installations

[U.S. DOE Analysis: Combined Heat and Power \(CHP\) Technical Potential in the United States](#)

Sector	Potential Sites	Potential Capacity (MW)
Industrial	159	731
Commercial/Institutional	228	218
<b>Total</b>	<b>890</b>	<b>445</b>

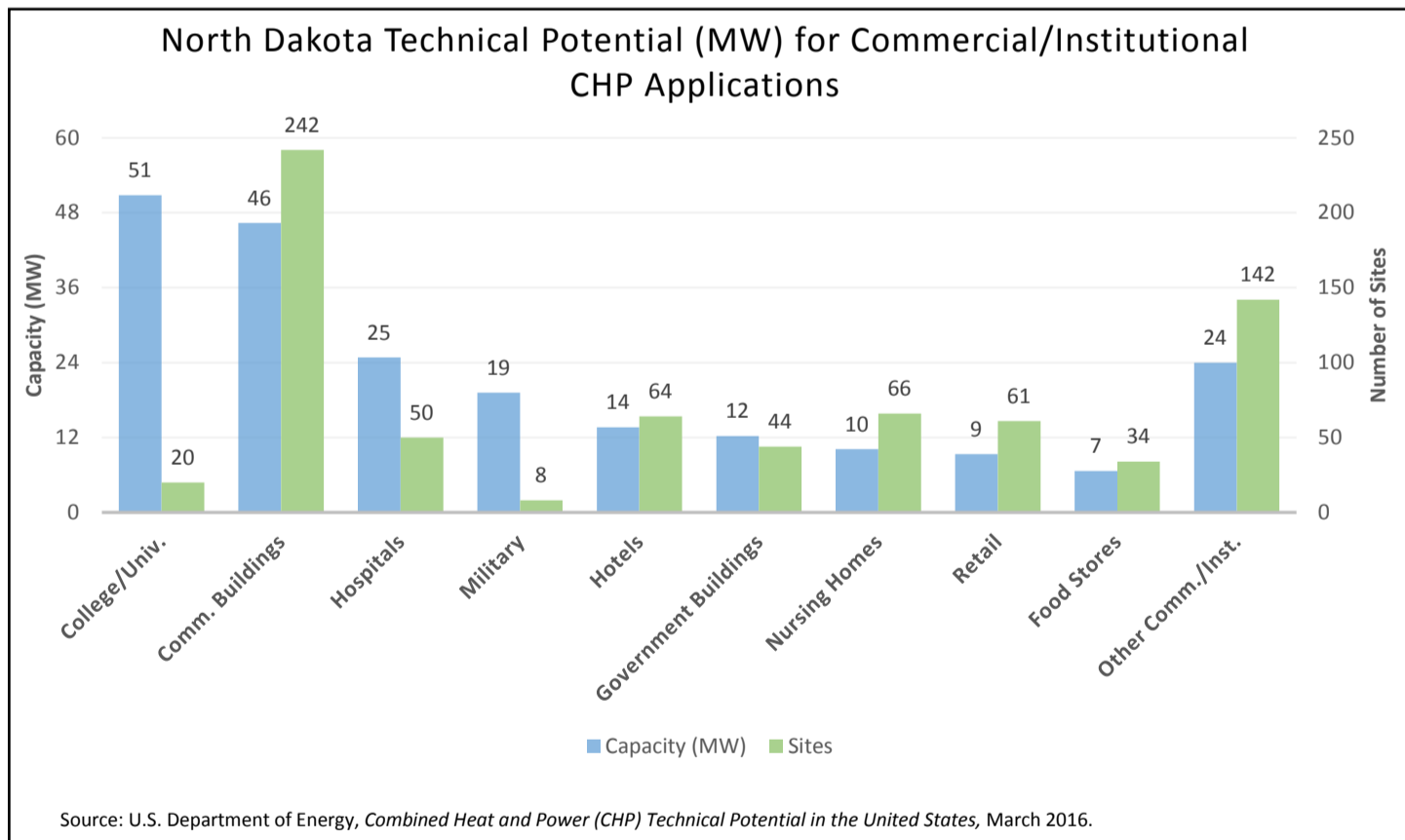


Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

### Technical Potential by CHP Size Range for Top Five Industrial Sectors

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	18	3	0	0	4	10	1	5	2	119	25	137
Food Processing	36	7	8	6	9	21	2	13	0	0	55	46
Petroleum Refining	0	0	0	0	0	0	2	17	0	0	2	17
Primary Metals	2	0.4	2	1	2	6	0	0	0	0	6	7
Lumber and Wood	12	2	2	1	2	3	0	0	0	0	16	7
Other Industrial	47	8	7	5	1	2	0	0	0	0	55	14
<b>Total</b>	<b>115</b>	<b>20</b>	<b>19</b>	<b>13</b>	<b>18</b>	<b>41</b>	<b>5</b>	<b>35</b>	<b>2</b>	<b>119</b>	<b>159</b>	<b>228</b>

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

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.	9	2	3	2	6	16	2	31	0	0	20	51
Commercial Buildings	155	8	68	27	19	11	0	0	0	0	242	46
Hospitals	38	7	7	5	5	13	0	0	0	0	50	25
Military	5	1	1	1	0	0	2	18	0	0	8	19
Hotels	56	7	5	3	3	4	0	0	0	0	64	14
Other Comm./Inst.	323	39	18	11	5	7	1	5	0	0	347	63
<b>Total</b>	<b>586</b>	<b>64</b>	<b>102</b>	<b>49</b>	<b>38</b>	<b>52</b>	<b>5</b>	<b>54</b>	<b>0</b>	<b>0</b>	<b>731</b>	<b>218</b>

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

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## North 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.

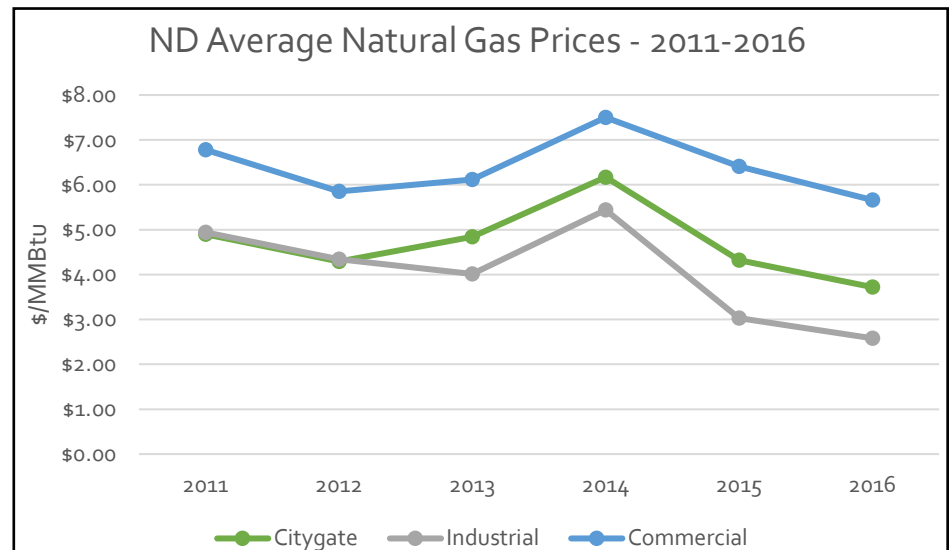
### North Dakota Natural Gas Prices

#### North Dakota Average Gas Prices - 2016

Sector	ND Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	3.72	3.75
Industrial	2.58	3.39
Commercial	5.66	7.22

Source: U.S. Energy Information Administration, "Natural Gas Prices", [https://www.eia.gov/dnav/ng/ng\\_pri\\_sum\\_dcu\\_SND\\_a.htm](https://www.eia.gov/dnav/ng/ng_pri_sum_dcu_SND_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.



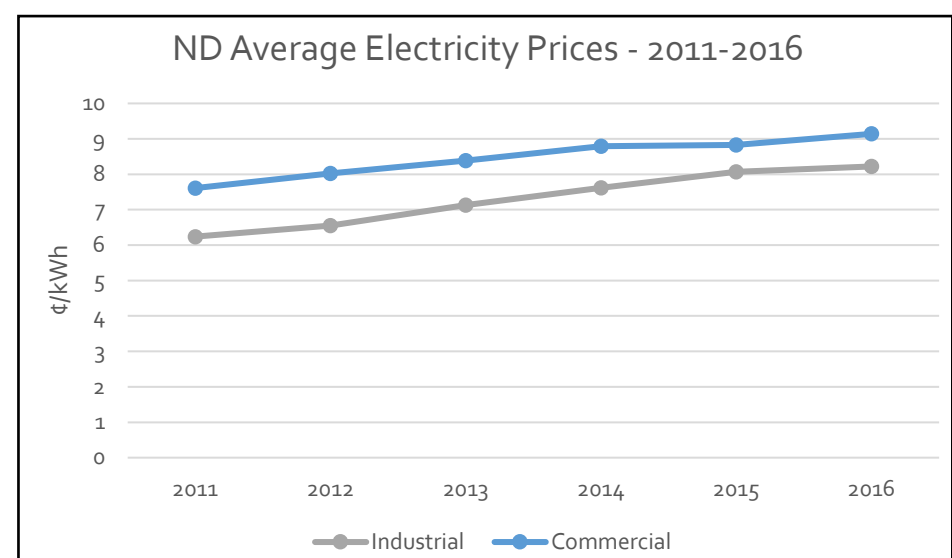
### North Dakota Electricity Prices

#### North Dakota Average Electricity Prices - 2016

Sector	ND Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	8.22	6.75
Commercial	9.14	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.



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

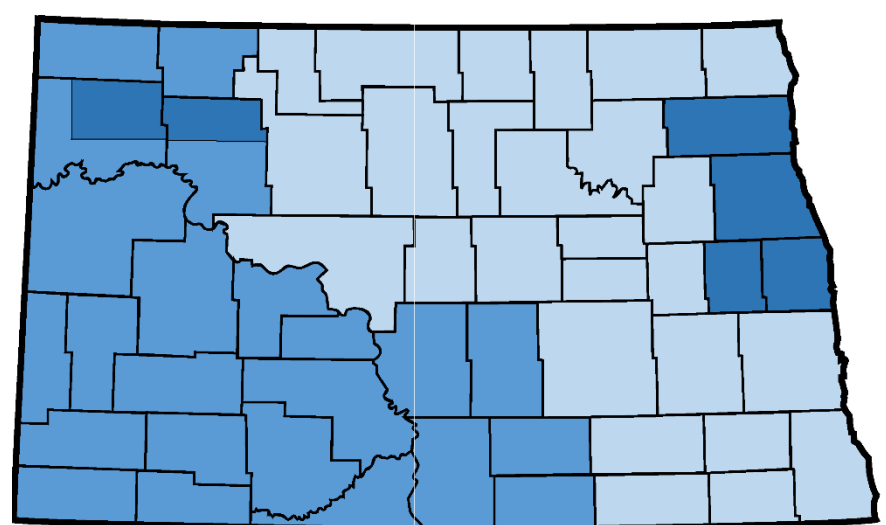
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Xcel Energy	7.46	9.26	8.36
Montana-Dakota Utilities	5.67	8.33	7.00
Otter Tail Power	5.66	7.94	6.80

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.

#### North Dakota Electricity Prices – Heat Map



Legend:  
 Light Blue: Otter Tail Power  
 Medium Blue: Montana-Dakota Utilities  
 Dark Blue: Xcel Energy

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Potential

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## Department of Energy CHP Partnerships

### Midwest CHP Technical Assistance Partnership



U.S. DEPARTMENT OF ENERGY  
**CHP Technical Assistance Partnerships**  
MIDWEST

Midwest CHP TAP Director: Cliff Haefke  
Phone: 312-355-3476  
Email: [chaefk1@uic.edu](mailto:chaefk1@uic.edu)

### 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 North Dakota.

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U.S. DEPARTMENT OF ENERGY  
**CHP Technical Assistance Partnerships**