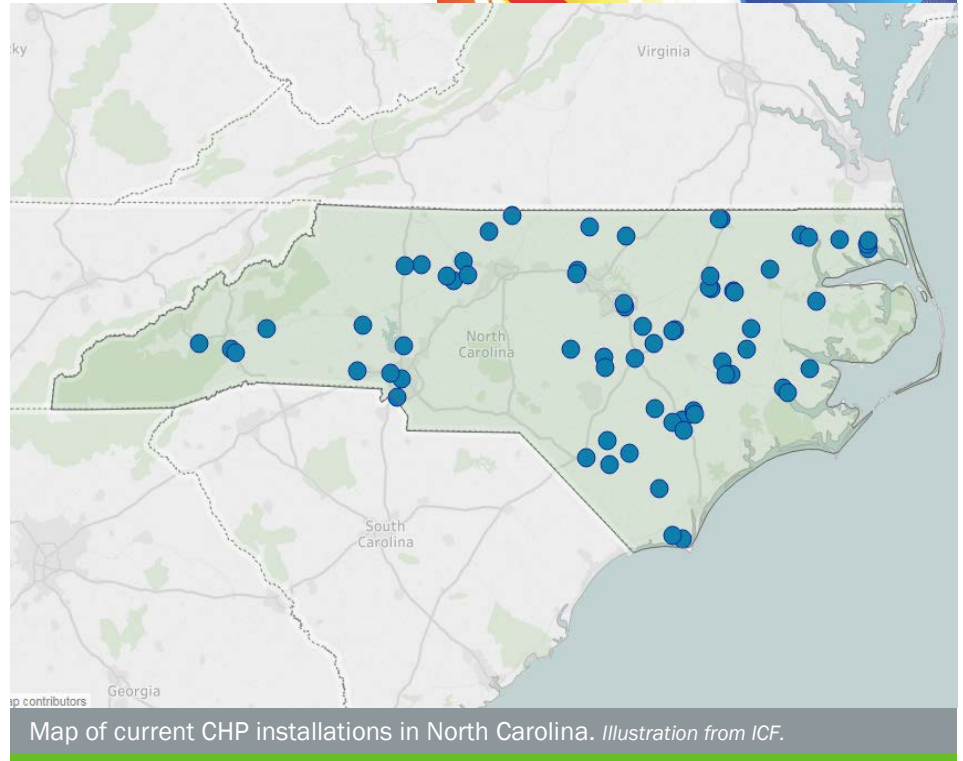


The State of CHP: North Carolina



Combined heat and power (CHP) – also 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. The information in this document provides a general overview of the state of CHP in North Carolina, with data on current installations, technical potential, and economics for CHP.



North Carolina: Installed CHP

U.S. DOE Combined Heat and Power Installation Database

The DOE CHP Installation Database is a data collection effort sponsored by the U.S. Department of Energy. The database contains a comprehensive listing of combined heat and power installations throughout the country, including those in North Carolina, and can be accessed by visiting energy.gov/chp-installs.

CHP Project Profiles

The Southeast CHP TAP has compiled information on certain illustrative CHP projects in North Carolina. You can access these by visiting the Department of Energy’s CHP Project Profiles Database at energy.gov/chp-projects.

Southeast CHP Technical Assistance Partnership

For assistance with questions about specific CHP opportunities in North Carolina, please consult with the Southeast CHP TAP by visiting sechptap.org or contacting the CHP TAP director.

North Carolina Existing CHP

Sector	Sites	Capacity (MW)
Industrial	38	1,094
Commercial/Institutional	22	65
Other	7	2
Total	67	1,161

Southeast CHP TAP Director

Isaac Panzarella, P.E.

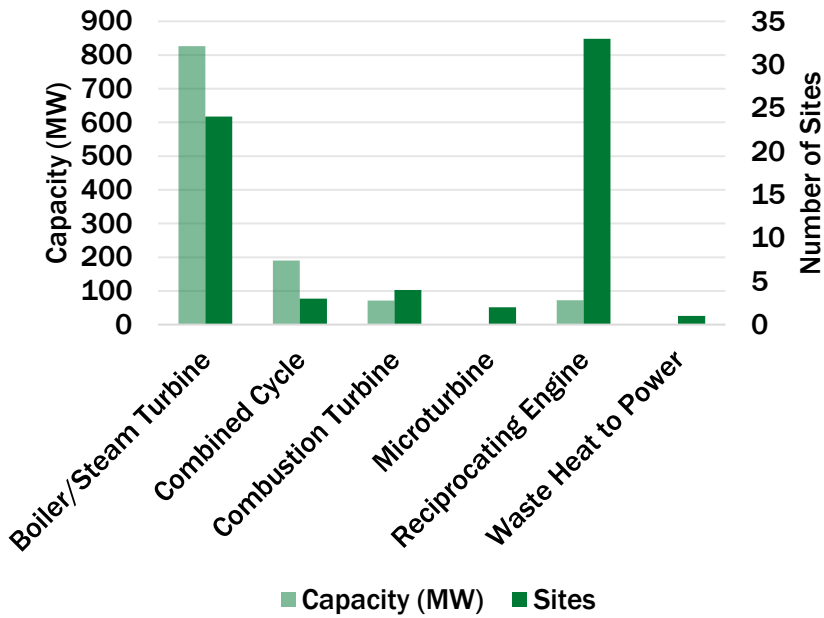
- North Carolina State University
- ipanzarella@ncsu.edu
- 919-515-0354

SOUTHEAST

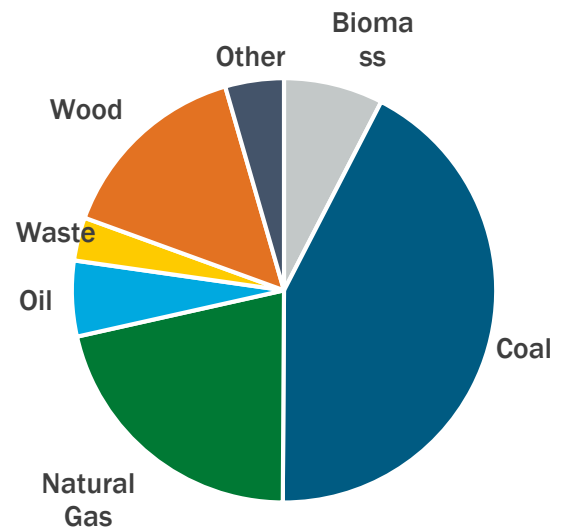


CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS

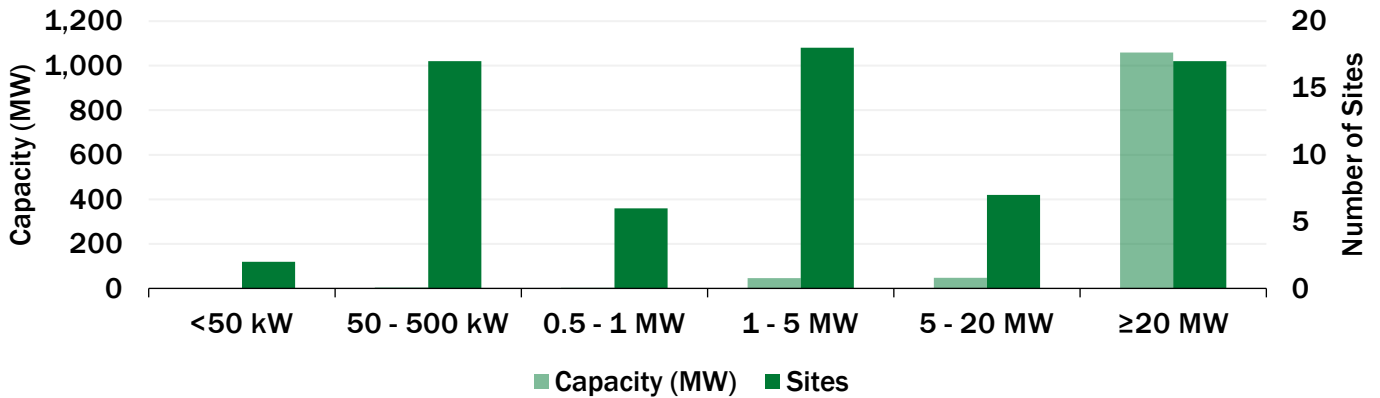
North Carolina CHP by Technology



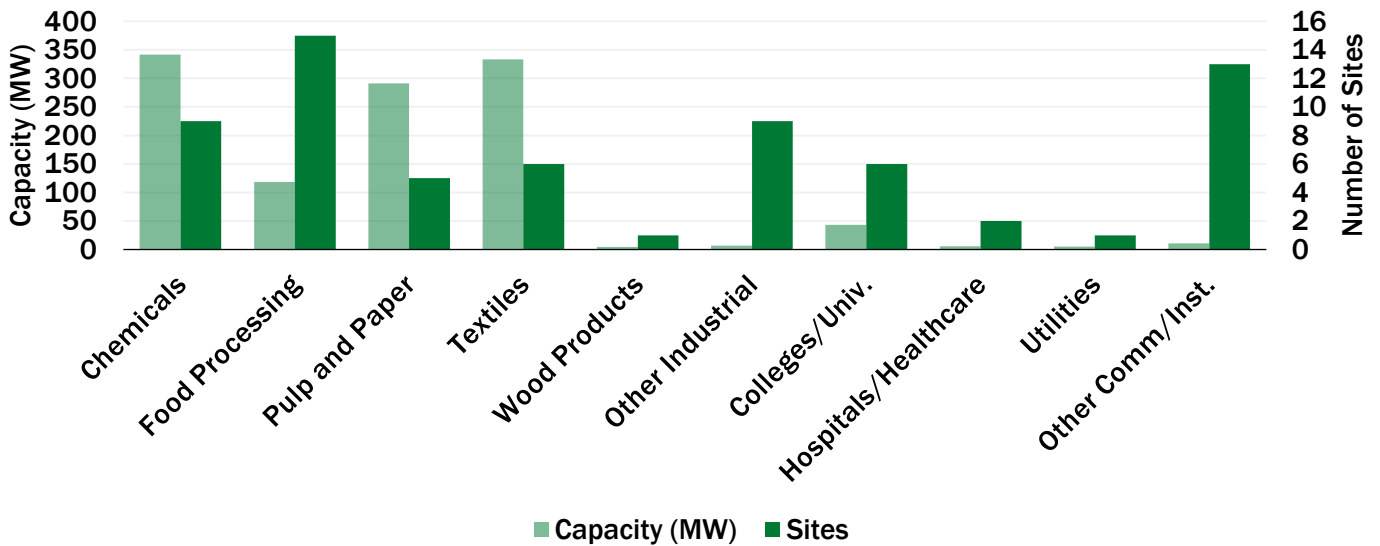
North Carolina CHP Capacity (MW) by Fuel



North Carolina CHP by Size Range



North Carolina CHP by Application



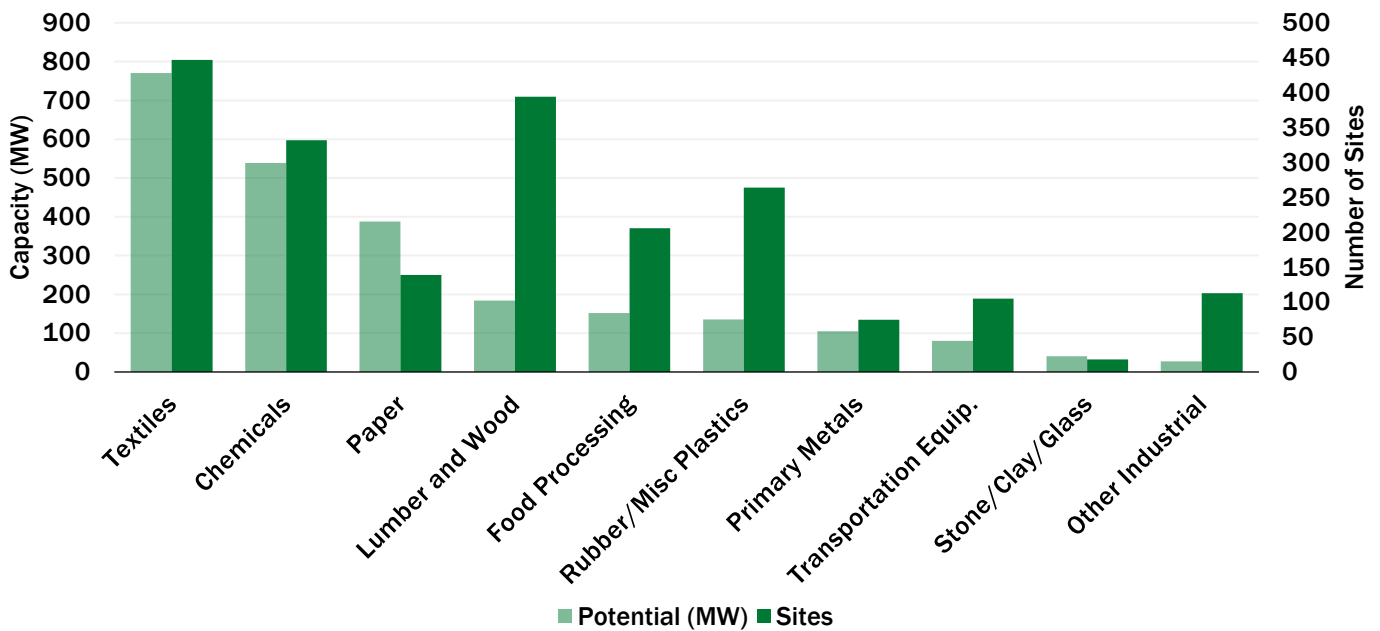
North Carolina: Technical Potential for New CHP Installations

The “Combined Heat and Power (CHP) Technical Potential in the United States” market analysis report provides data on the technical potential in industrial facilities and commercial buildings for “topping cycle” CHP, waste heat to power (WHP) CHP, and district energy CHP in the U.S. This report can be accessed at energy.gov/chp-potential.

North Carolina CHP Technical Potential

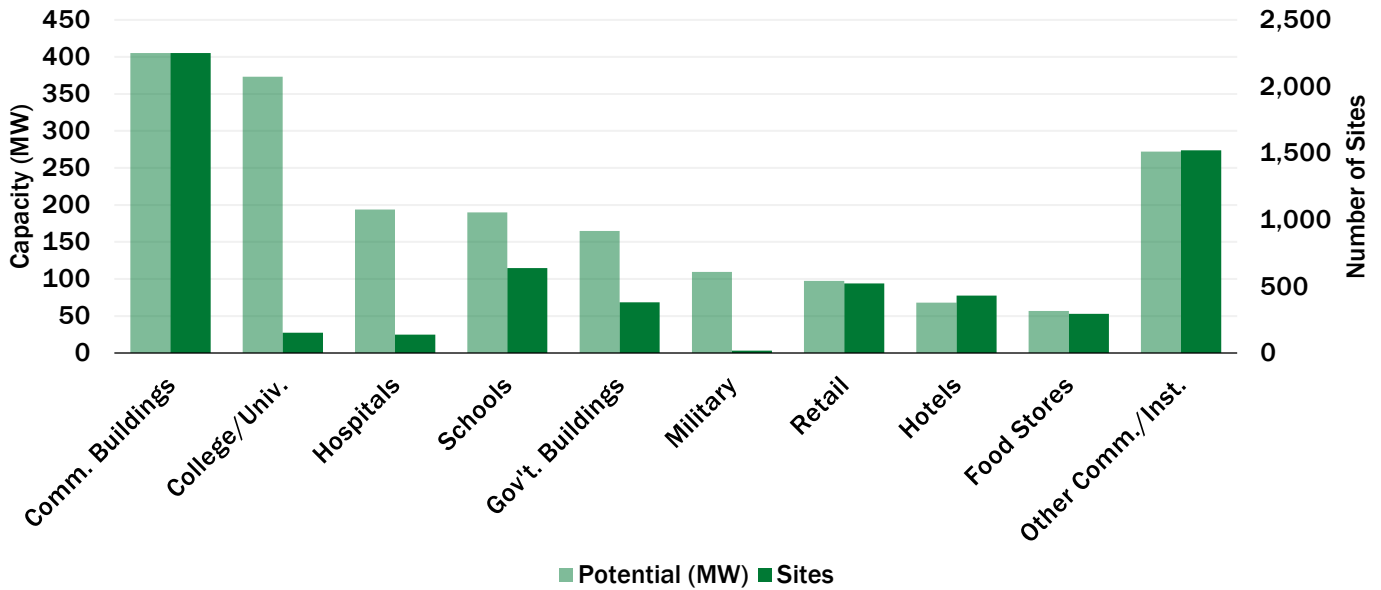
Sector	Potential Sites	Potential MW
Industrial	2,093	2,421
Commercial/Institutional	6,344	1,931
Total	8,437	4,352

North Carolina Technical Potential (MW) for Industrial CHP Applications



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
Textiles	195	44	53	40	157	308	40	327	2	52	447	770
Chemicals	188	35	39	29	80	183	21	168	4	125	332	539
Paper	69	19	28	19	29	59	8	80	5	210	139	388
Lumber and Wood	306	55	49	34	35	65	4	31	0	0	394	184
Food Processing	142	29	24	18	36	70	4	35	0	0	206	152
Other Industrial	445	79	54	39	64	120	9	68	3	84	575	389
Total	1,345	261	247	177	401	805	86	707	14	471	2,093	2,421

North Carolina Technical Potential (MW) for Commercial/Institutional CHP Applications



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	1,501	75	600	240	150	90	0	0	0	0	2,251	405
College/Univ.	66	14	23	16	44	101	17	156	3	86	153	373
Hospitals	40	11	42	29	48	100	9	53	0	0	139	194
Schools	571	145	64	43	2	2	0	0	0	0	637	190
Government Buildings	303	38	41	28	30	50	6	49	0	0	380	165
Other Comm./Inst.	2,611	312	122	76	43	71	5	42	3	103	2,784	604
Total	5,092	596	892	431	317	415	37	300	6	188	6,344	1,931

Department of Energy CHP Accelerators

Packaged CHP Accelerator

Standardized packaged CHP systems can reduce risk for both CHP users and suppliers by reducing design errors, limiting uncertainty about performance, shortening project development time, and reducing overall costs. Accelerator partners will validate the installation, performance, and economic and resiliency benefits of packaged CHP systems, evaluate the integration of new technologies and packaged CHP, and identify R&D challenges. For more information, visit <https://betterbuildingsinitiative.energy.gov/accelerators/packaged-chp>

CHP for Resiliency Accelerator

The U.S. DOE collaborated with cities, states, utilities, and other stakeholders who are actively pursuing CHP as a consideration in resiliency planning for critical infrastructure in their jurisdictions. This included defining resiliency, identifying critical infrastructure, and assessing CHP opportunities. This process was documented in the DG for Resilience Planning Guide and the CHP for Resilience Screening Tool. For more information, visit <https://betterbuildingsinitiative.energy.gov/accelerators/combined-heat-and-power-resiliency>

North Carolina: 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.

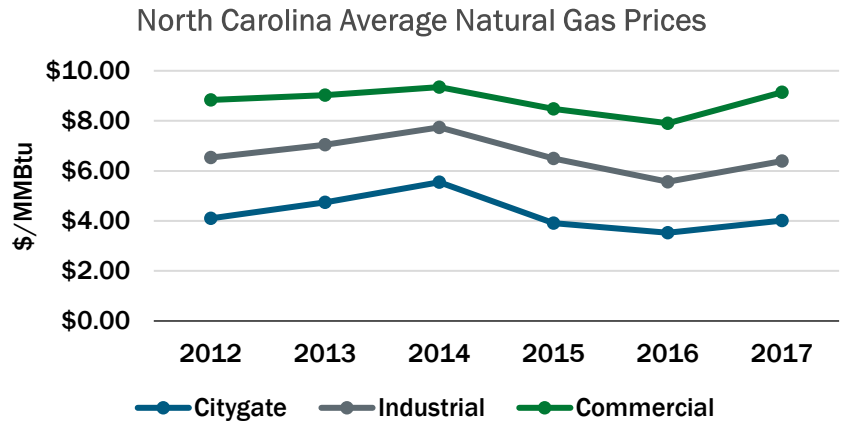
North Carolina Natural Gas Prices

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.

North Carolina Average Gas Prices (\$/MMBtu) - 2017

Sector	NC Price	U.S. Price
Citygate*	4.02	4.26
Industrial	6.40	4.20
Commercial	9.14	8.08

*Citygate is a point or measuring station at which a distributing gas utility receives gas from a NG pipeline company or transmission system.

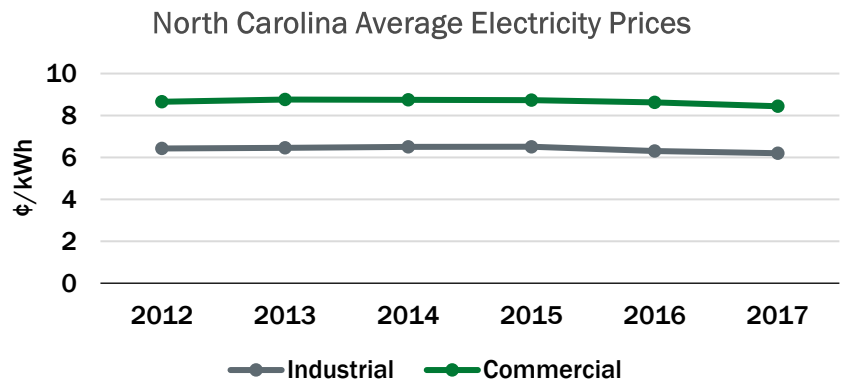


North Carolina Electricity Prices

Electricity rates can vary greatly by utility and facility size range. The rates below from EIA represent general averages; individual facility rates may vary.

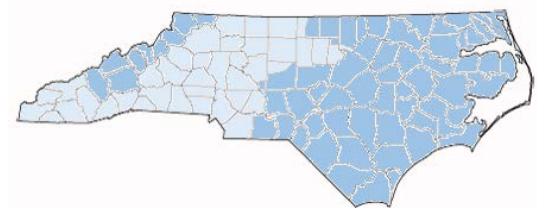
North Carolina Average Electricity Prices (¢/kWh) - 2017

Sector	NC Price	U.S. Price
Industrial	6.20	6.88
Commercial	8.44	10.66



North Carolina Average Delivered Electricity Prices by Utility

Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price (¢/kWh)
State municipal average	8.09	10.84	9.47
State coop average	7.34	11.19	9.27
Dominion Power	5.59	9.09	7.34
Duke Energy Progress	6.05	8.15	7.10
Duke Energy Carolinas	5.92	7.71	6.81



- Duke Energy Carolinas
- Duke Energy Progress / Dominion Power