

The State of CHP: WV



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

Installed CHP

CHP Technical Potential

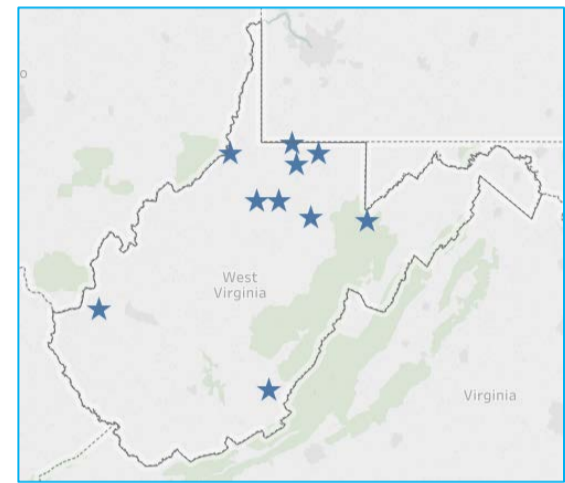
CHP Economics

CHP Partners

West Virginia Installed Base of CHP

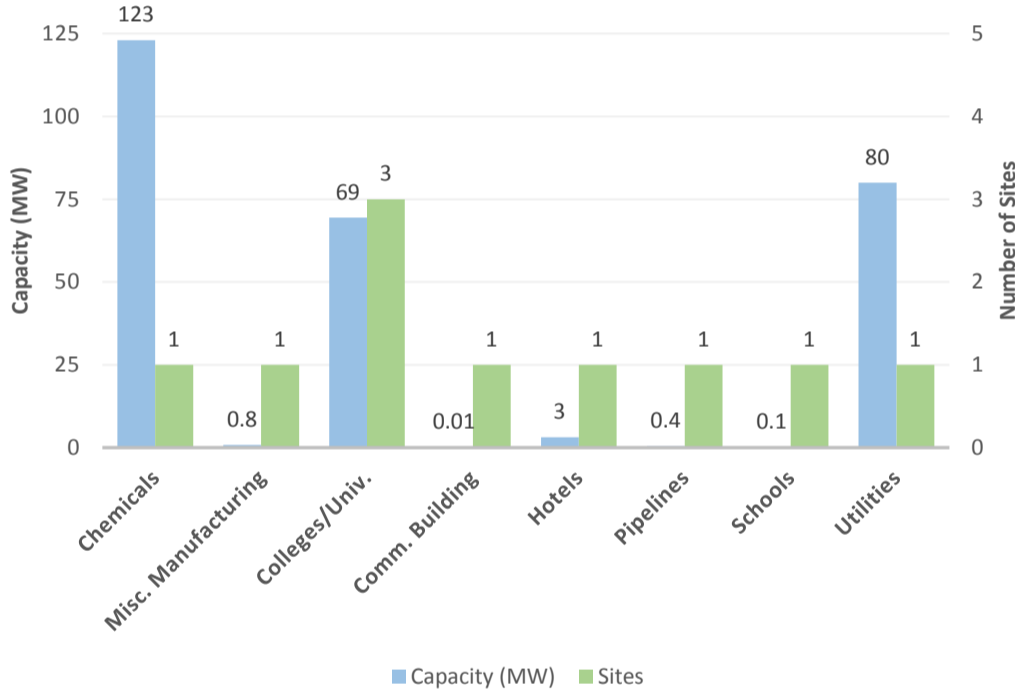
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	3	124
Commercial/Institutional	7	153
Other	0	0
Total	10	277



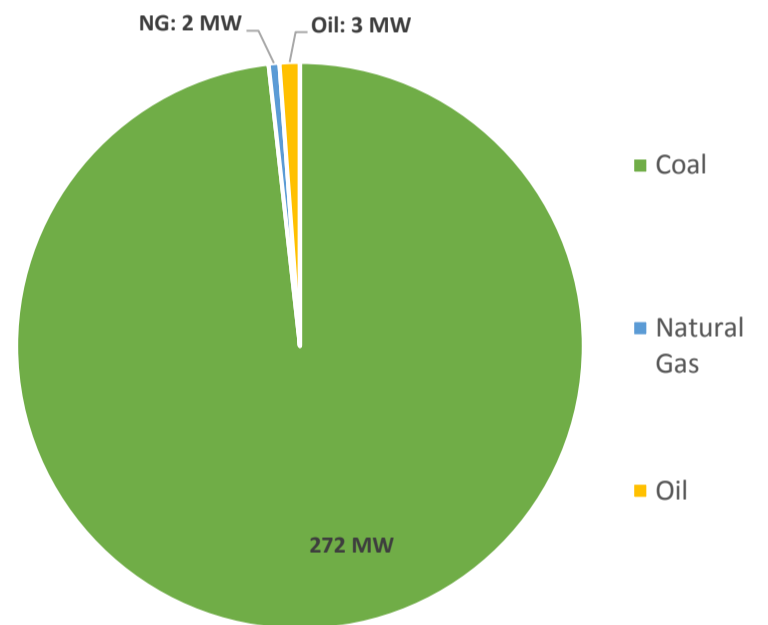
The Mid-Atlantic CHP Technical Assistance Partnership has compiled information on certain illustrative CHP projects in West Virginia. You can access these by visiting the Department of Energy's [CHP Project Profiles Database](#).

West Virginia CHP by Application



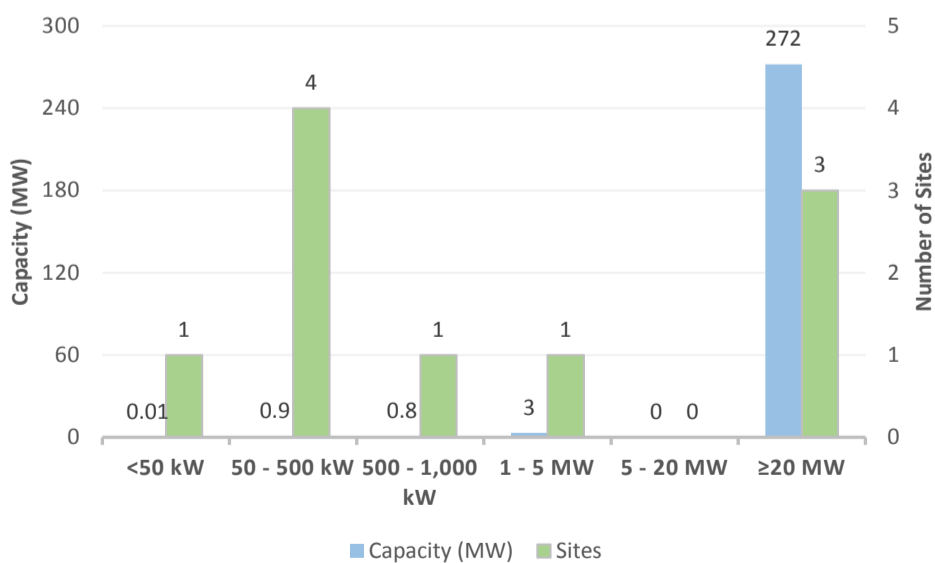
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

West Virginia CHP Capacity (MW) by Fuel Type



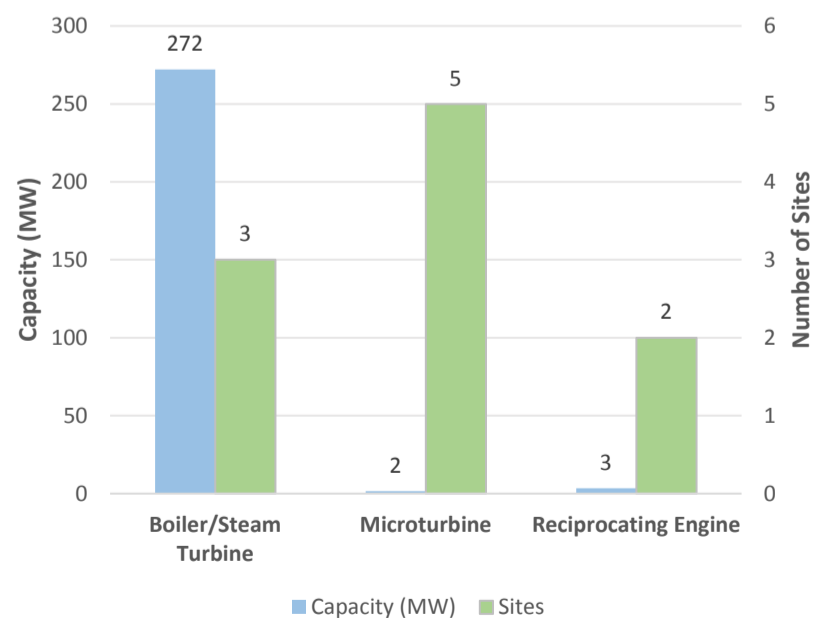
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

West Virginia CHP by Size Range



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

West Virginia 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.





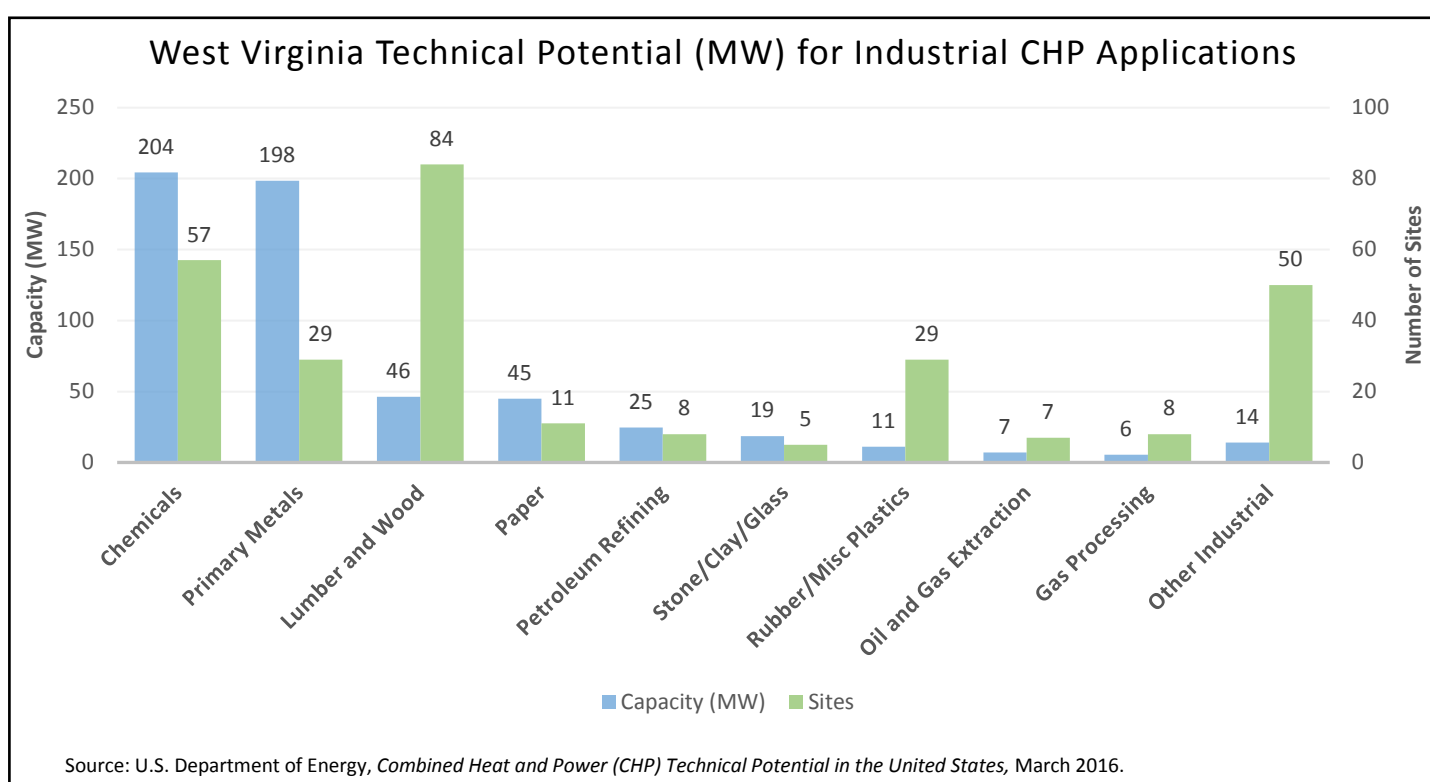
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West Virginia Technical Potential for New CHP Installations

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

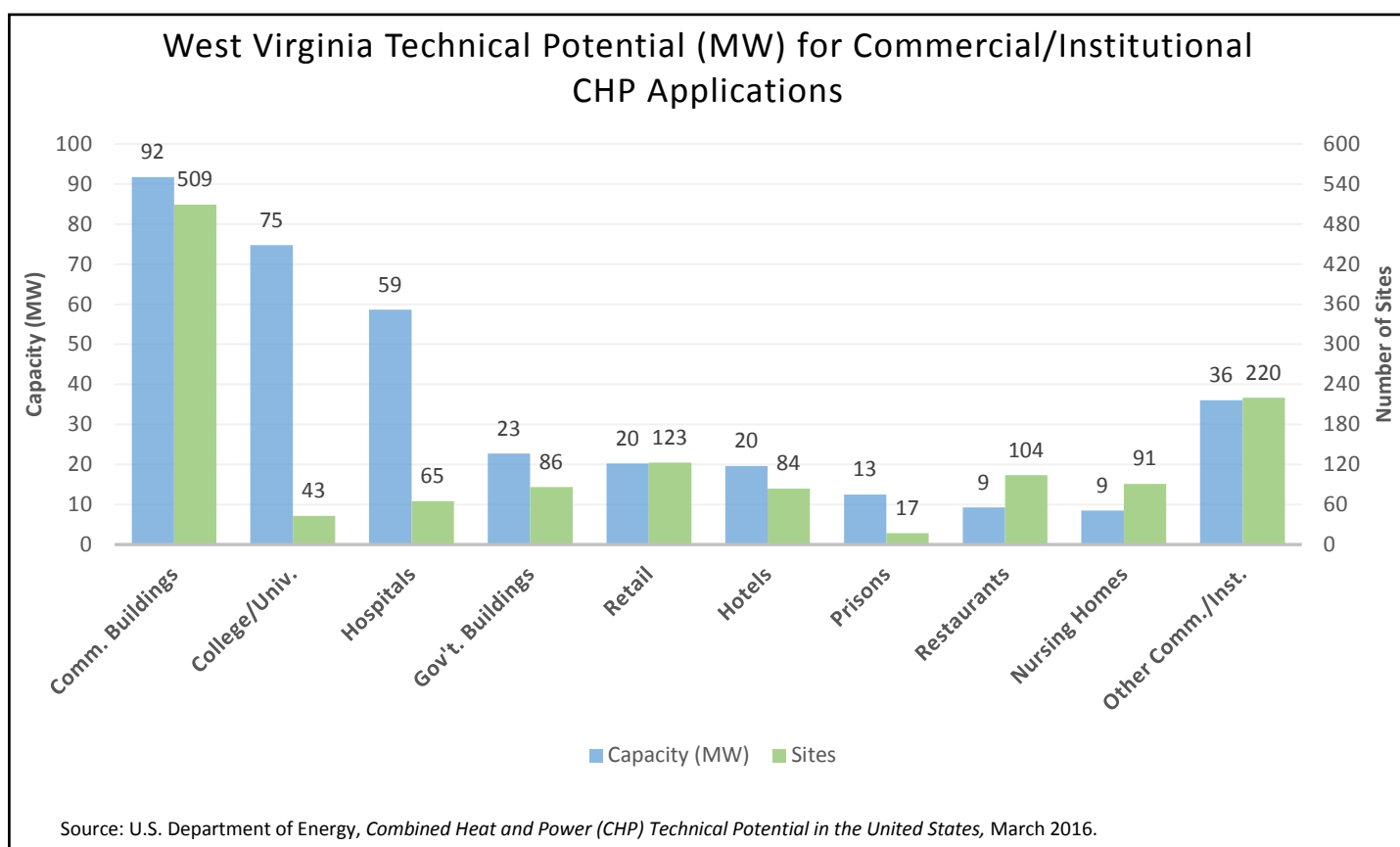
Sector	Potential Sites	Potential Capacity (MW)
Industrial	288	575
Commercial/Institutional	1,342	354
Total	1,630	929



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	20	4	7	6	17	43	11	100	2	51	57	204
Primary Metals	14	4	5	3	4	10	4	42	2	139	29	198
Lumber and Wood	63	14	15	11	4	9	2	13	0	0	84	46
Paper	3	1	1	1	4	9	3	34	0	0	11	45
Petroleum Refining	0	0	3	2	4	11	1	11	0	0	8	25
Other Industrial	76	14	12	9	10	18	1	15	0	0	99	56
Total	176	37	43	32	43	100	22	216	4	190	288	575

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	339	17	136	54	34	20	0	0	0	0	509	92
College/Univ.	23	4	4	3	10	21	6	47	0	0	43	75
Hospitals	31	9	12	8	21	36	1	6	0	0	65	59
Government Buildings	80	10	2	1	3	5	1	6	0	0	86	23
Hotels	79	9	2	1	2	4	1	5	0	0	84	20
Other Comm./Inst.	490	55	13	8	11	18	1	5	0	0	516	85
Total	1,083	114	170	76	79	100	9	64	0	0	1,342	354

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

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West Virginia 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.

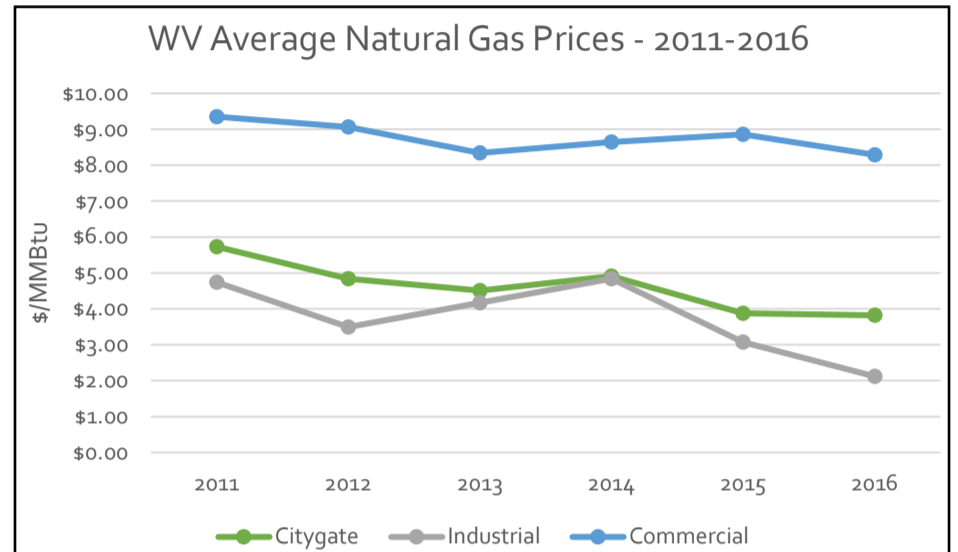
West Virginia Natural Gas Prices

West Virginia Average Gas Prices - 2016

Sector	WV Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	3.30	3.75
Industrial	3.83	3.39
Commercial	6.45	7.22

Source: U.S. Energy Information Administration, "Natural Gas Prices", https://www.eia.gov/dnav/ng/ng_pri_sum_dcu_SWV_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.



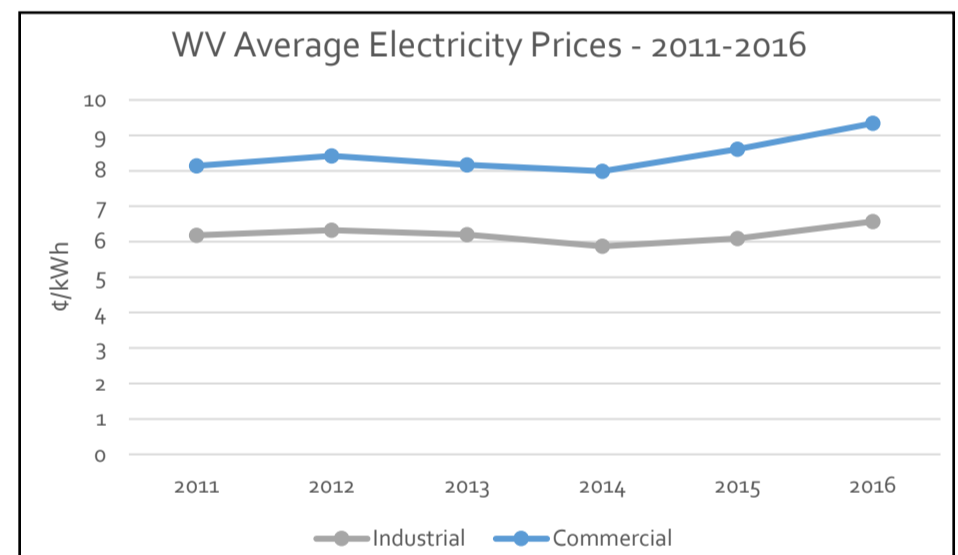
West Virginia Electricity Prices

West Virginia Average Electricity Prices - 2016

Sector	WV Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	6.92	6.75
Commercial	9.44	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.



West Virginia Average Delivered Electricity Prices by Utility

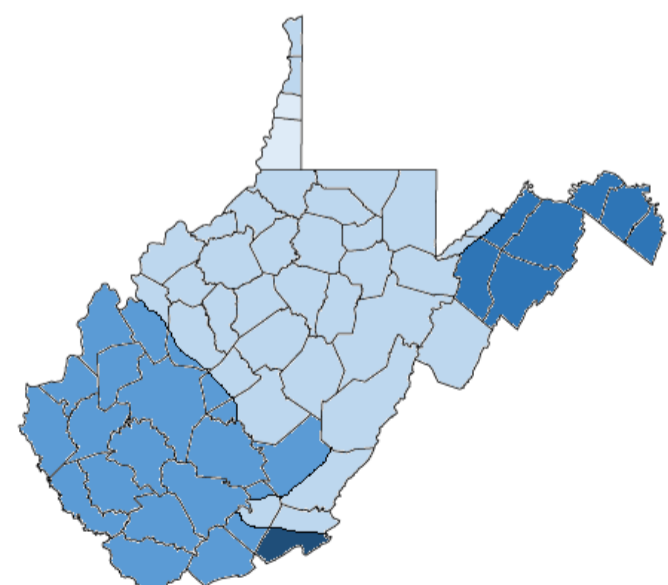
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Craig-Botetourt Elec Coop	-	16.56	16.56
Potomac Edison Co	9.02	8.31	8.67
Appalachian Power Co	6.95	8.56	7.75
Monongahela Power Co	6.04	8.70	7.37
Wheeling Power Co	5.61	8.62	7.11

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.

West Virginia Electricity Prices – Heat Map



- Wheeling Power Co
- Monongahela Power Co
- Appalachian Power Co
- Potomac Edison Co
- Craig-Botetourt Elec Coop

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CHP Technical
Potential

CHP Economics

CHP Partners

Department of Energy CHP Partnerships

Mid-Atlantic CHP Technical Assistance Partnership



U.S. DEPARTMENT OF ENERGY
CHP Technical Assistance Partnerships
MID-ATLANTIC

Mid-Atlantic CHP TAP Director: Jim Freihaut
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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 West Virginia.

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