

# The State of CHP: Missouri



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

Installed CHP

CHP Technical Potential

CHP Economics

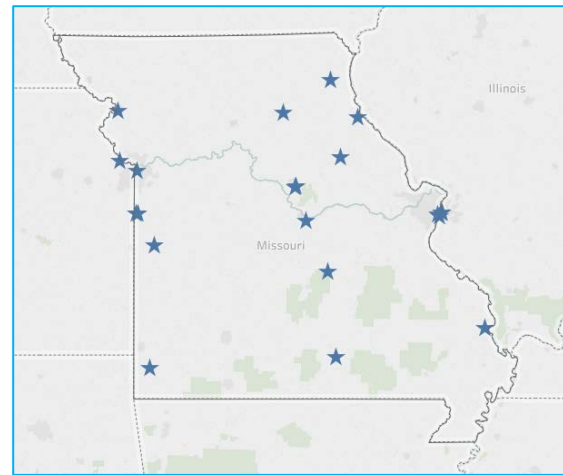
CHP Partners

## Missouri Installed Base of CHP

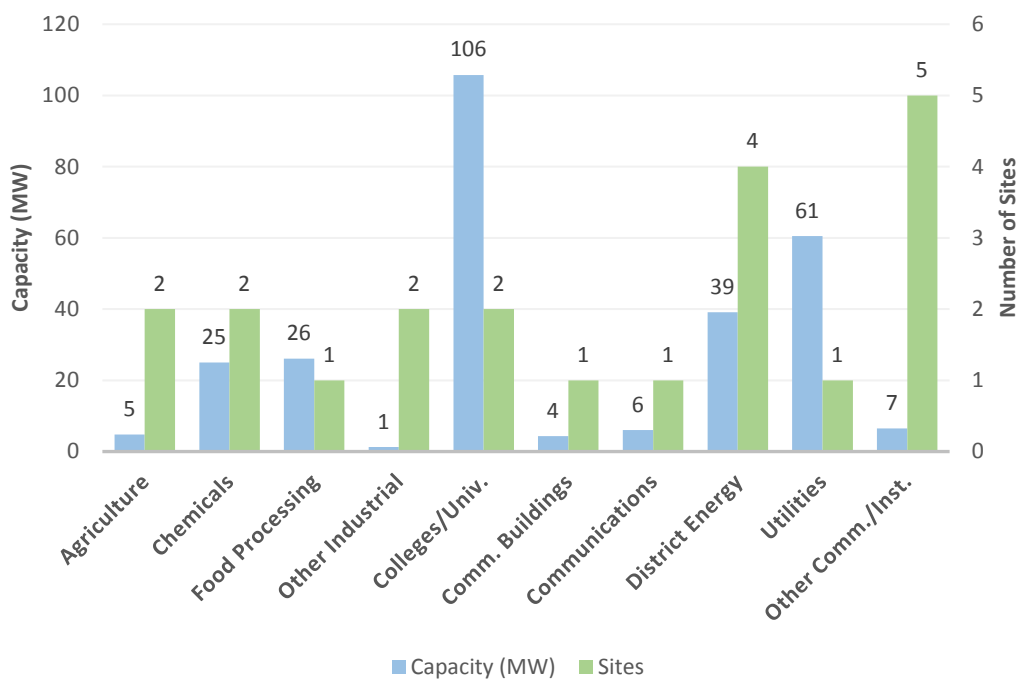
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	5	52
Commercial/Institutional	14	222
Other	2	5
<b>Total</b>	<b>21</b>	<b>279</b>

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

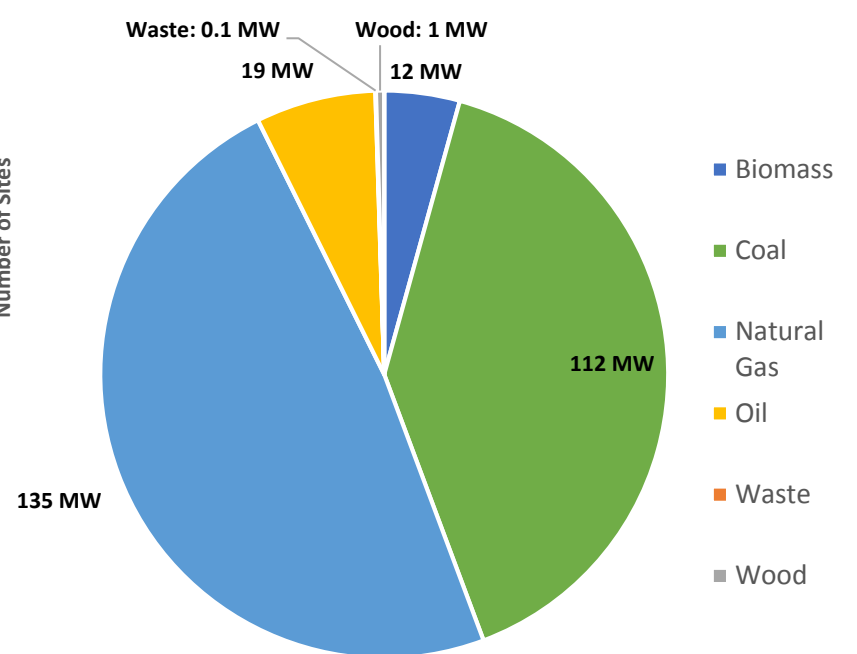


### Missouri CHP by Application



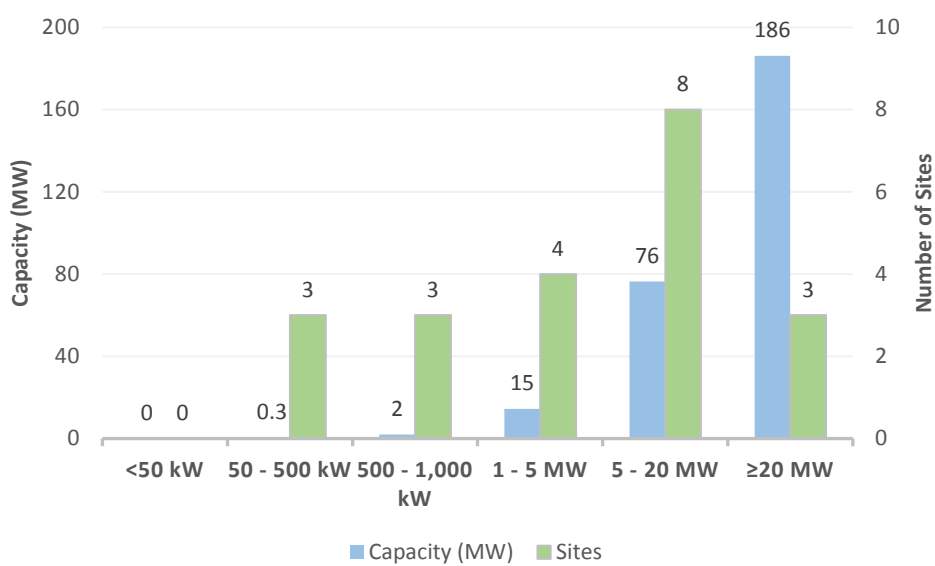
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

### Missouri CHP Capacity (MW) by Fuel Type



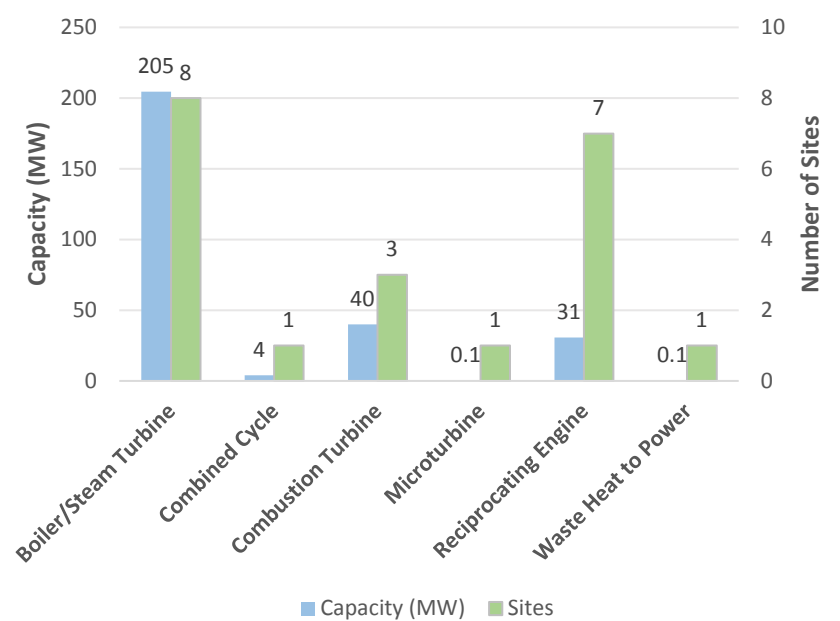
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

### Missouri CHP by Size Range



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

### Missouri 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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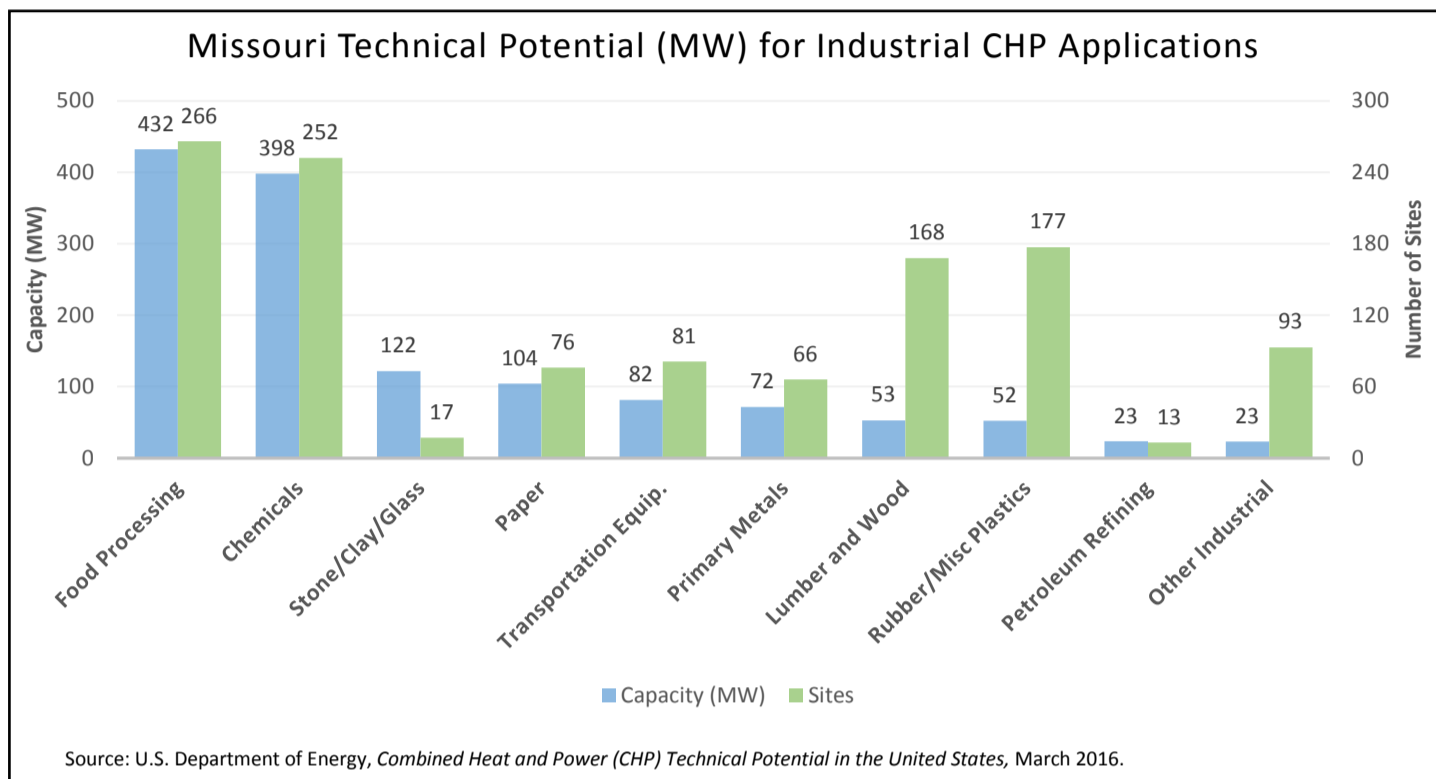
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## Missouri Technical Potential for New CHP Installations

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

Sector	Potential Sites	Potential Capacity (MW)
Industrial	1,209	1,361
Commercial/Institutional	5,175	1,929
<b>Total</b>	<b>6,384</b>	<b>3,290</b>

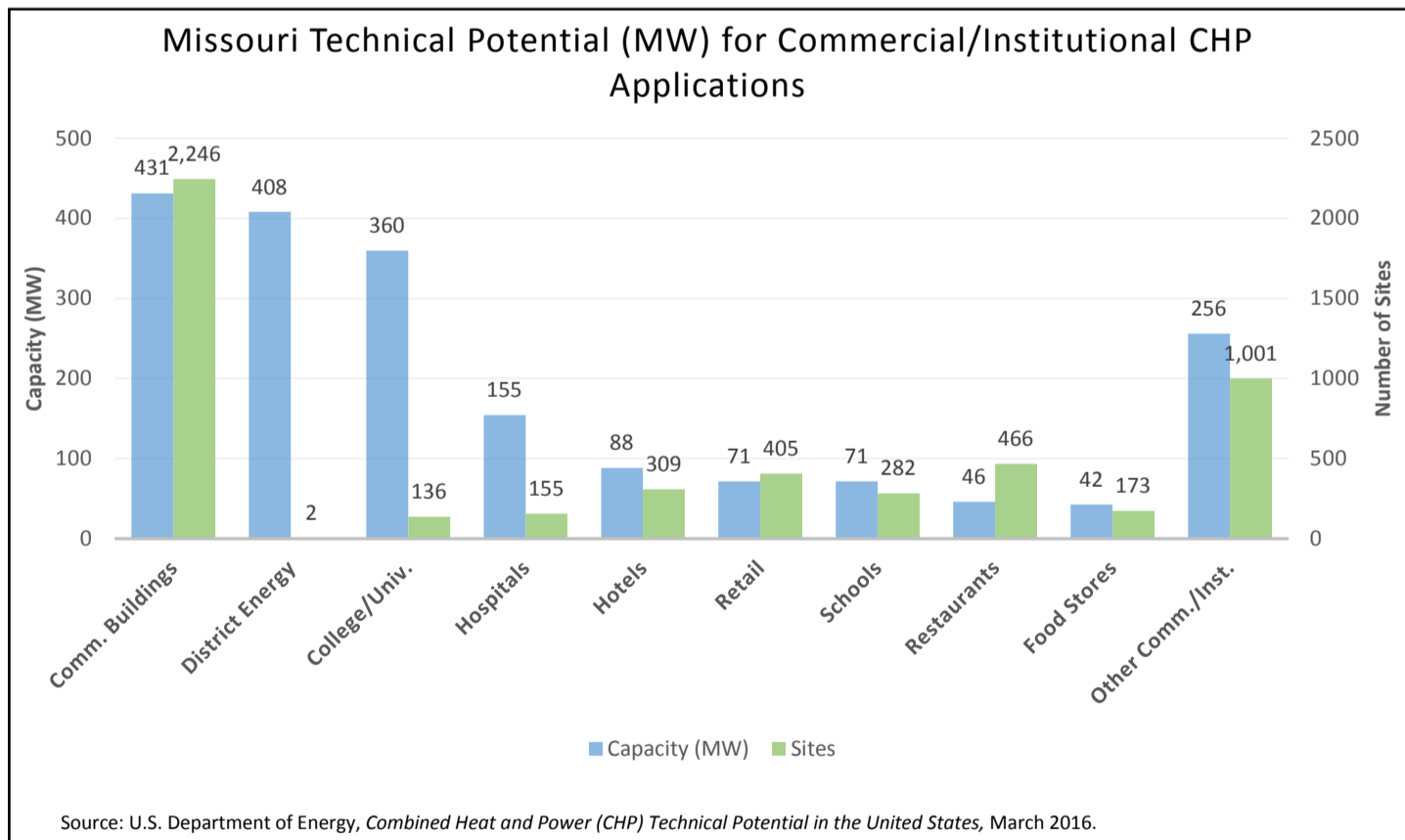


Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

### 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	174	36	24	17	51	98	14	135	3	147	266	432
Chemicals	155	27	25	18	52	110	16	140	4	103	252	398
Stone/Clay/Glass	3	0	1	1	3	8	9	89	1	23	17	122
Paper	46	12	12	9	16	30	1	10	1	43	76	104
Transportation Equip.	57	9	13	9	8	17	2	24	1	23	81	82
Other Industrial	419	72	54	39	41	86	3	28	0	0	517	223
<b>Total</b>	<b>854</b>	<b>155</b>	<b>129</b>	<b>92</b>	<b>171</b>	<b>349</b>	<b>45</b>	<b>426</b>	<b>10</b>	<b>339</b>	<b>1,209</b>	<b>1,361</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	1,437	72	629	252	180	108	0	0	0	0	2,246	431
College/Univ.	81	15	3	2	33	77	13	128	6	138	136	360
Hospitals	80	20	30	22	43	96	2	16	0	0	155	155
Hotels	273	31	17	10	16	27	3	19	0	0	309	88
Retail	381	56	23	14	1	2	0	0	0	0	405	71
Other Comm./Inst.	1,765	231	114	66	37	66	6	54	2	408	1,924	824
<b>Total</b>	<b>4,017</b>	<b>424</b>	<b>816</b>	<b>365</b>	<b>310</b>	<b>376</b>	<b>24</b>	<b>217</b>	<b>8</b>	<b>546</b>	<b>5,175</b>	<b>1,929</b>

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

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## Missouri 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.

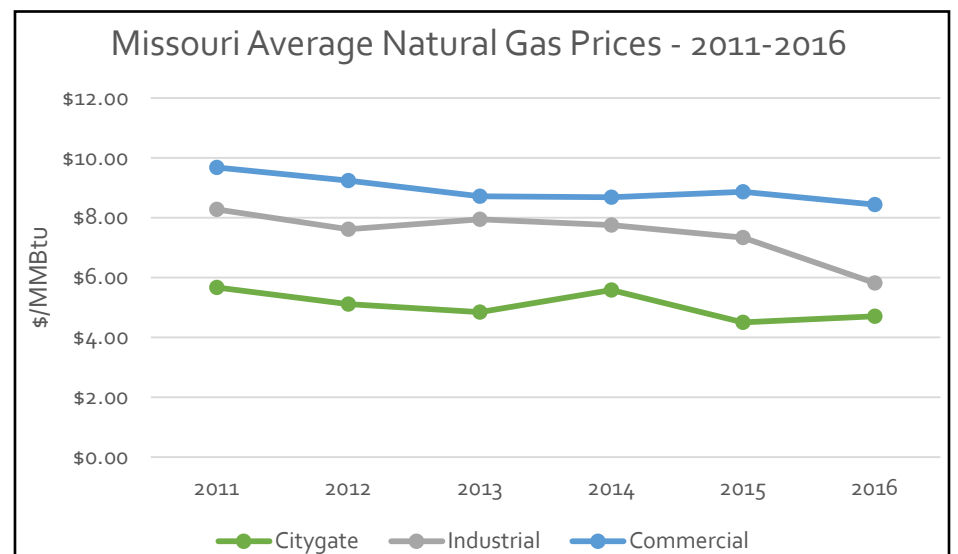
### Missouri Natural Gas Prices

#### Missouri Average Gas Prices - 2016

Sector	MO Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	4.70	3.75
Industrial	5.82	3.39
Commercial	8.44	7.22

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



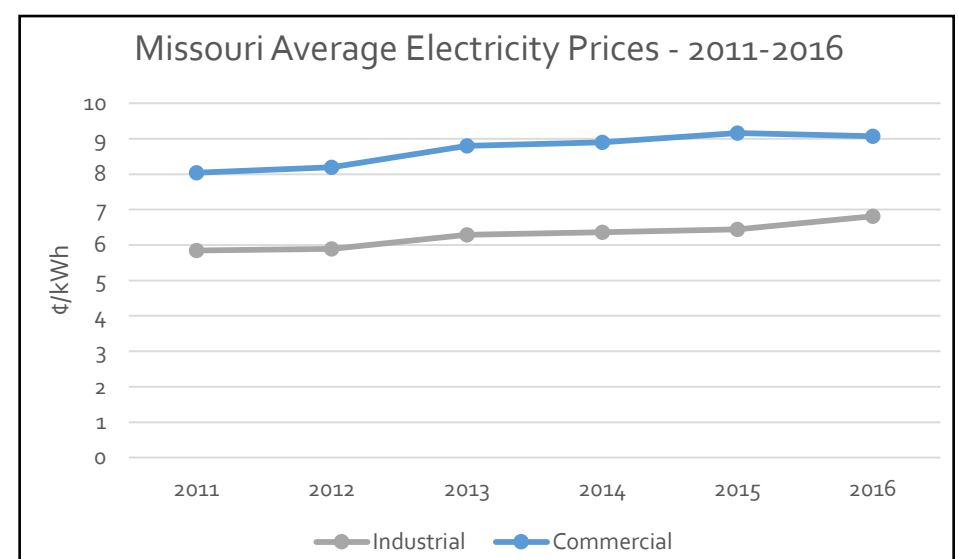
### Missouri Electricity Prices

#### Missouri Average Electricity Prices - 2016

Sector	MO Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	6.81	6.75
Commercial	9.07	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.



#### Missouri Average Delivered Electricity Prices by Utility

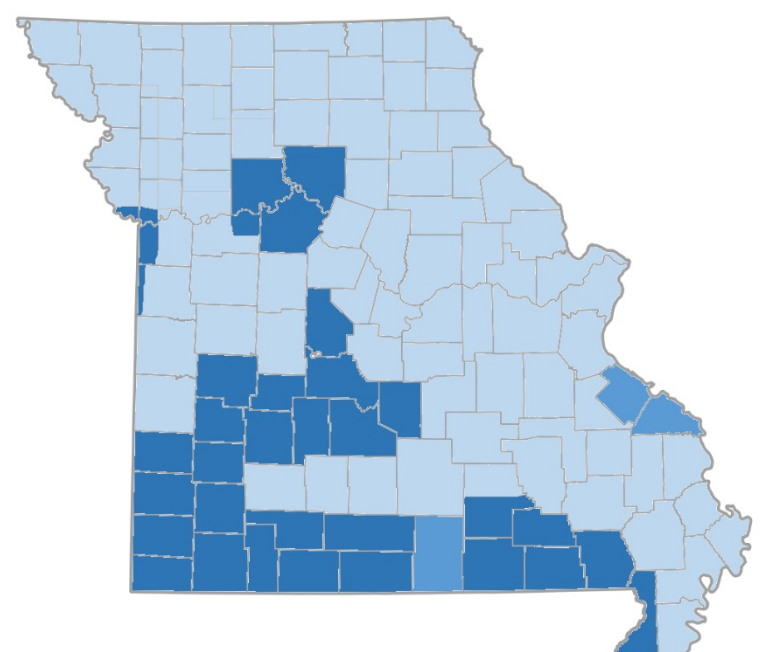
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Empire District Electric	8.82	11.00	9.91
Kansas City Power & Light	9.30	9.99	9.65
State municipal average	8.34	9.73	9.14
State coop average	8.10	9.85	9.14
Citizens Electric Corp	5.78	11.78	8.78
Howell-Oregon Elec Coop	7.64	8.77	8.21
City Utilities of Springfield	7.28	8.05	7.66
KCP&L Greater Missouri	6.41	8.59	7.50
Ameren Missouri	5.67	8.69	7.18

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.

#### Missouri Electricity Prices – Heat Map



- City Utilities of Springfield / KCP&L Greater MO / Ameren
- Citizens Electric Corp / Howell-Oregon Electric Coop
- Empire District Electric / Kansas City Light & Power

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CHP Technical  
Potential

CHP Economics

CHP Partners

## 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](#).

- State of Missouri

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