

# The State of CHP: Colorado



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

Installed CHP

CHP Technical Potential

CHP Economics

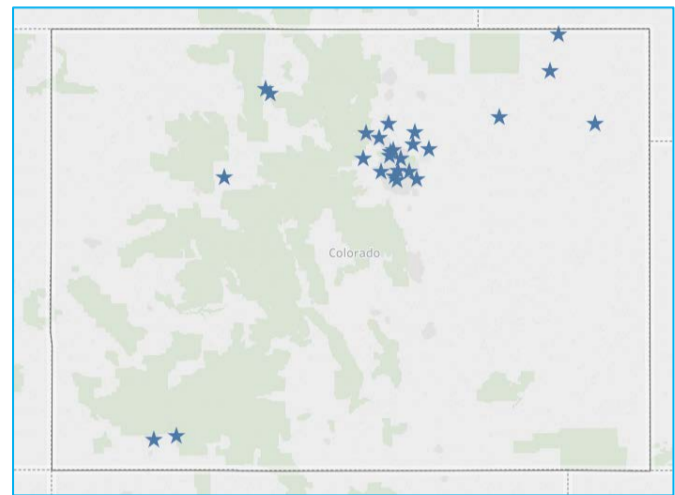
CHP Partners

## Colorado Installed Base of CHP

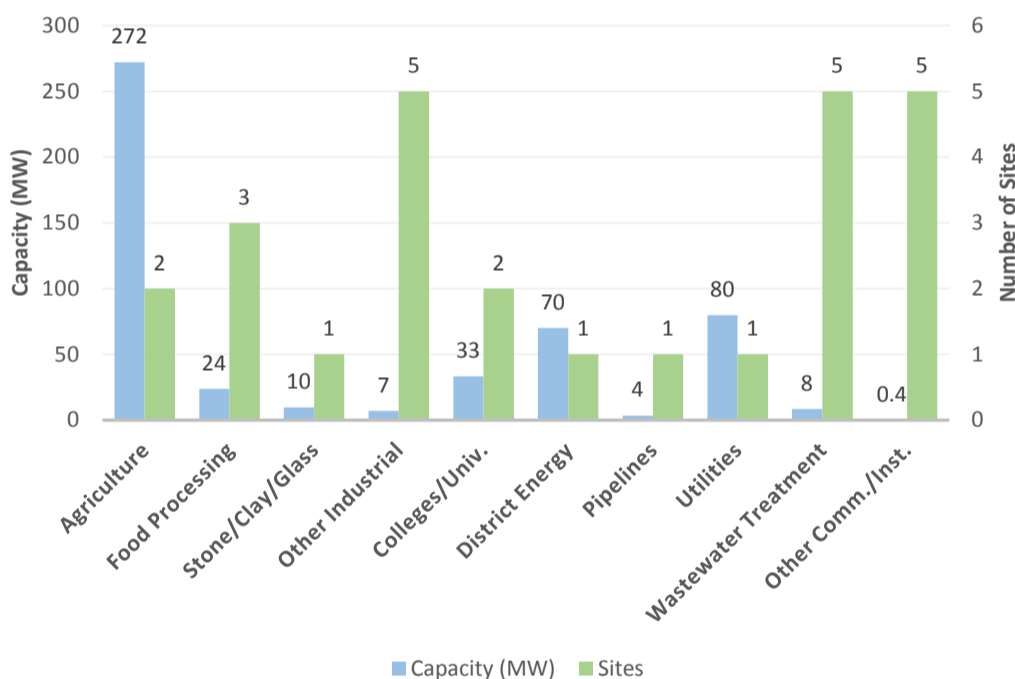
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	8	40
Commercial/Institutional	15	195
Other	3	273
<b>Total</b>	<b>26</b>	<b>508</b>

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

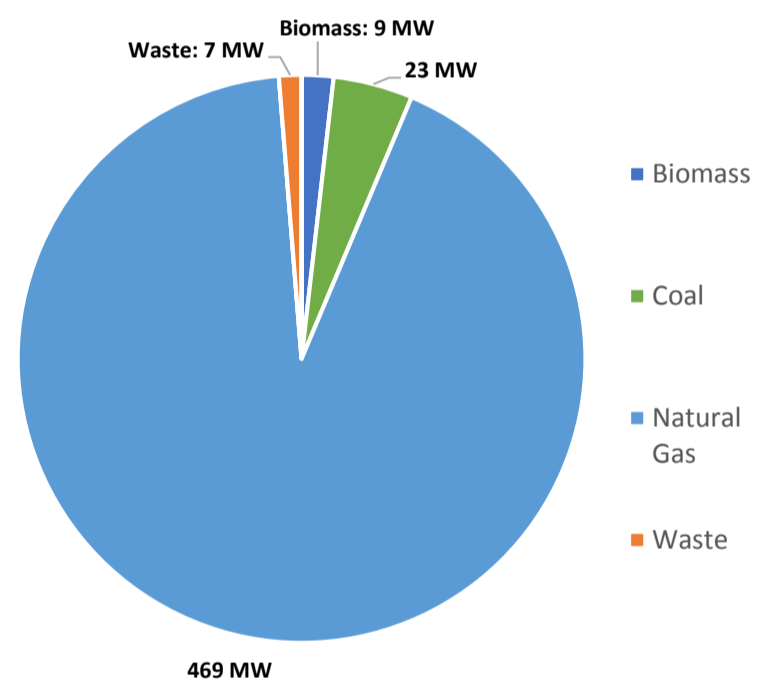


Colorado CHP by Application



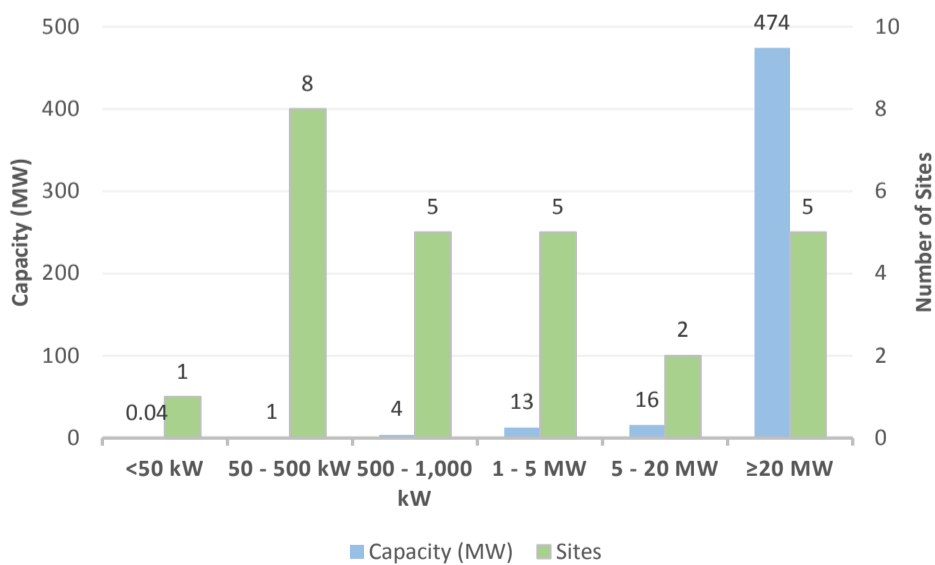
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Colorado CHP Capacity (MW) by Fuel Type



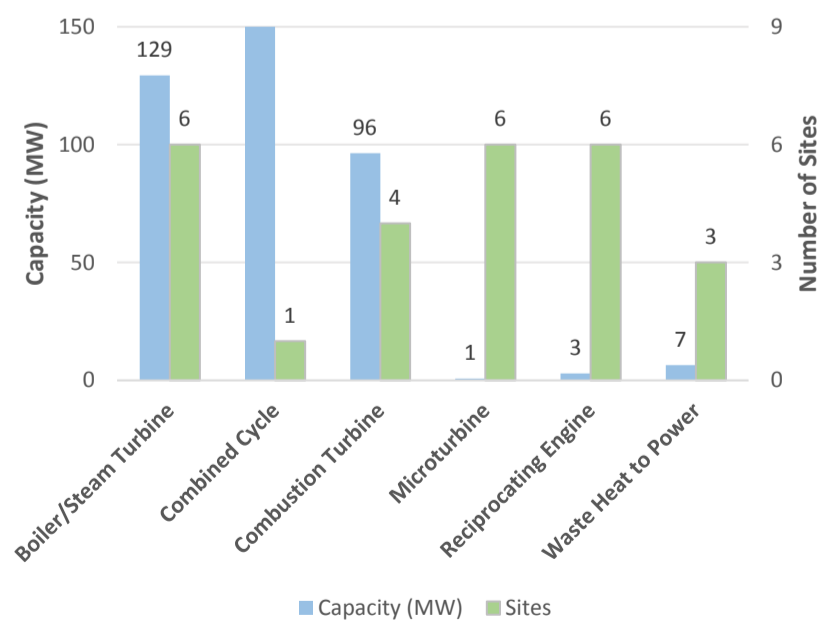
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Colorado CHP by Size Range



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

Colorado 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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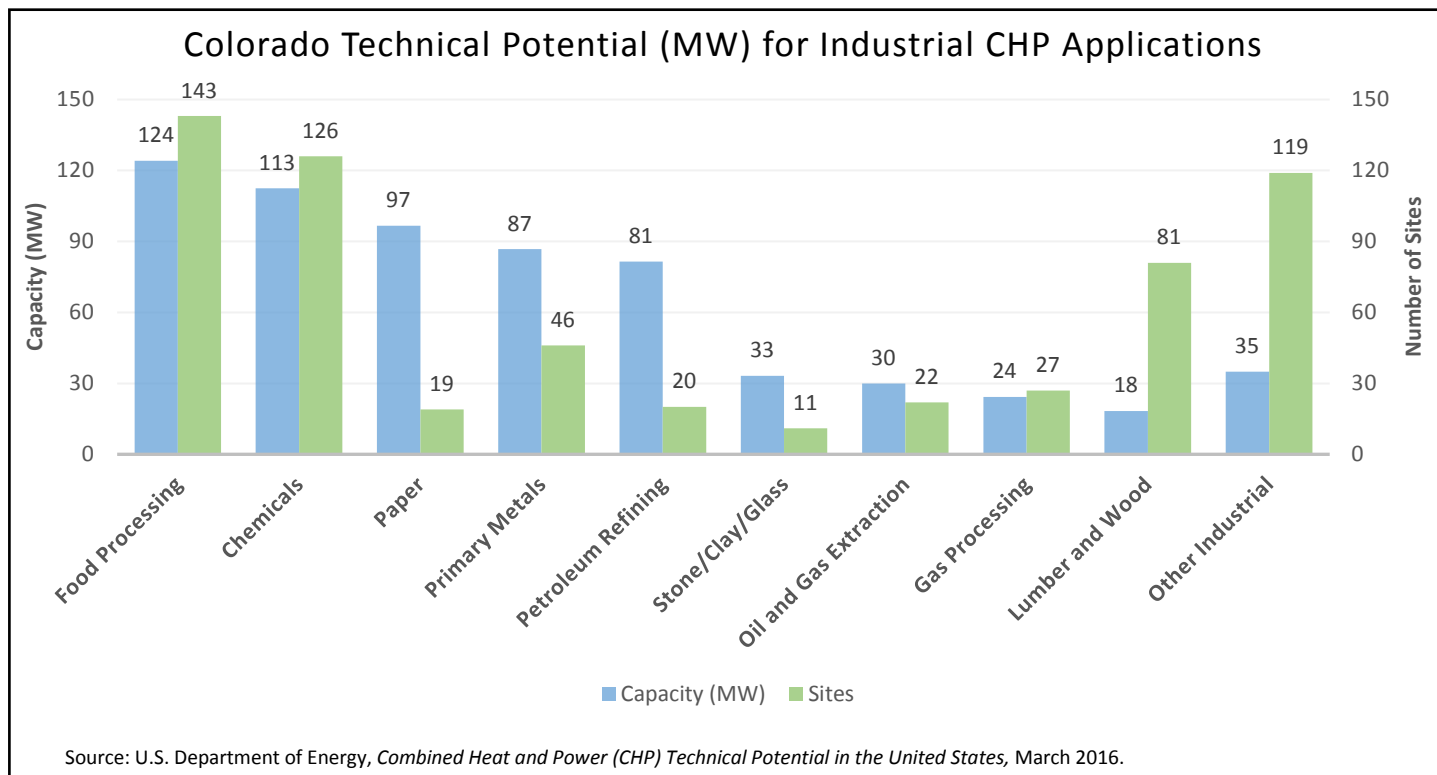
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## Colorado Technical Potential for New CHP Installations

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

Sector	Potential Sites	Potential Capacity (MW)
Industrial	614	642
Commercial/Institutional	3,930	1,077
<b>Total</b>	<b>4,544</b>	<b>1,718</b>

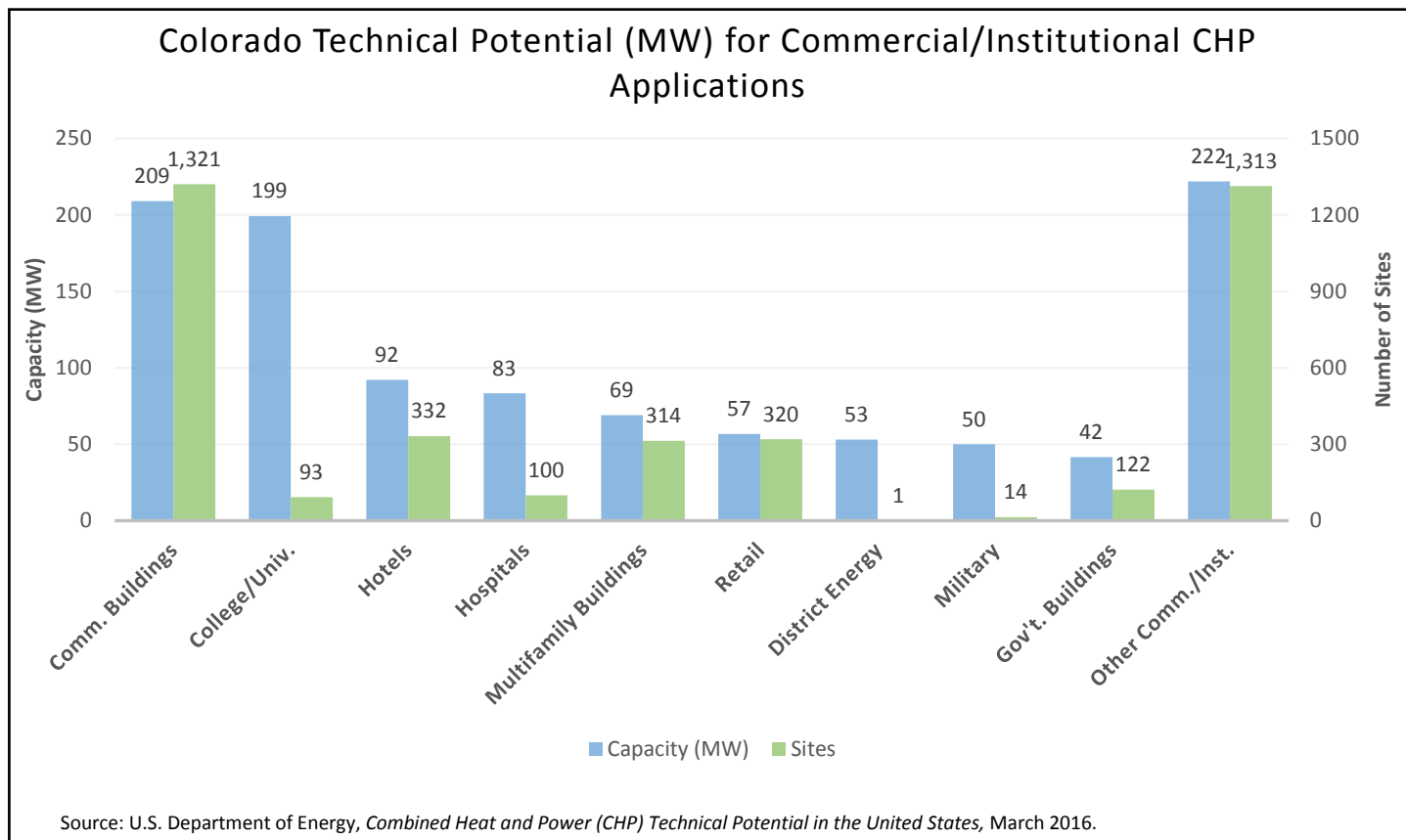


Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

### 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
Food Processing	98	22	20	14	21	42	4	47	0	0	143	124
Chemicals	82	15	23	16	14	28	7	53	0	0	126	113
Paper	13	4	2	1	3	8	0	0	1	84	19	97
Primary Metals	25	6	13	10	6	16	0	0	2	54	46	87
Petroleum Refining	1	0	1	1	15	37	2	16	1	28	20	81
Other Industrial	218	36	17	11	19	42	6	52	0	0	260	141
<b>Total</b>	<b>437</b>	<b>83</b>	<b>76</b>	<b>54</b>	<b>78</b>	<b>171</b>	<b>19</b>	<b>167</b>	<b>4</b>	<b>166</b>	<b>614</b>	<b>642</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
Commercial Buildings	954	48	294	118	73	44	0	0	0	0	1,321	209
College/Univ.	51	9	8	5	25	68	8	84	1	33	93	199
Hotels	287	37	22	14	23	41	0	0	0	0	332	92
Hospitals	60	15	12	9	28	60	0	0	0	0	100	83
Multifamily Buildings	221	17	80	40	12	12	0	0	0	0	314	69
Other Comm./Inst.	1,682	212	54	36	28	49	3	22	3	106	1,770	423
<b>Total</b>	<b>3,255</b>	<b>337</b>	<b>470</b>	<b>221</b>	<b>189</b>	<b>274</b>	<b>11</b>	<b>106</b>	<b>4</b>	<b>139</b>	<b>3,930</b>	<b>1,077</b>

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

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## Colorado 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.

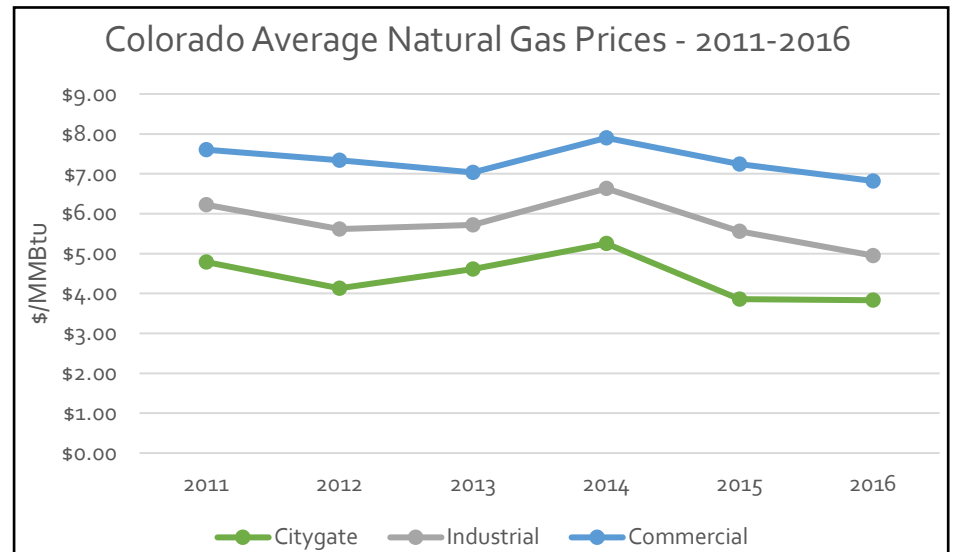
### Colorado Natural Gas Prices

#### Colorado Average Gas Prices - 2016

Sector	CO Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	3.83	3.75
Industrial	4.95	3.39
Commercial	6.82	7.22

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



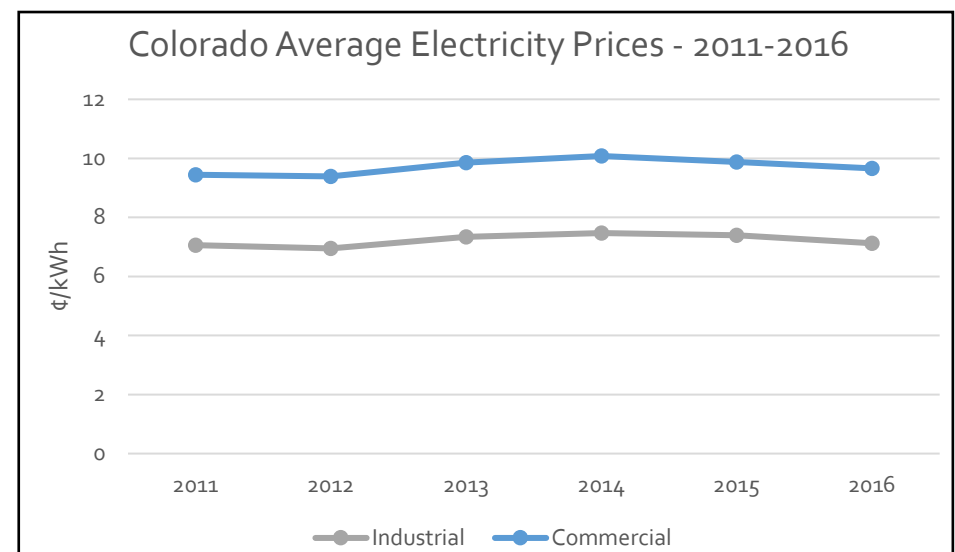
### Colorado Electricity Prices

#### Colorado Average Electricity Prices - 2016

Sector	CO Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	7.13	6.75
Commercial	9.66	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.



#### Colorado Average Delivered Electricity Prices by Utility

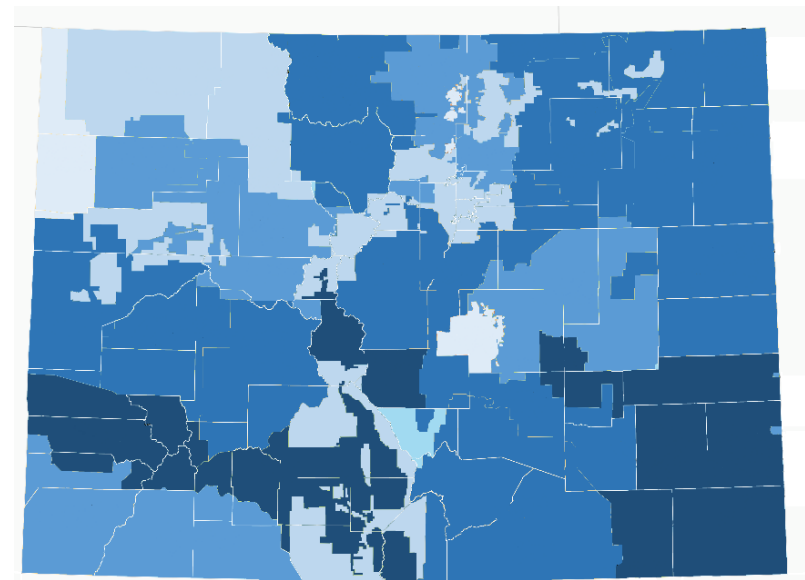
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Black Hills/CO Elec Util	8.96	12.84	10.90
Intermountain Rural Elec	8.72	11.62	10.17
United Power	8.64	10.65	9.64
Xcel Energy	6.51	9.63	8.07
City of Colorado Springs	7.59	7.98	7.78

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.

#### Colorado Electricity Prices – Heat Map



Legend for Colorado Electricity Prices – Heat Map:

- \$6.00-\$8.00
- \$8.00-\$9.00
- \$9.00-\$10.00
- \$10.00-\$13.00
- \$13.00-\$15.00

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CHP Technical  
Potential

CHP Economics

CHP Partners

## Department of Energy CHP Partnerships

### Southwest CHP Technical Assistance Partnership



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

Southwest CHP TAP Director: Gavin Dillingham  
Phone: 281-216-7147  
Email: [gdillingham@harcresearch.org](mailto:gdillingham@harcresearch.org)

### 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 Colorado.

**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.



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