

# The State of CHP: Virginia



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

Installed CHP

CHP Technical Potential

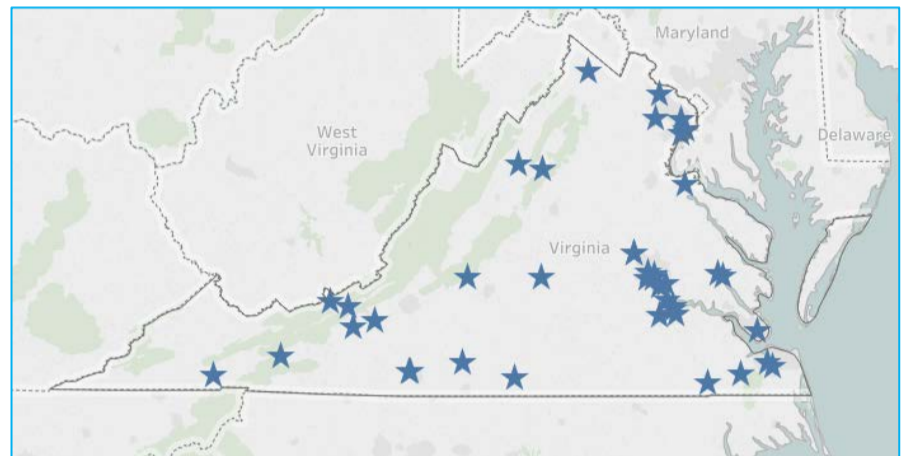
CHP Economics

CHP Partners

## Virginia Installed Base of CHP

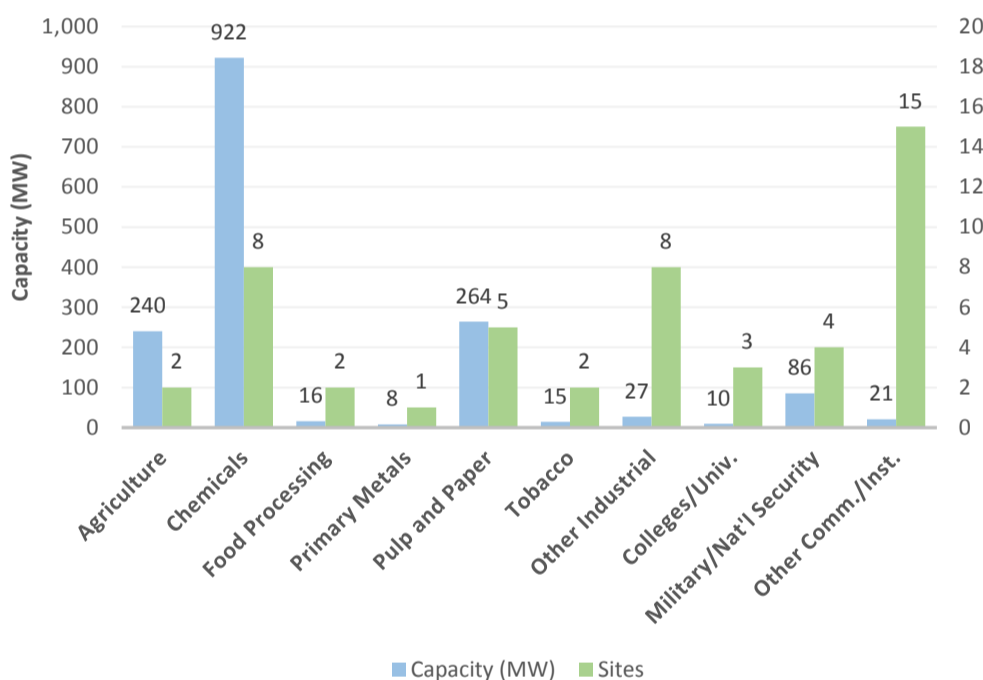
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	26	1,251
Commercial/Institutional	22	116
Other	2	241
<b>Total</b>	<b>50</b>	<b>1,608</b>



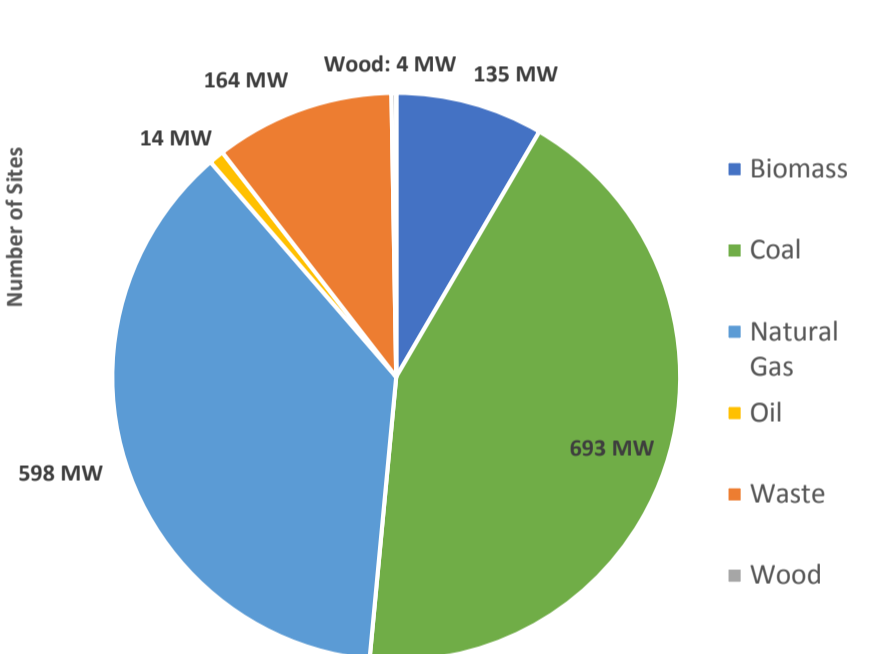
The Mid-Atlantic CHP Technical Assistance Partnership has compiled information on certain illustrative CHP projects in Virginia. You can access these by visiting the Department of Energy's [CHP Project Profiles Database](#).

Virginia CHP by Application



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

Virginia CHP Capacity (MW) by Fuel Type



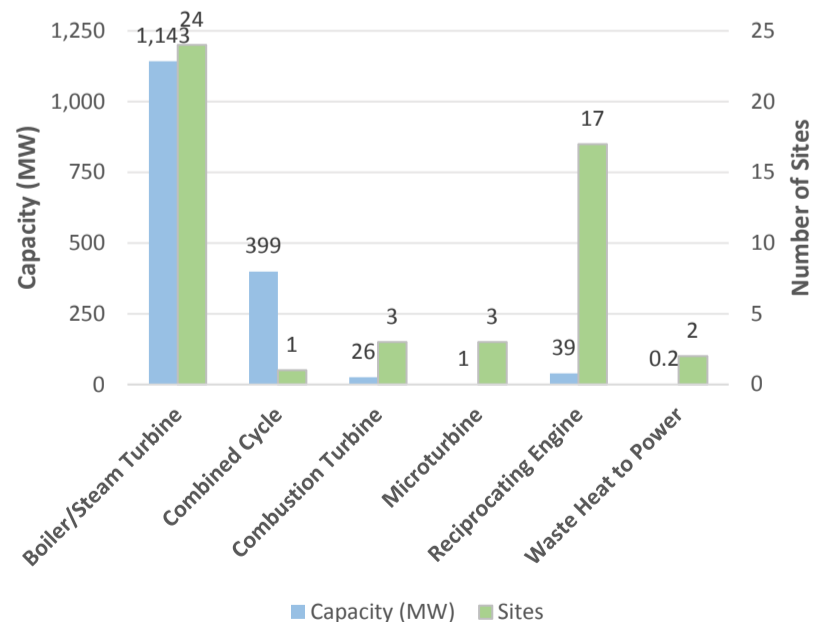
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Virginia CHP by Size Range



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

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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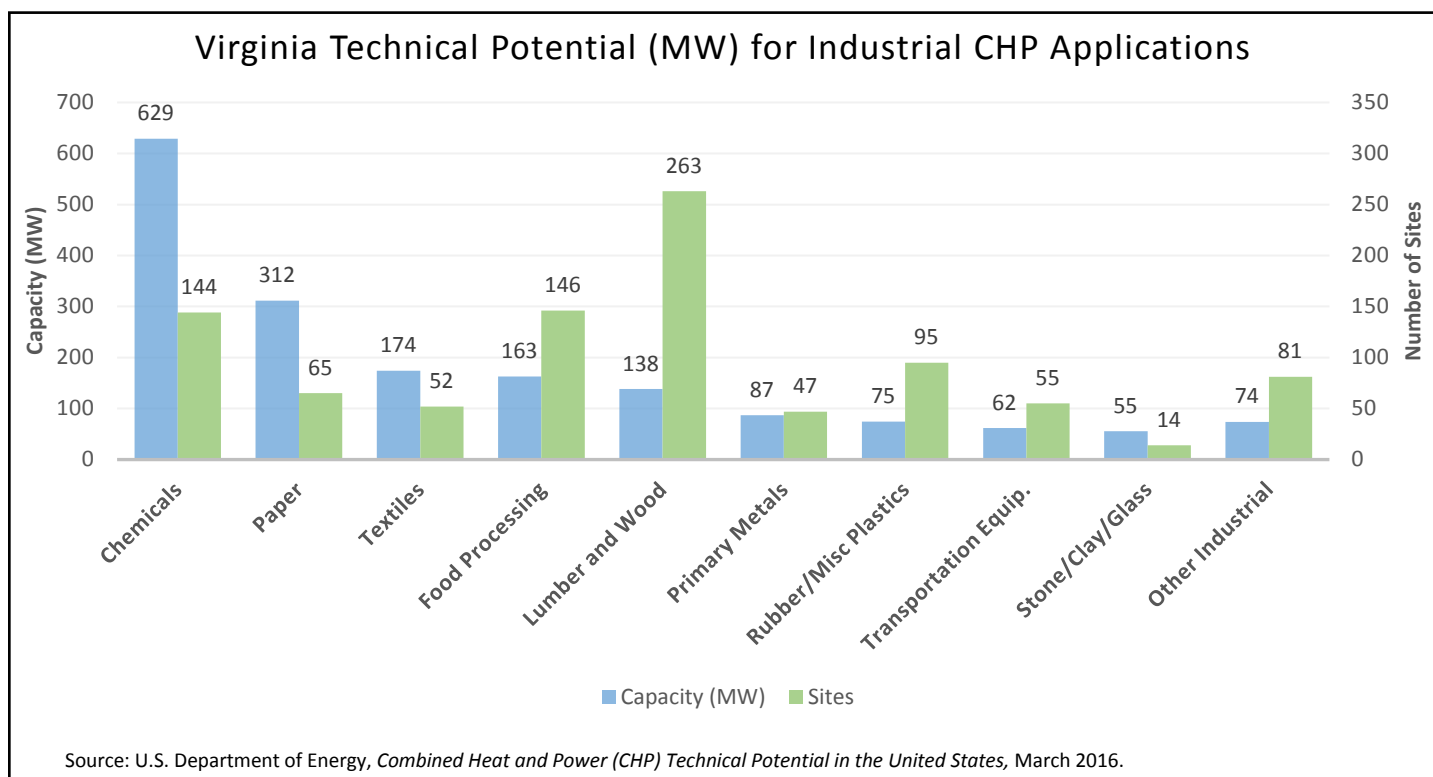
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## Virginia Technical Potential for New CHP Installations

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

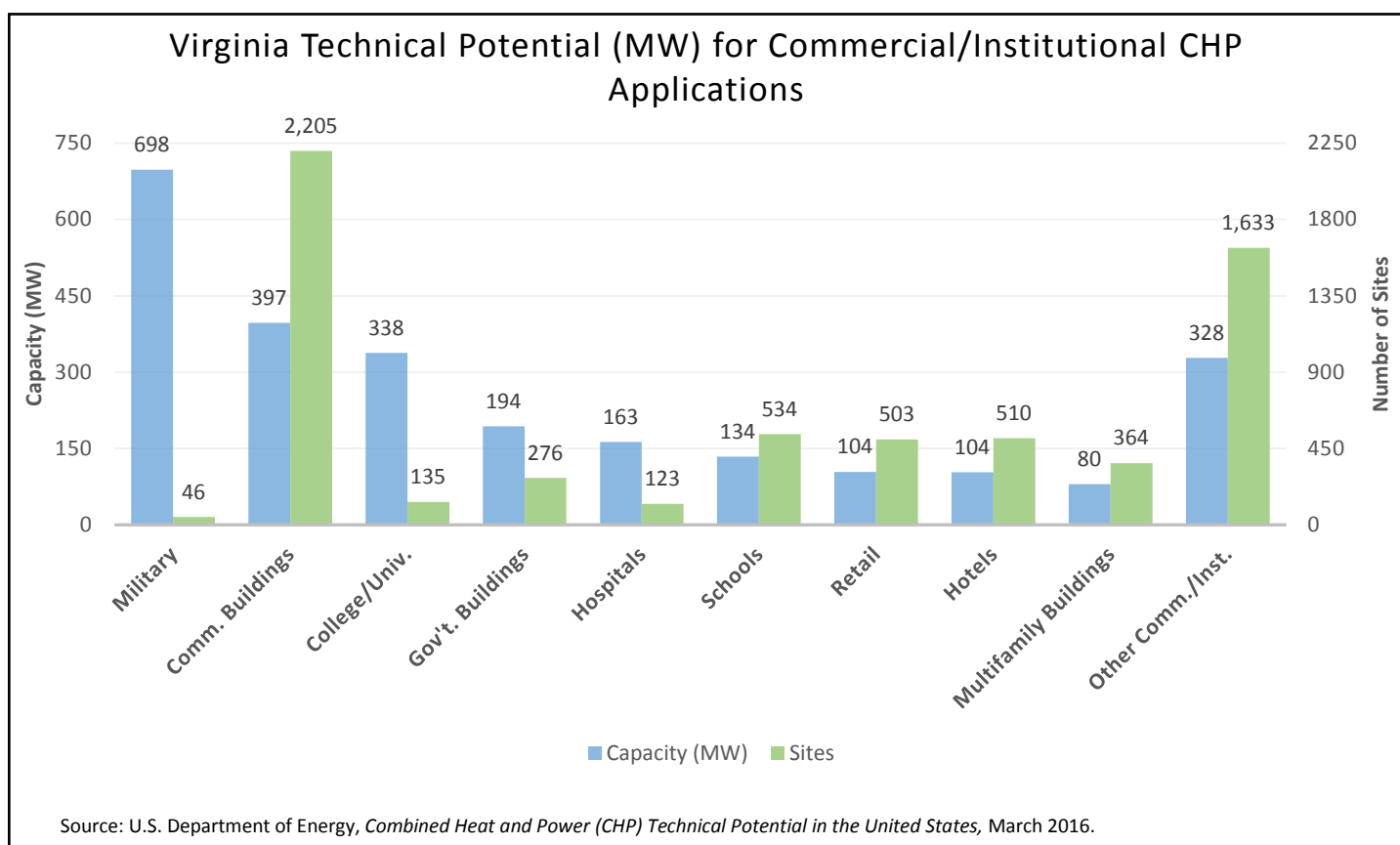
Sector	Potential Sites	Potential Capacity (MW)
Industrial	962	1,768
Commercial/Institutional	6,329	2,540
<b>Total</b>	<b>7,291</b>	<b>4,308</b>



### 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	76	13	17	12	27	46	16	148	8	411	144	629
Paper	25	7	10	6	19	54	6	59	5	186	65	312
Textiles	14	3	9	7	19	40	8	55	2	68	52	174
Food Processing	95	15	19	15	28	46	3	30	1	57	146	163
Lumber and Wood	190	38	43	29	25	43	5	29	0	0	263	138
Other Industrial	195	34	46	32	39	80	8	93	4	113	292	352
<b>Total</b>	<b>595</b>	<b>110</b>	<b>144</b>	<b>100</b>	<b>157</b>	<b>309</b>	<b>46</b>	<b>414</b>	<b>20</b>	<b>834</b>	<b>962</b>	<b>1,768</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 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
Military	16	3	5	4	10	31	13	111	2	550	46	698
Commercial Buildings	1,470	74	588	235	147	88	0	0	0	0	2,205	397
College/Univ.	77	15	7	5	33	78	14	114	4	126	135	338
Government Buildings	212	31	24	17	30	52	10	93	0	0	276	194
Hospitals	41	11	27	19	50	101	5	33	0	0	123	163
Other Comm./Inst.	3,219	448	235	139	87	124	3	40	0	0	3,544	750
<b>Total</b>	<b>5,035</b>	<b>581</b>	<b>886</b>	<b>418</b>	<b>357</b>	<b>474</b>	<b>45</b>	<b>391</b>	<b>6</b>	<b>676</b>	<b>6,329</b>	<b>2,540</b>

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

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## 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.

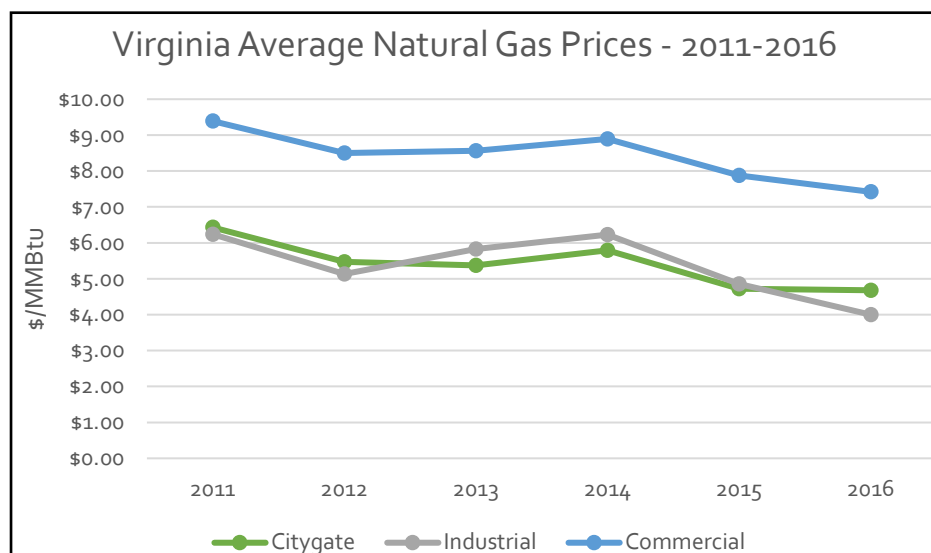
### Virginia Natural Gas Prices

#### Virginia Average Gas Prices - 2016

Sector	VA Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	4.68	3.75
Industrial	4.00	3.39
Commercial	7.42	7.22

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



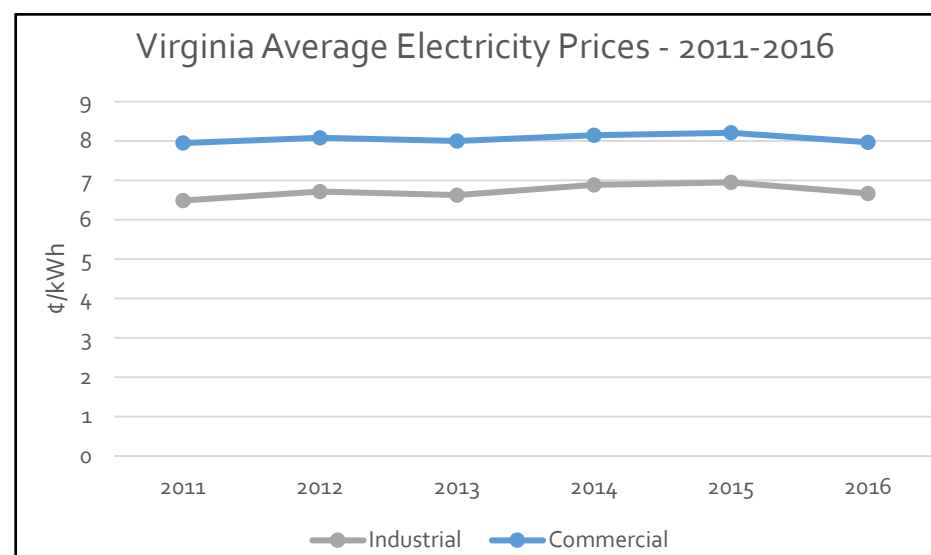
### Virginia Electricity Prices

#### Virginia Average Electricity Prices - 2016

Sector	VA Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	6.67	6.75
Commercial	7.97	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.



#### Virginia Average Delivered Electricity Prices by Utility

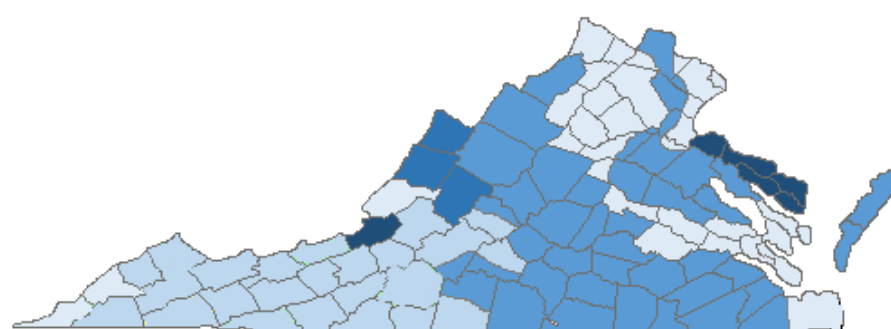
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Northern Neck Elec Coop	-	13.89	13.89
Craig-Botetourt Elec Coop	-	13.54	13.54
BARC Electric Coop	-	11.56	11.56
Various Central VA coops	8.36	11.43	9.89
Appalachian Power Co	6.95	9.09	8.02
Virginia Electric & Power	5.95	7.86	6.90

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.

#### Virginia Electricity Prices – Heat Map



- Virginia Electric & Power Co
- Appalachian Power Co
- Various Central Virginia coops
- BARC Electric Coop
- Northern Neck Elec Coop / Craig-Botetourt Elec Coop

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CHP Technical  
Potential

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## 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  
Phone: 814-863-0083  
Email: [jdf11@psu.edu](mailto:jdf11@psu.edu)

### CHP Resiliency for 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](#).

- Health Care Without Harm

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