

The State of CHP: Pennsylvania



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

Installed CHP

CHP Technical Potential

CHP Economics

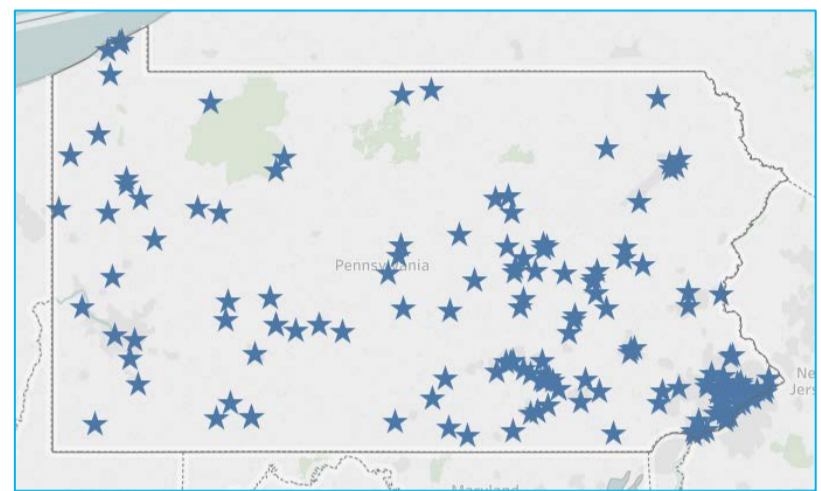
CHP Partners

Pennsylvania Installed Base of CHP

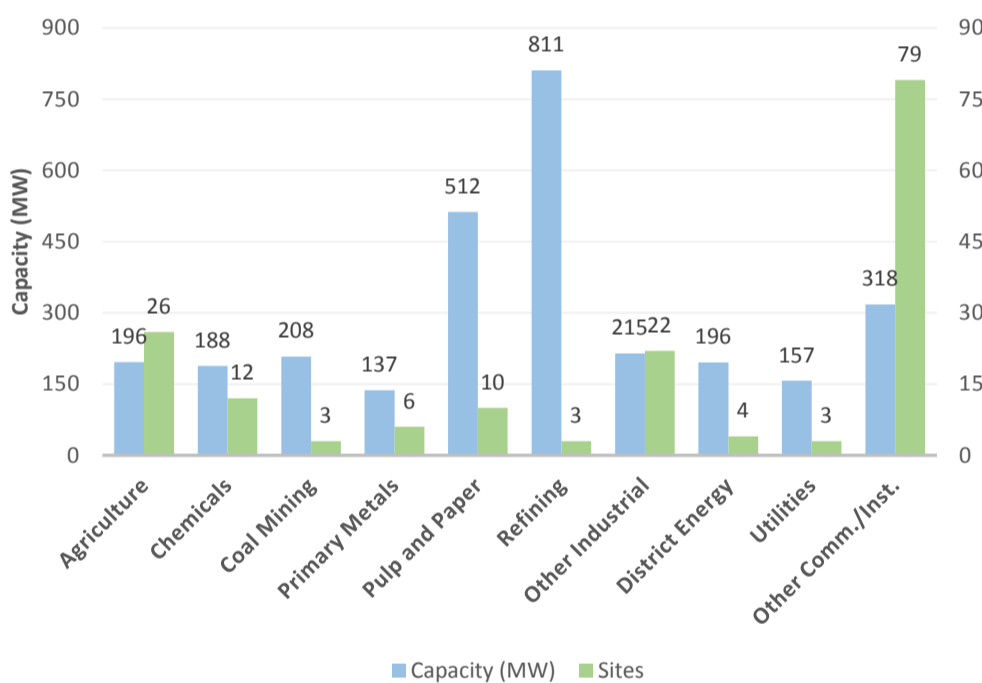
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	52	1,863
Commercial/Institutional	86	671
Other	30	404
Total	168	2,938

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

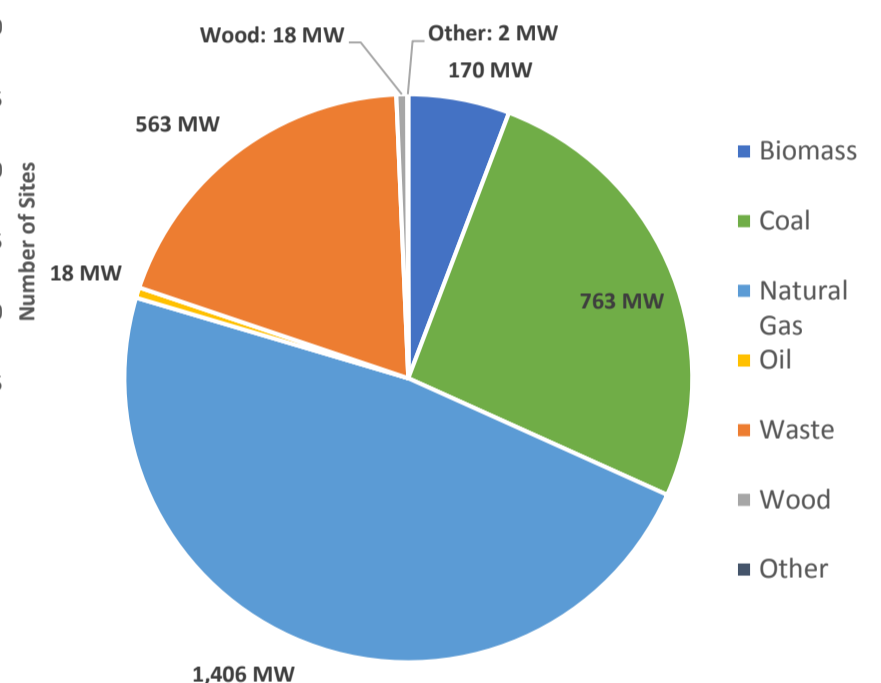


Pennsylvania CHP by Application



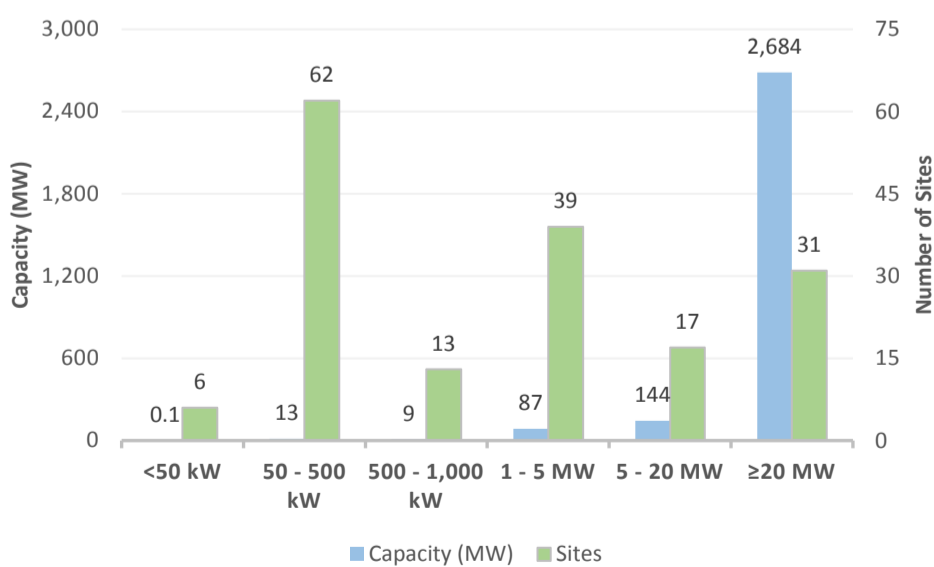
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Pennsylvania CHP Capacity (MW) by Fuel Type



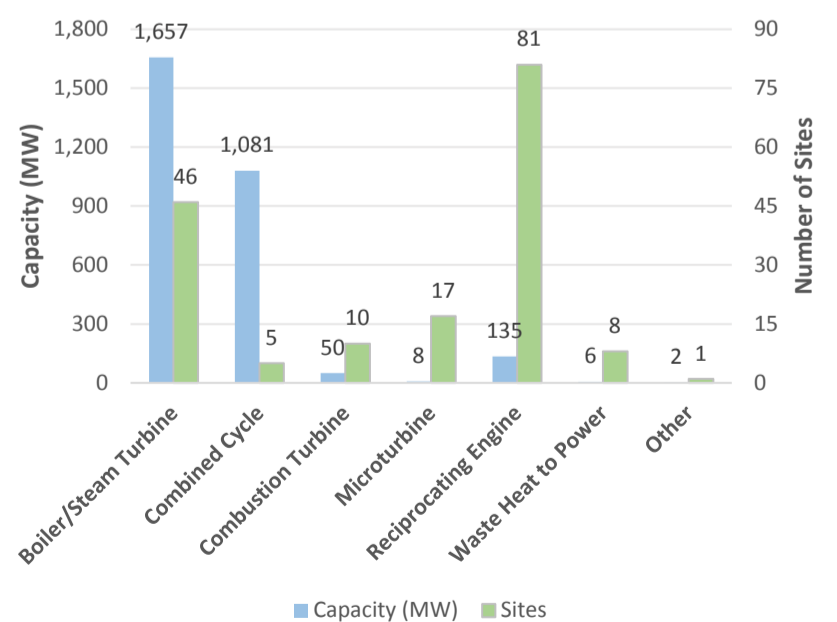
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Pennsylvania CHP by Size Range



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

Pennsylvania 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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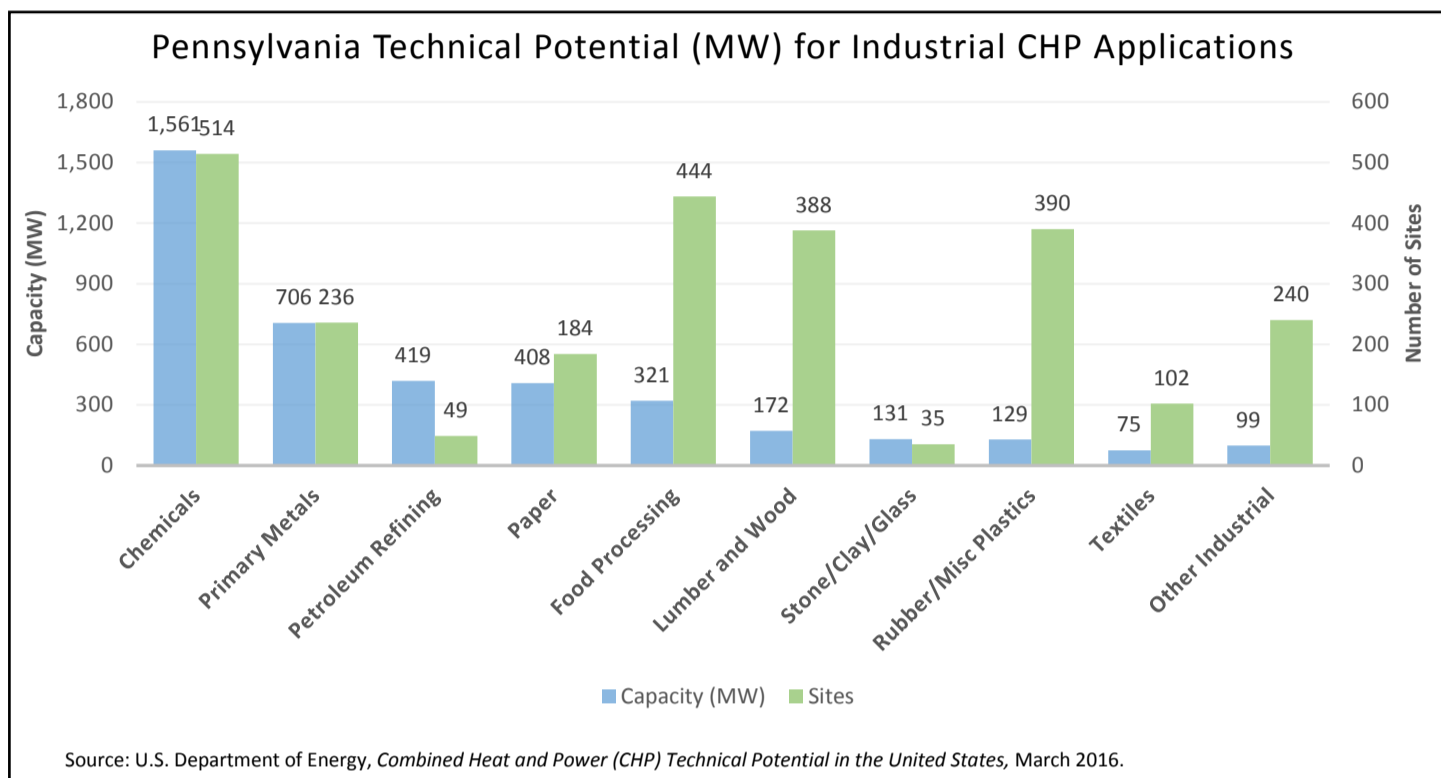
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Pennsylvania Technical Potential for New CHP Installations

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

Sector	Potential Sites	Potential Capacity (MW)
Industrial	2,582	4,022
Commercial/Institutional	10,126	3,737
Total	12,708	7,759

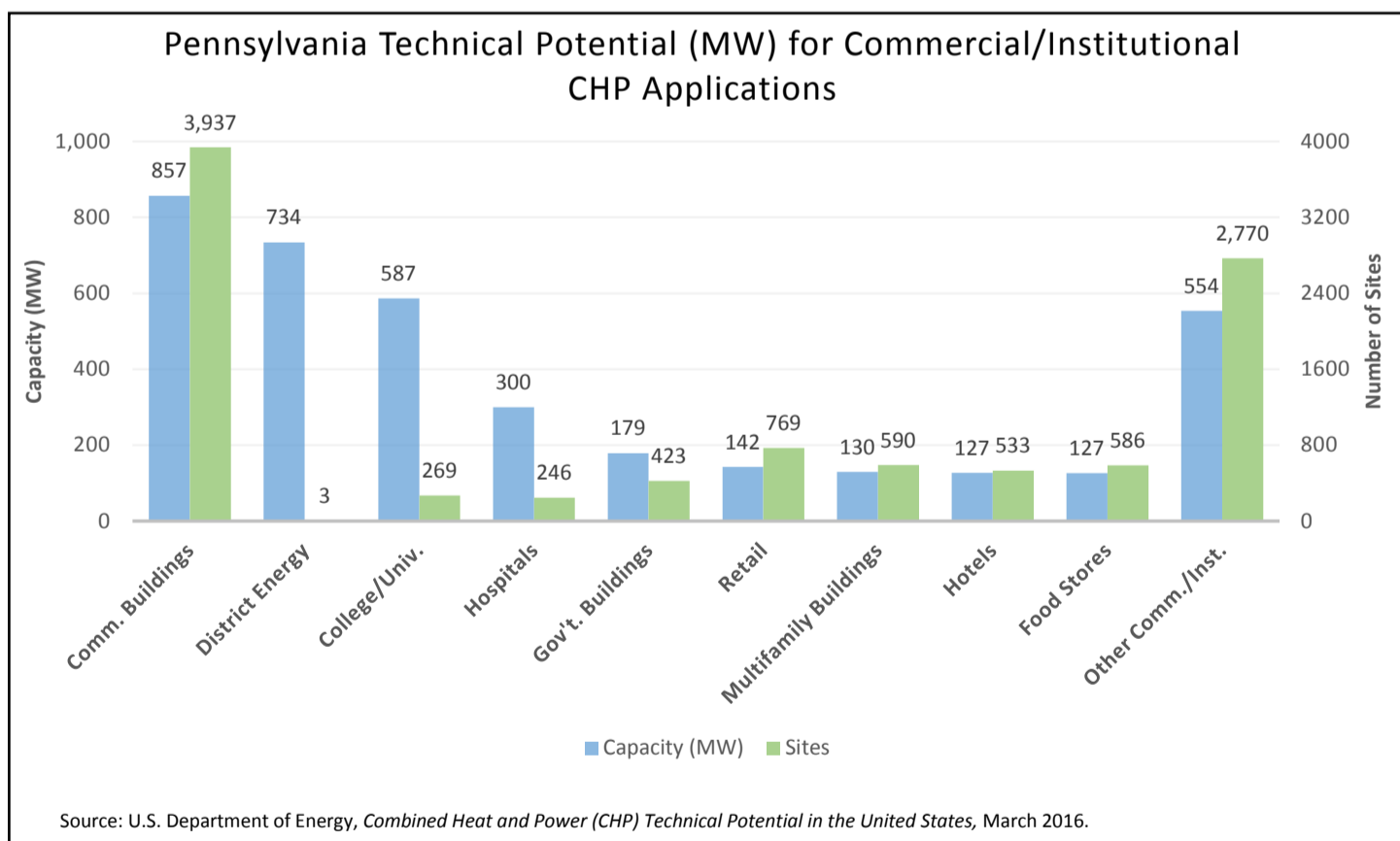


Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

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	247	44	57	42	134	301	61	543	15	631	514	1,561
Primary Metals	104	26	59	44	45	107	21	210	7	320	236	706
Petroleum Refining	3	1	15	11	22	56	2	19	7	333	49	419
Paper	98	25	30	22	37	73	15	135	4	154	184	408
Food Processing	316	59	43	32	75	156	10	74	0	0	444	321
Other Industrial	909	154	124	89	103	226	19	138	0	0	1,155	606
Total	1,677	309	328	239	416	918	128	1,118	33	1,437	2,582	4,022

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	2,316	116	1,158	463	463	278	0	0	0	0	3,937	857
College/Univ.	150	27	22	13	64	170	28	229	5	147	269	587
Hospitals	81	23	54	37	106	204	5	35	0	0	246	300
Government Buildings	361	44	30	21	27	51	4	42	1	21	423	179
Retail	729	106	30	19	10	18	0	0	0	0	769	142
Other Comm./Inst.	4,077	513	277	157	117	191	8	75	3	734	4,482	1,672
Total	7,714	829	1,571	711	787	912	45	383	9	902	10,126	3,737

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

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Pennsylvania 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.

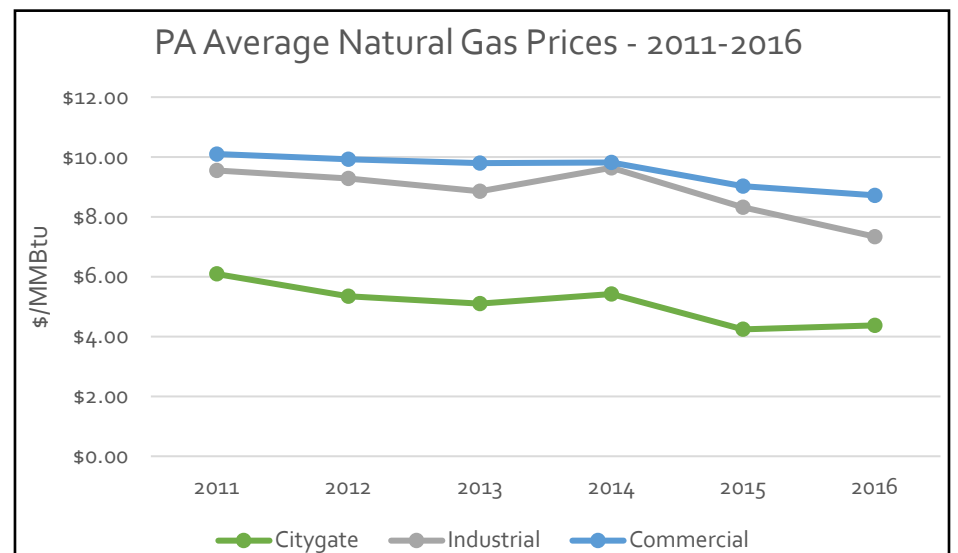
Pennsylvania Natural Gas Prices

Pennsylvania Average Gas Prices - 2016

Sector	PA Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	4.37	3.75
Industrial	7.34	3.39
Commercial	8.72	7.22

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



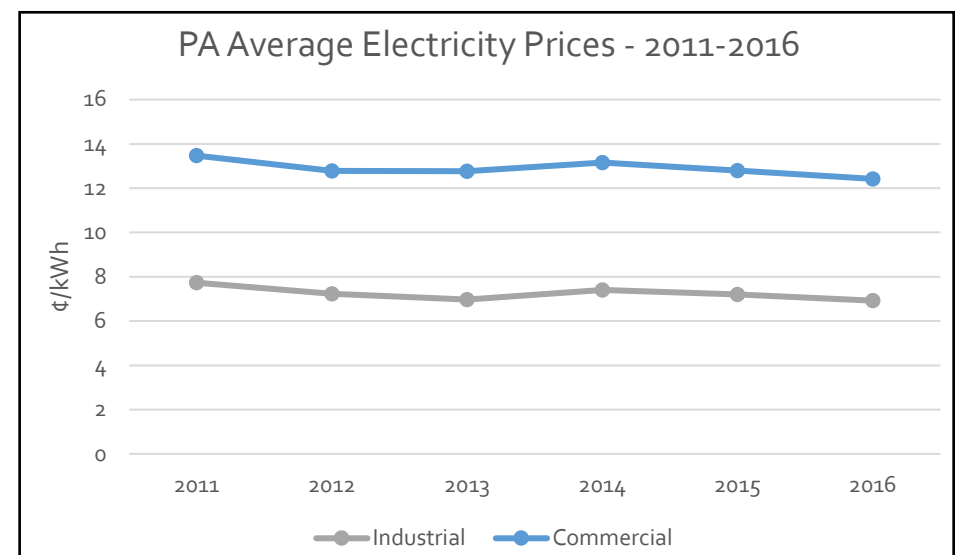
Pennsylvania Electricity Prices

Pennsylvania Average Electricity Prices - 2016

Sector	PA Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	6.92	6.75
Commercial	9.25	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.



Pennsylvania Average Delivered Electricity Prices by Utility

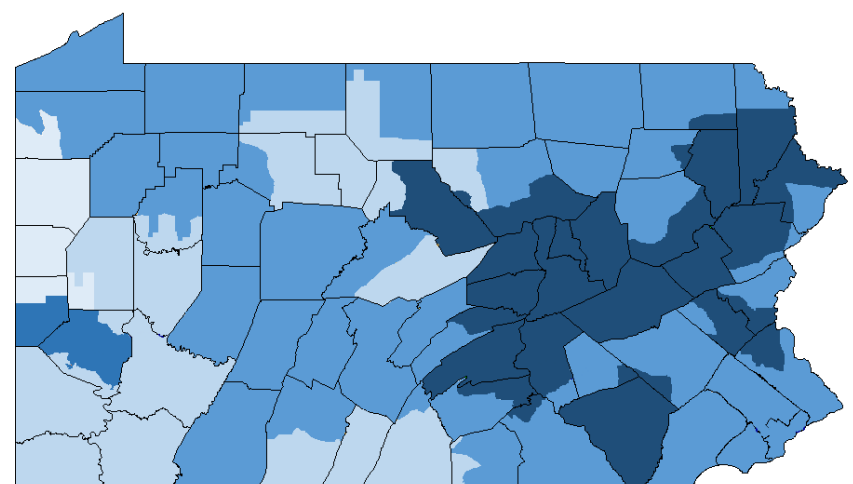
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
PPL Electric Utilities Corp	13.45	12.97	13.21
Duquesne Light Co	11.23	11.82	11.53
Metropolitan Edison Co	9.38	11.42	10.40
UGI Utilities	9.10	11.35	10.22
Pennsylvania Electric Co	8.86	11.55	10.20
PECO Energy Co	7.74	11.71	9.73
West Penn Power Co	7.38	9.39	8.39
Pennsylvania Power Co	5.08	10.31	7.69

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.

Pennsylvania Electricity Prices – Heat Map



- Pennsylvania Power Co
- West Penn Power Co
- Metropolitan Edison / UGI Utilities / PA Electric / PECO Energy
- Duquesne Light Co
- PPL Electric Utilities Corp

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

- Pennsylvania Public Utility Commission
 - [Pittsburgh, PA](#)

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U.S. DEPARTMENT OF ENERGY
CHP Technical Assistance Partnerships