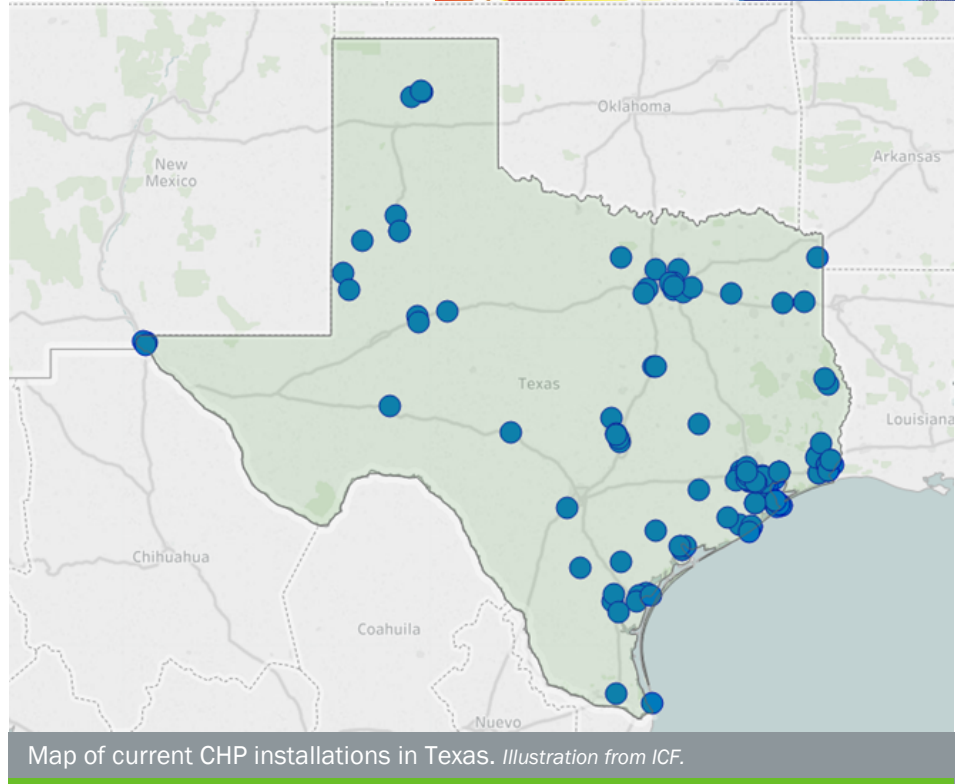


The State of CHP: Texas



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 Texas, with data on current installations, technical potential, and economics for CHP.



Texas: 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 Texas, and can be accessed by visiting <https://doe.icfwebservices.com/chp>.

CHP Project Profiles

The Southcentral CHP TAP 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 at <https://betterbuildingsolutioncenter.energy.gov/chp/chp-project-profiles-database>.

Southcentral CHP Technical Assistance Partnership

For assistance with questions about specific CHP opportunities in Texas, please consult with the Southcentral CHP TAP by visiting scchptap.org or contacting the CHP TAP director.

Texas Existing CHP

Sector	Sites	Capacity (MW)
Industrial	81	16,540
Commercial/Institutional	39	630
Other	7	170
Total	127	17,339

Southcentral CHP TAP Director

Gavin Dillingham, Ph.D.

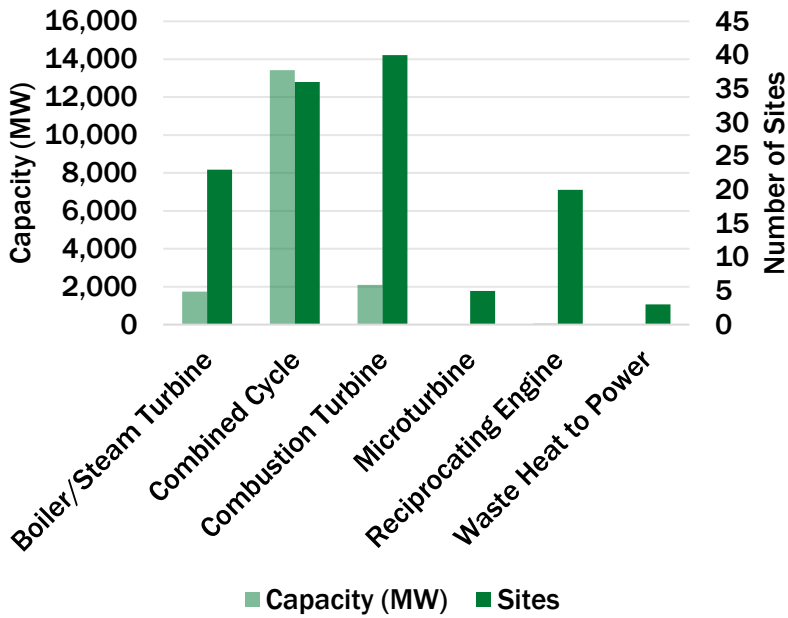
- HARC
- gdillingham@harcresearch.org
- 281-216-7147

SOUTHCENTRAL

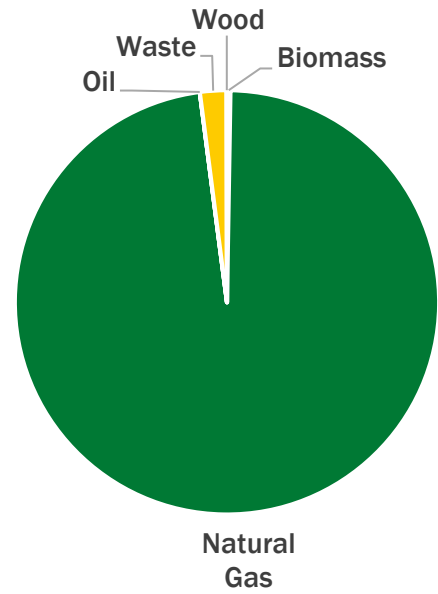


CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS

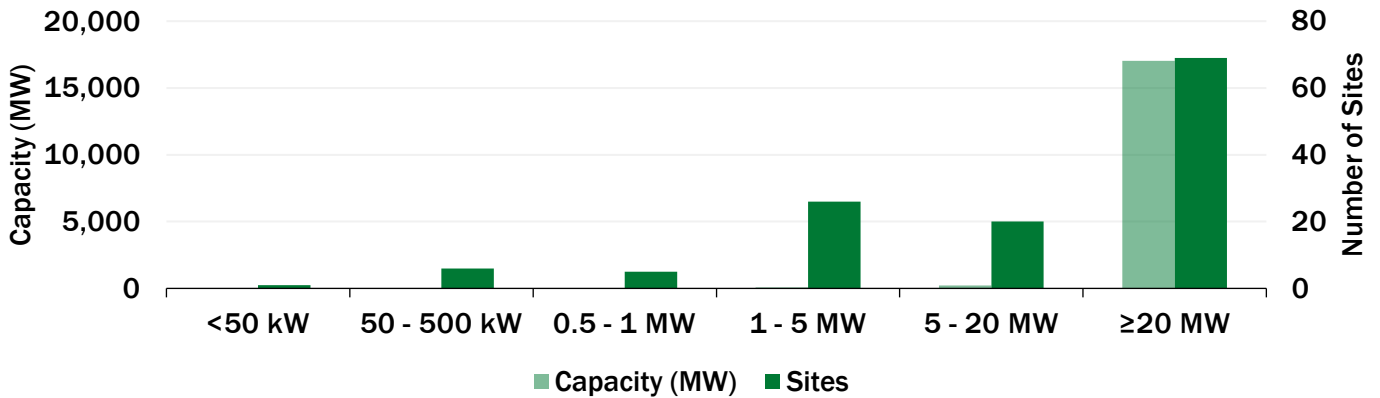
Texas CHP by Technology



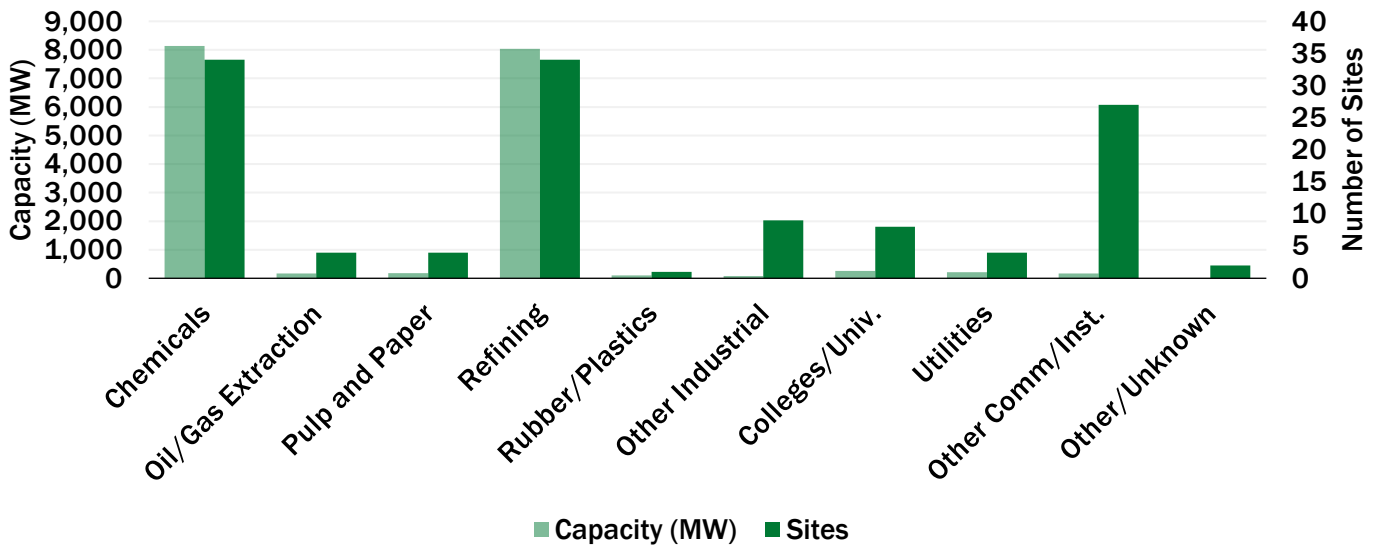
Texas CHP Capacity (MW) by Fuel



Texas CHP by Size Range



Texas CHP by Application



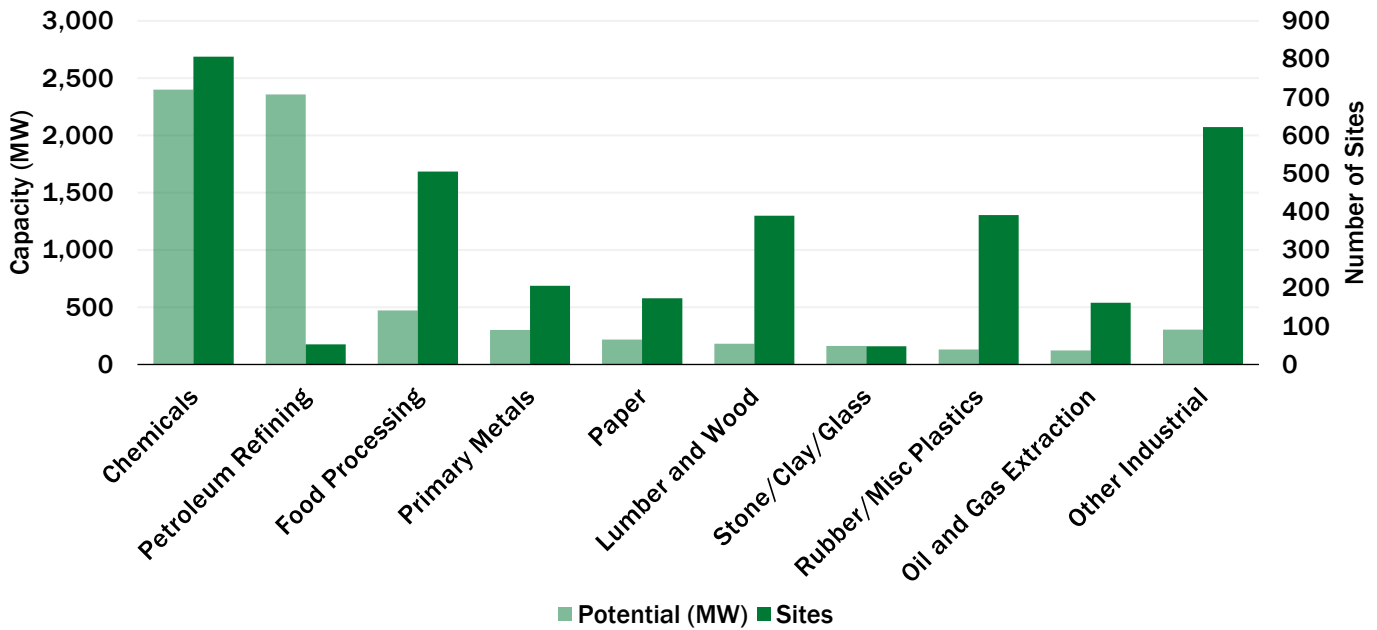
Texas: Technical Potential for New CHP Installations

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. Read the report [here](#).

Texas CHP Technical Potential

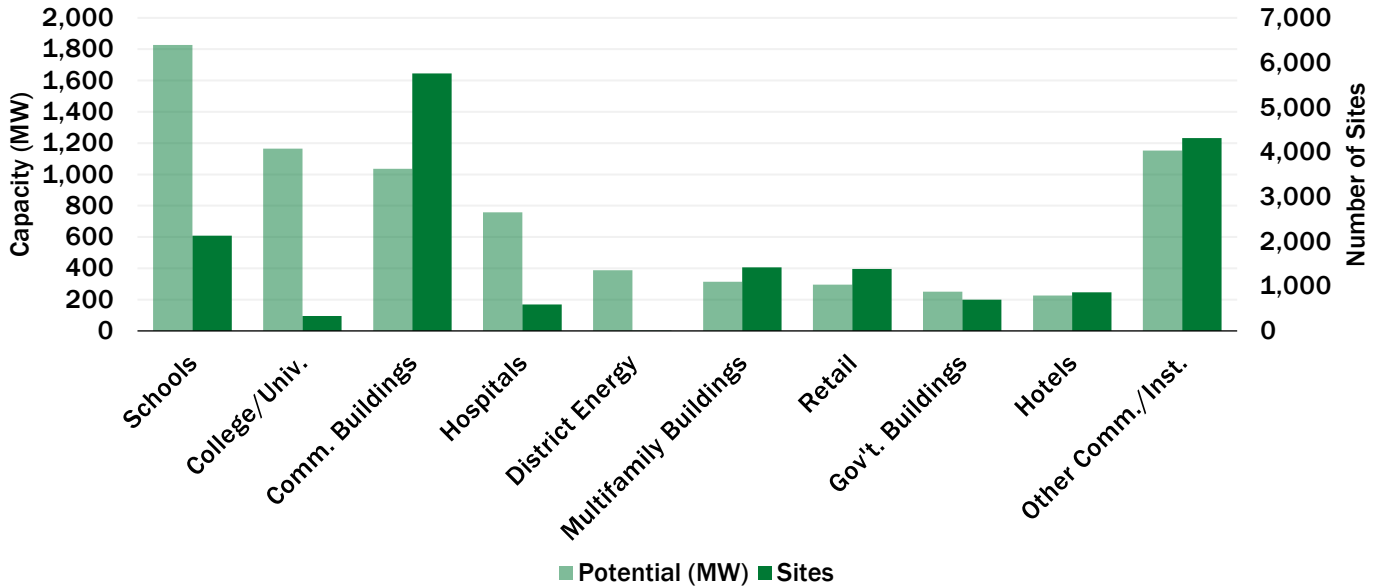
Sector	Potential Sites	Potential MW
Industrial	3,356	6,648
Commercial/Institutional	17,499	7,414
Total	20,855	14,062

Texas 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
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

Texas 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
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

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://betterbuildingssolutioncenter.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://betterbuildingssolutioncenter.energy.gov/accelerators/combined-heat-and-power-resiliency>

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

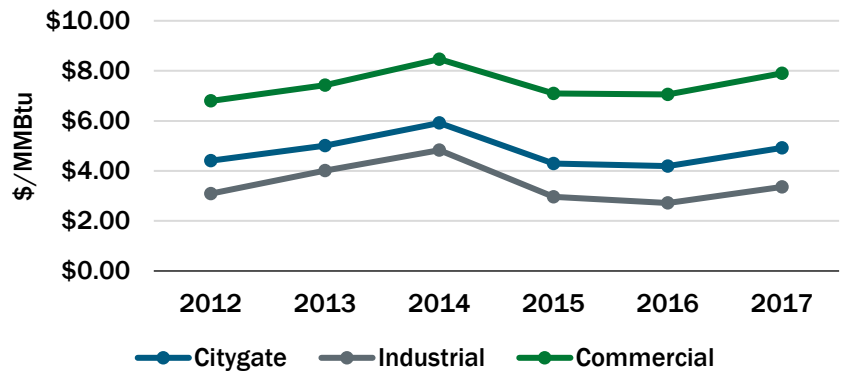
The EIA industrial natural gas price is a full tariff rate, and most large consumers are purchasing gas commodities from marketers at a lower rate.

Texas Average Gas Prices (\$/MMBtu) - 2017

Sector	TX Price	U.S. Price
Citygate*	4.92	4.26
Industrial	3.36	4.20
Commercial	7.90	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.

Texas Average Natural Gas Prices



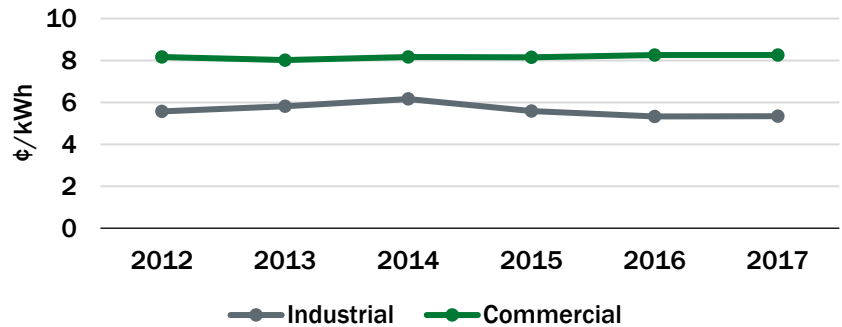
Texas Electricity Prices

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

Texas Average Electricity Prices (¢/kWh) - 2017

Sector	TX Price	U.S. Price
Industrial	5.35	6.88
Commercial	8.26	10.66

Texas Average Electricity Prices



Texas Average Delivered Electricity Prices by Utility

Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price (¢/kWh)
El Paso Electric	8.57	10.61	9.59
NextEra Energy Services	-	8.63	8.63
City of San Antonio	7.98	9.14	8.56
TXU Energy	5.84	11.21	8.53
Reliant Energy	5.89	10.83	8.36
Austin Energy	6.13	8.25	7.19
SWEPCO	5.99	7.82	6.91
Energy Texas	5.39	8.00	6.70
Xcel Energy	4.78	8.02	6.40



- Energy Texas / SWEPCO / Xcel Energy
- Austin Energy
- San Antonio / Retail energy providers
- El Paso Electric