

The State of CHP: Texas



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

Installed CHP

CHP Technical Potential

CHP Economics

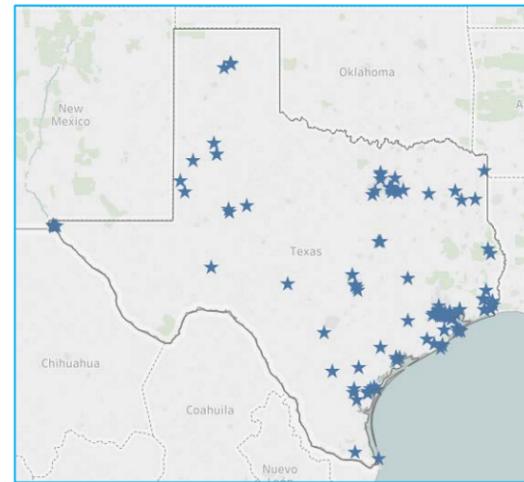
CHP Partners

Texas Installed Base of CHP

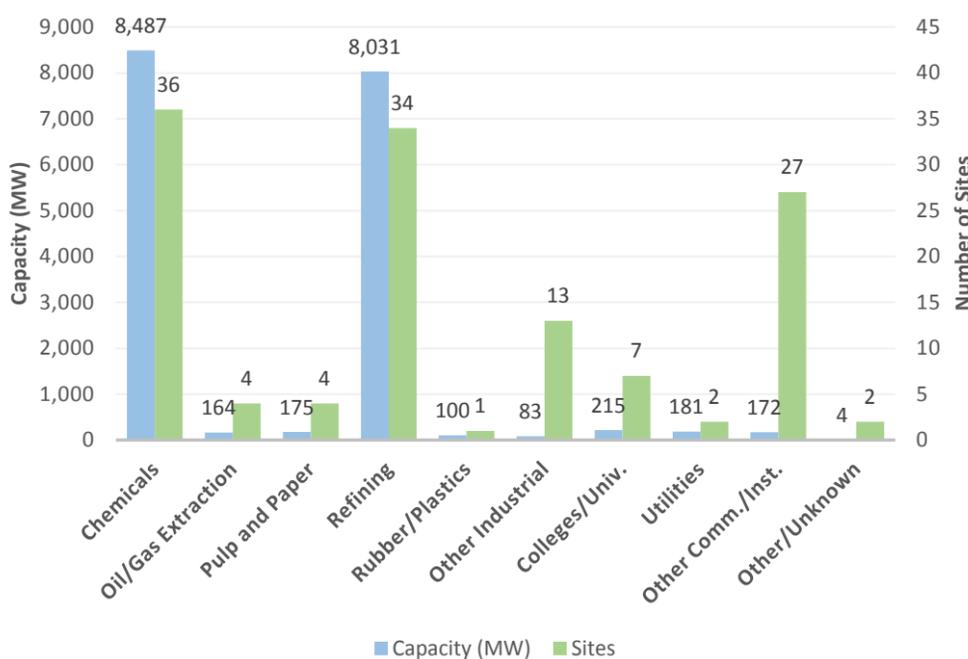
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	87	16,874
Commercial/Institutional	36	568
Other	7	170
Total	130	17,612

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

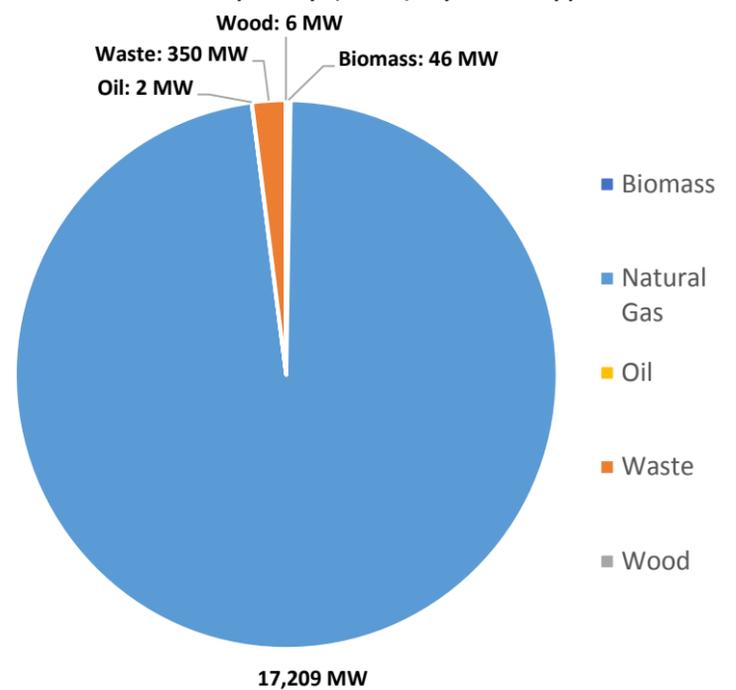


Texas CHP by Application



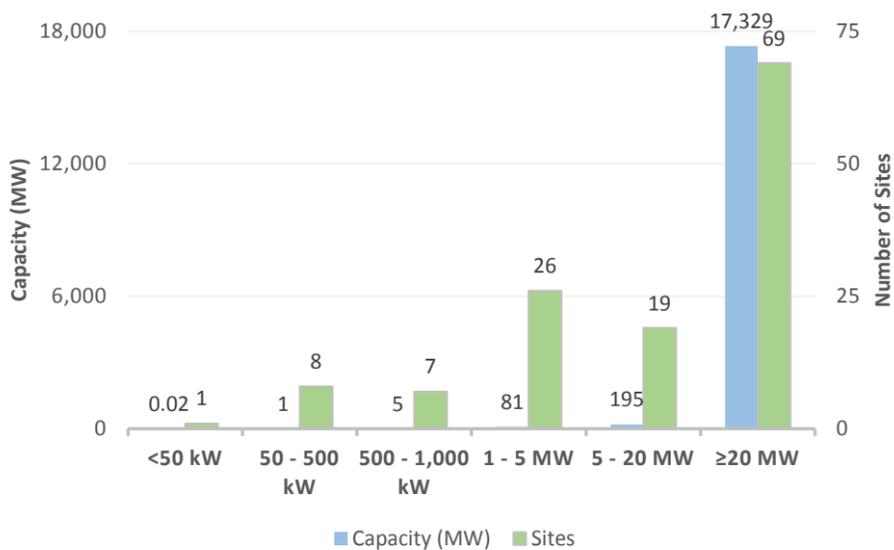
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Texas CHP Capacity (MW) by Fuel Type



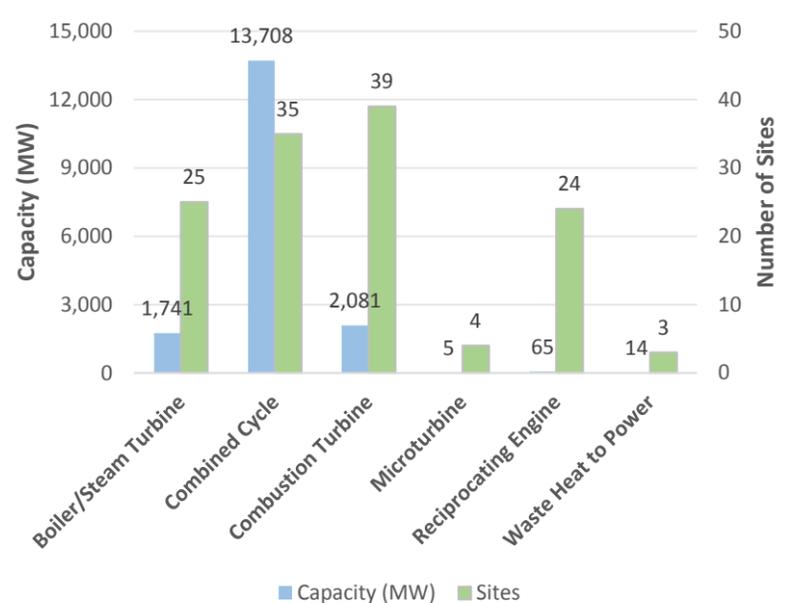
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Texas CHP by Size Range



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

Texas 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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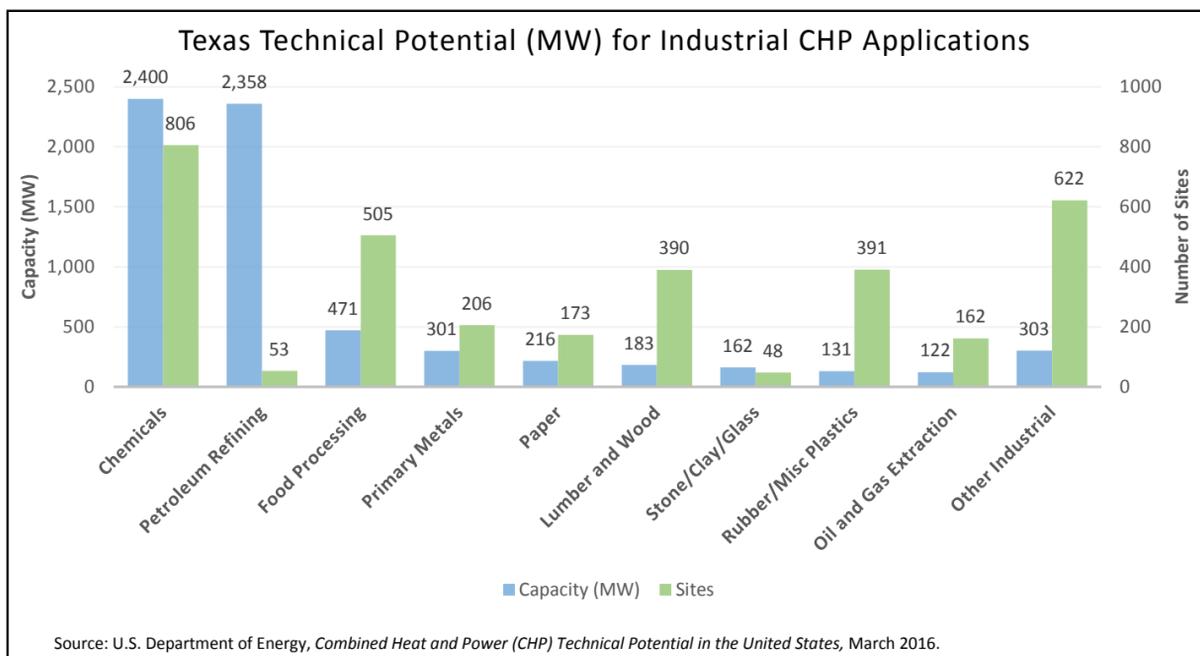
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Texas Technical Potential for New CHP Installations

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

Sector	Potential Sites	Potential Capacity (MW)
Industrial	3,356	6,648
Commercial/Institutional	17,499	7,414
Total	20,855	14,062

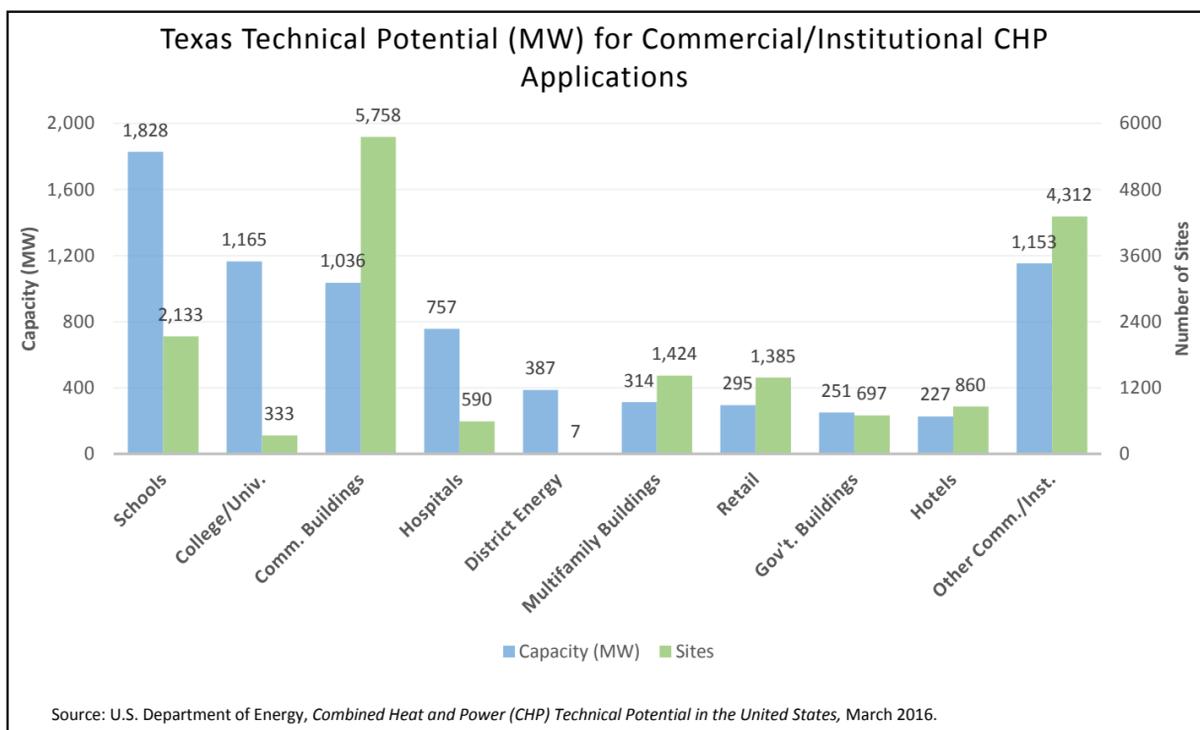


Source: U.S. Department of Energy, Combined Heat and Power (CHP) Technical Potential in the United States, March 2016.

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	404	78	114	82	176	380	84	769	28	1,092	806	2,400
Petroleum Refining	3	0	4	2	7	16	10	126	29	2,214	53	2,358
Food	347	66	58	40	80	160	19	184	1	21	505	471
Primary Metals	114	28	40	28	37	84	12	89	3	73	206	301
Paper	114	29	20	13	25	50	13	100	1	25	173	216
Other Industrial	1,237	210	193	137	156	314	25	197	2	42	1,613	901
Total	2,219	410	429	302	481	1,003	163	1,466	64	3,466	3,356	6,648

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
Schools	237	116	1,386	902	510	811	0	0	0	0	2,133	1,828
College/Univ.	179	33	17	11	85	233	39	388	13	500	333	1,165
Commercial Buildings	3,839	192	1,535	614	384	230	0	0	0	0	5,758	1,036
Hospitals	358	86	87	59	128	274	16	109	1	229	590	757
Multifamily Buildings	1,003	75	364	182	56	56	0	0	0	0	1,424	314
Other Comm./Inst.	6,649	869	306	203	267	521	29	216	10	505	7,261	2,314
Total	12,265	1,371	3,695	1,970	1,430	2,125	84	713	24	1,235	17,499	7,414

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

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CHP Technical Potential

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Texas 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.

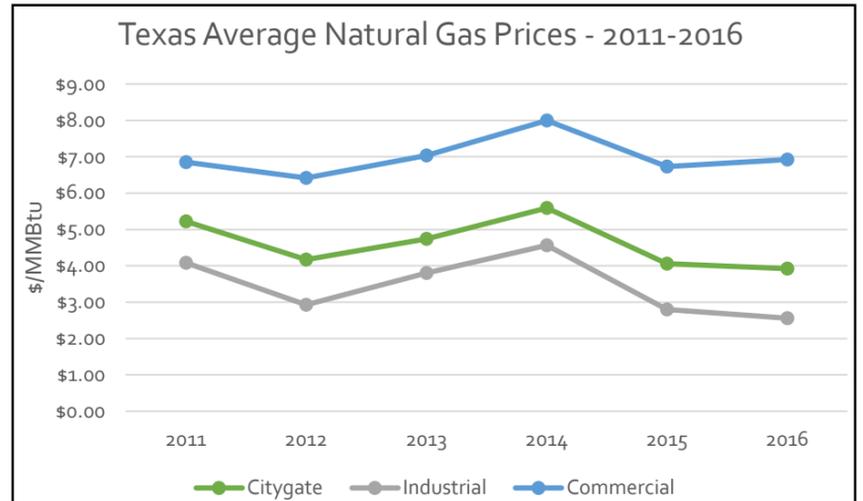
Texas Natural Gas Prices

Texas Average Gas Prices - 2016

Sector	TX 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_STX_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.



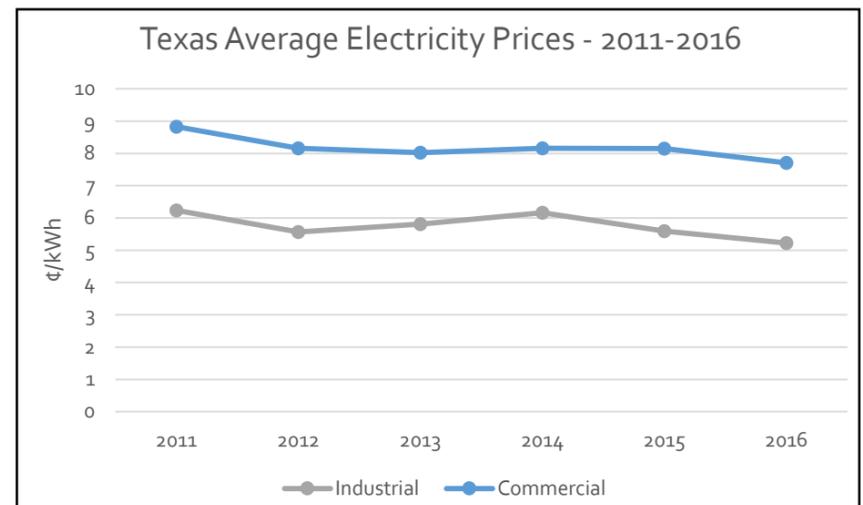
Texas Electricity Prices

Texas Average Electricity Prices - 2016

Sector	TX Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	5.22	6.75
Commercial	7.71	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.



Texas Average Delivered Electricity Prices by Utility

Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Centerpoint Energy	6.90	12.19	9.55
Hudson Energy Services	-	9.53	9.53
ONCOR	6.30	11.53	8.92
AEP Texas	-	7.62	7.92
MidAmerican Energy	4.99	8.36	6.67
Entergy Texas	5.18	7.52	6.35
SW Public Service	4.71	7.54	6.12
NextEra Energy Services	-	5.38	5.38

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.

Texas Electricity Prices – Heat Map



- Lightest Blue: \$5.00 - \$6.00
- Light Blue: \$6.00 - \$7.00
- Medium Blue: \$7.00 - \$8.00
- Dark Blue: \$8.00 - \$9.00
- Darkest Blue: >\$9.00

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CHP Technical
Potential

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Department of Energy CHP Partnerships

Southwest CHP Technical Assistance Partnership



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

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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](#).

- Thermal Energy Corporation

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U.S. DEPARTMENT OF ENERGY
CHP Technical Assistance Partnerships