

# The State of CHP: Tennessee



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

Installed CHP

CHP Technical Potential

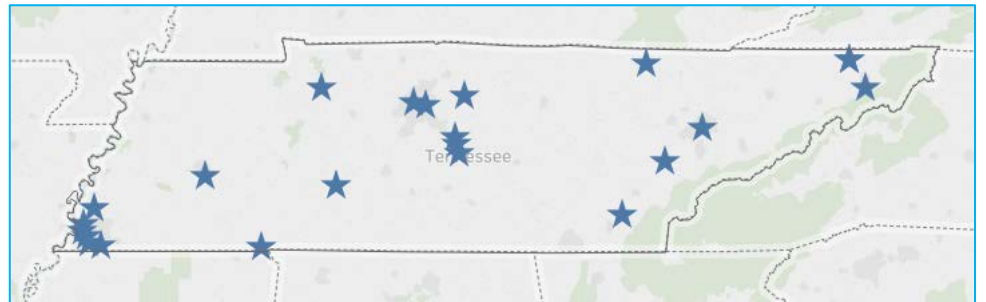
CHP Economics

CHP Partners

## Tennessee Installed Base of CHP

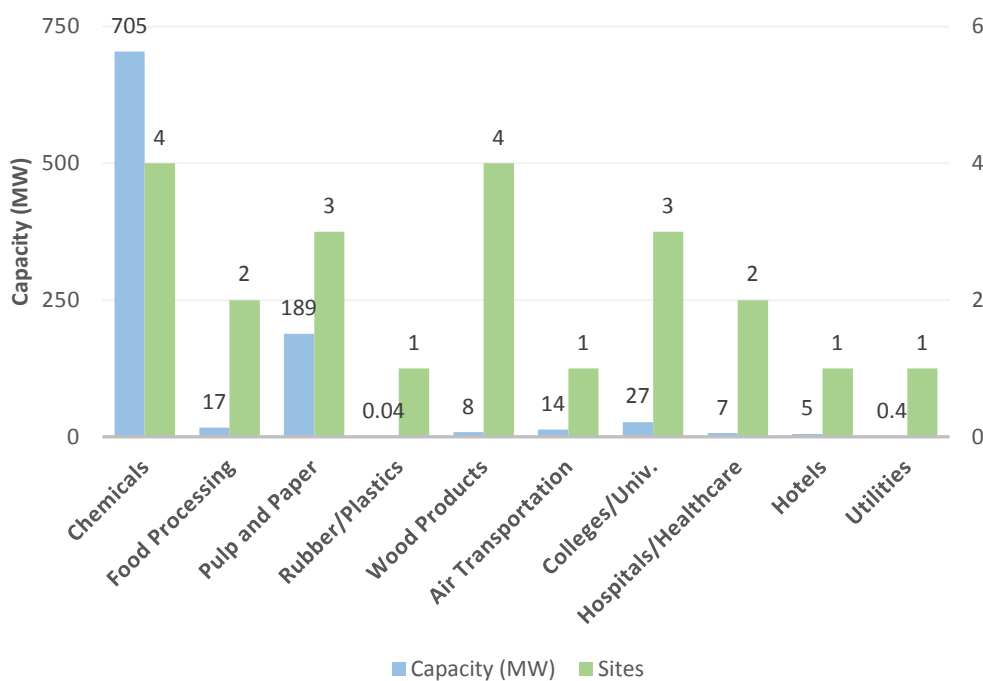
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	14	918
Commercial/Institutional	8	53
Other	0	0
<b>Total</b>	<b>22</b>	<b>971</b>



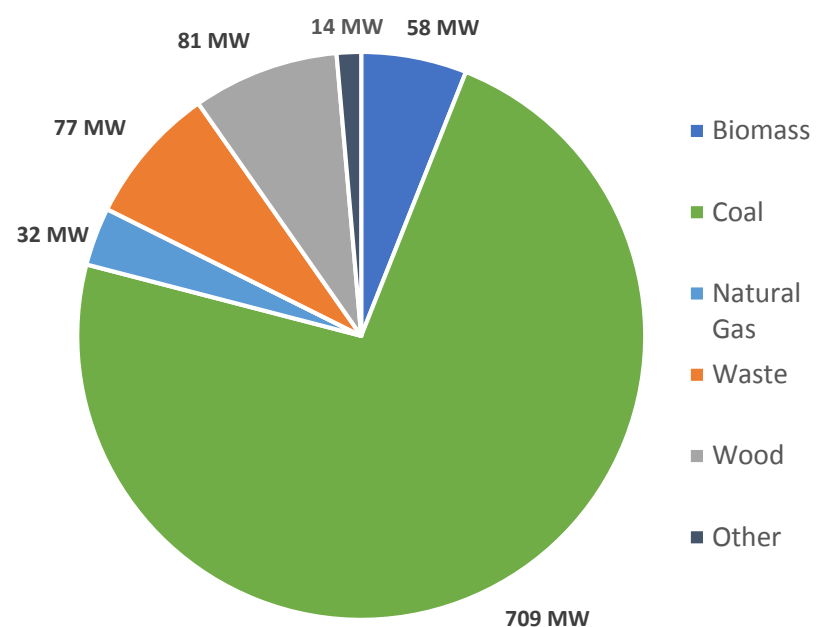
The Southeast CHP Technical Assistance Partnership has compiled information on certain illustrative CHP projects in Tennessee. You can access these by visiting the Department of Energy's [CHP Project Profiles Database](#).

### Tennessee CHP by Application



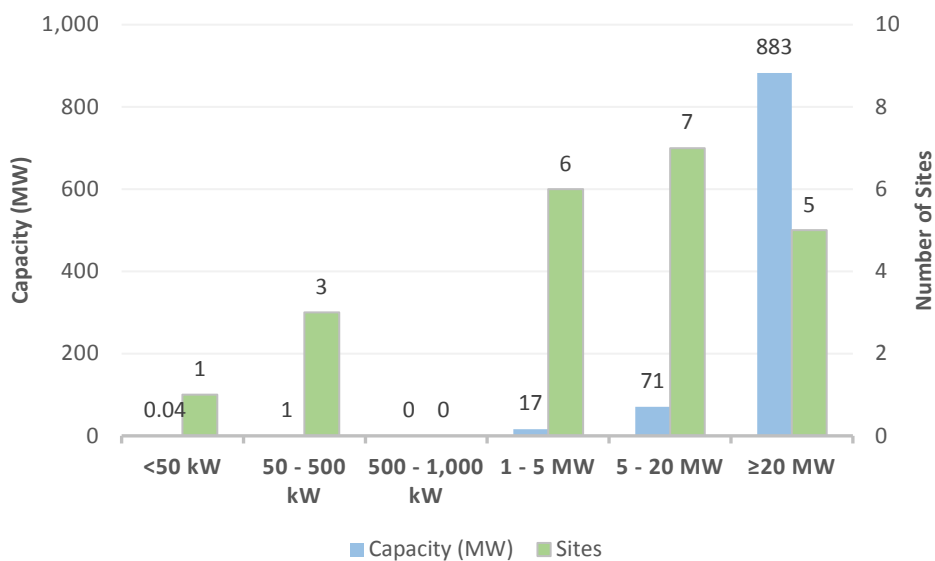
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

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



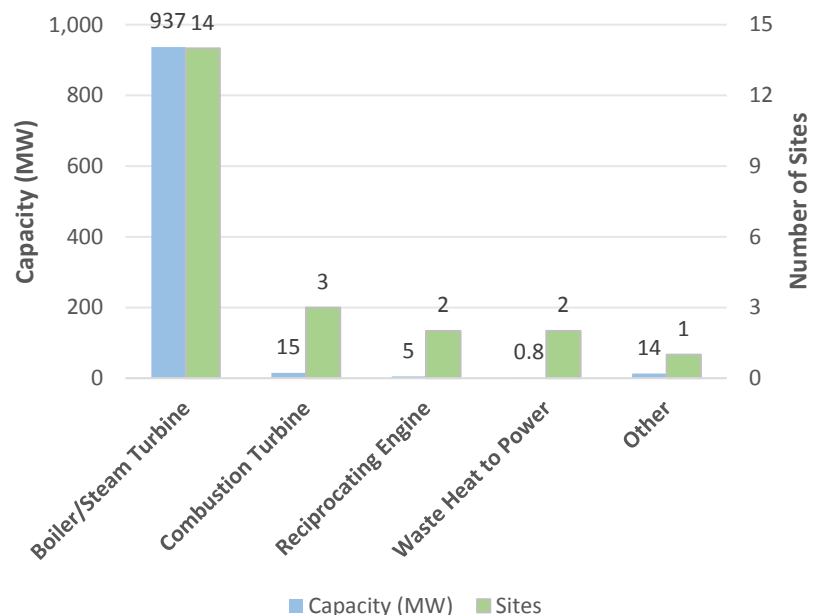
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

### Tennessee CHP by Size Range



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

### Tennessee 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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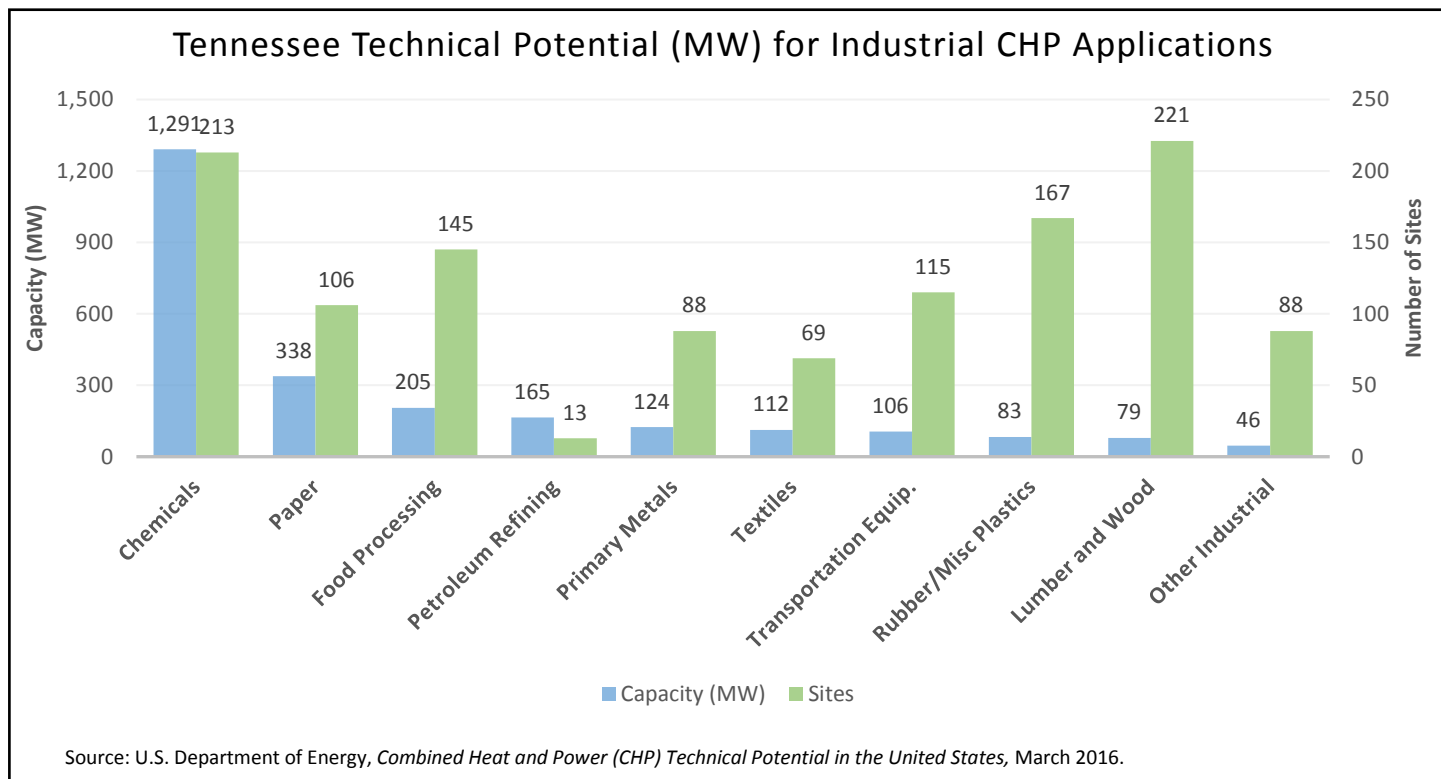
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## Tennessee Technical Potential for New CHP Installations

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

Sector	Potential Sites	Potential Capacity (MW)
Industrial	1,225	2,551
Commercial/Institutional	4,909	1,632
<b>Total</b>	<b>6,134</b>	<b>4,183</b>

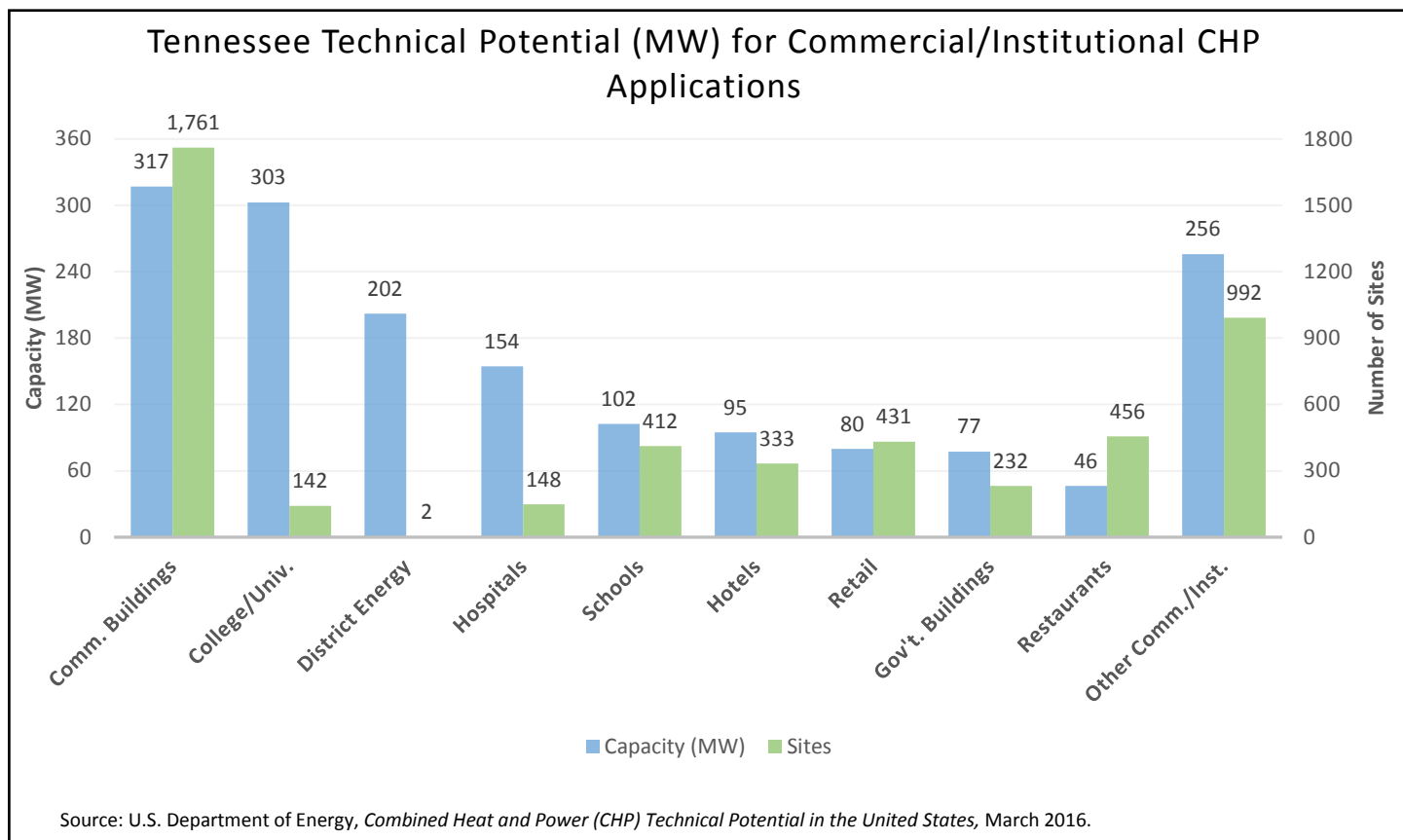


Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

### 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	91	16	16	11	58	125	38	330	10	810	213	1,291
Paper	55	14	17	11	22	52	9	87	3	175	106	338
Food Processing	76	15	21	15	42	78	5	45	1	51	145	205
Petroleum Refining	1	0	5	3	4	9	0	0	3	153	13	165
Primary Metals	56	12	15	10	12	24	4	53	1	25	88	124
Other Industrial	484	91	80	57	84	175	12	105	0	0	660	427
<b>Total</b>	<b>763</b>	<b>147</b>	<b>154</b>	<b>107</b>	<b>222</b>	<b>462</b>	<b>68</b>	<b>620</b>	<b>18</b>	<b>1,214</b>	<b>1,225</b>	<b>2,551</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	1,174	59	470	188	117	70	0	0	0	0	1,761	317
College/Univ.	100	17	6	3	23	58	11	94	2	130	142	303
Hospitals	68	18	31	21	47	100	2	16	0	0	148	154
Schools	377	81	35	21	0	0	0	0	0	0	412	102
Hotels	307	33	15	9	8	14	3	38	0	0	333	95
Other Comm./Inst.	1,934	242	112	66	59	105	6	46	2	202	2,113	661
<b>Total</b>	<b>3,960</b>	<b>451</b>	<b>669</b>	<b>308</b>	<b>254</b>	<b>348</b>	<b>22</b>	<b>193</b>	<b>4</b>	<b>332</b>	<b>4,909</b>	<b>1,632</b>

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

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## Tennessee 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.

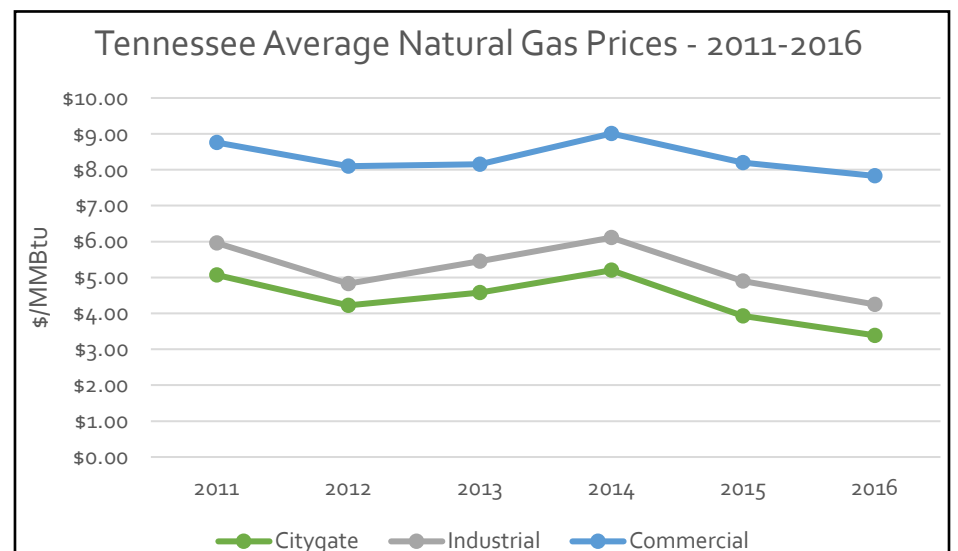
### Tennessee Natural Gas Prices

#### Tennessee Average Gas Prices - 2016

Sector	TN Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	3.92	3.75
Industrial	2.56	3.39
Commercial	6.92	7.22

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



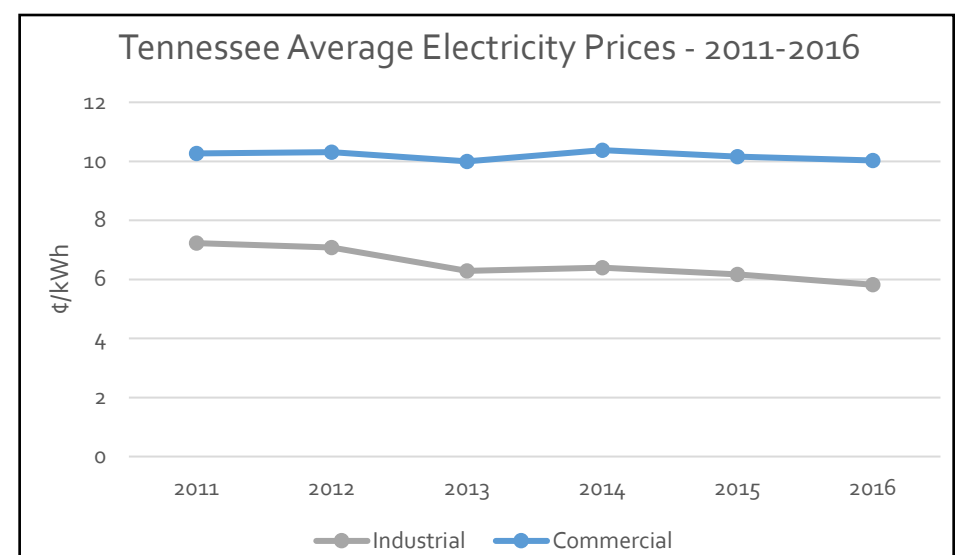
### Tennessee Electricity Prices

#### Tennessee Average Electricity Prices - 2016

Sector	TN Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	5.82	6.75
Commercial	10.03	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.



#### Tennessee Average Delivered Electricity Prices by Utility

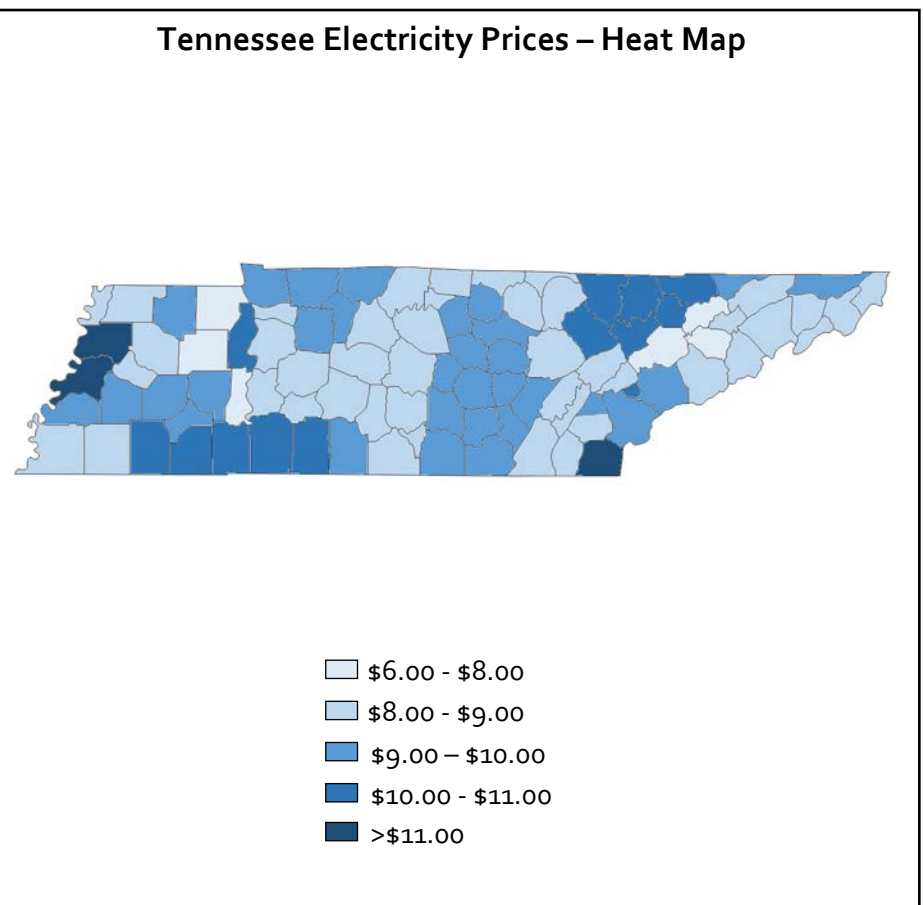
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Hickman-Fulton Counties	8.37	22.13	15.25
Tri-State Elec Corp	-	12.56	12.56
State coop average	7.15	12.26	10.01
City of Chattanooga	9.37	10.19	9.78
State municipal average	7.26	10.52	8.92
City of Memphis	7.66	9.89	8.77
Nashville Electric Service	6.72	10.29	8.51
Middle TN EMC	6.09	10.03	8.06
Knoxville Utilities Board	5.69	10.04	7.87

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.

#### Tennessee Electricity Prices – Heat Map



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Potential

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## Department of Energy CHP Partnerships

### Southeast CHP Technical Assistance Partnership



U.S. DEPARTMENT OF ENERGY

## CHP Technical Assistance Partnerships

SOUTHEAST

Southeast CHP TAP Director: Isaac Panzarella

Phone: 919-515-0354

Email: [ipanzarella@ncsu.edu](mailto:ipanzarella@ncsu.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](#).

- Tennessee Valley Authority

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U.S. DEPARTMENT OF ENERGY

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