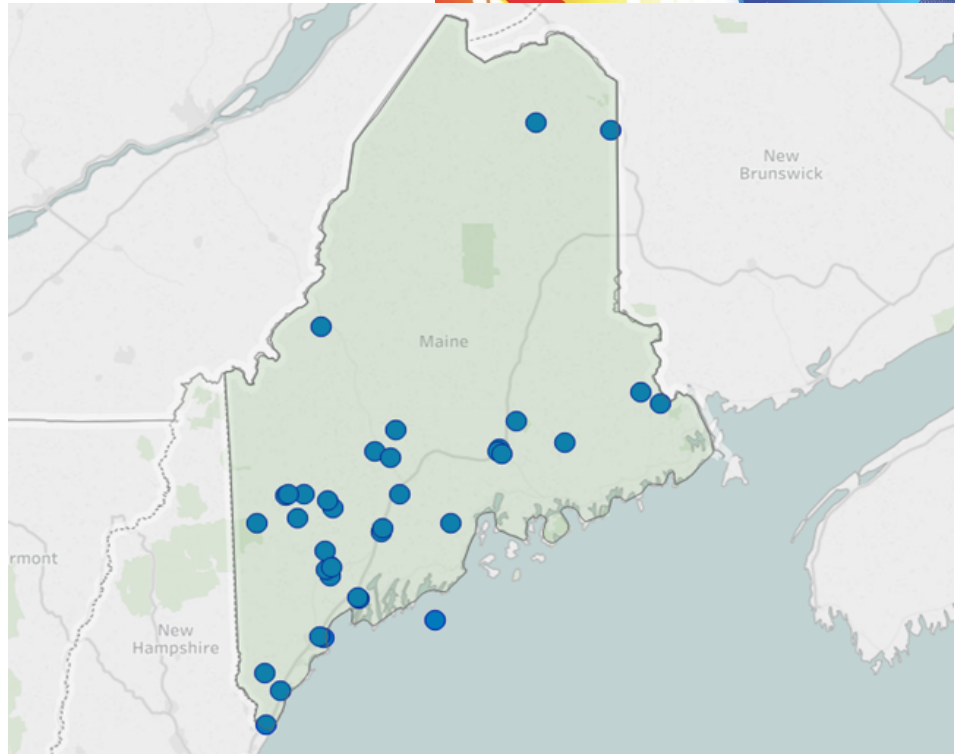


## The State of CHP: Maine



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



Map of current CHP installations in Maine. Illustration from ICF.

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

#### CHP Project Profiles

The New England CHP TAP has compiled information on certain illustrative CHP projects in Maine. You can access these by visiting the Department of Energy’s CHP Project Profiles Database at <https://betterbuildingssolutioncenter.energy.gov/chp/chp-project-profiles-database>.

#### New England CHP Technical Assistance Partnership

For assistance with questions about specific CHP opportunities in Maine, please consult with the New England CHP TAP by visiting [nechtap.org](http://nechtap.org) or contacting the CHP TAP director.

#### Maine Existing CHP

Sector	Sites	Capacity (MW)
Industrial	18	630
Commercial/Institutional	20	26
Other	0	0
<b>Total</b>	<b>38</b>	<b>656</b>

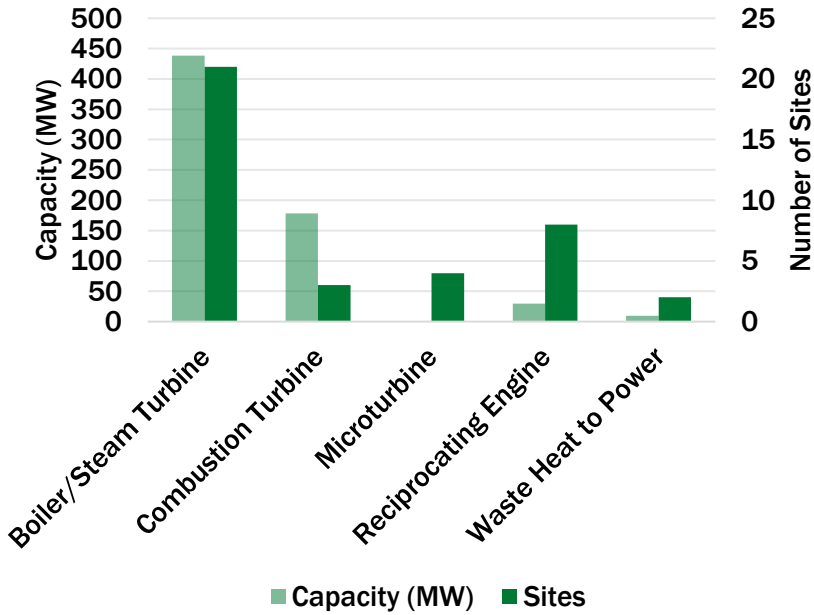
#### New England CHP TAP Director

David Dvorak, Ph.D., P.E.

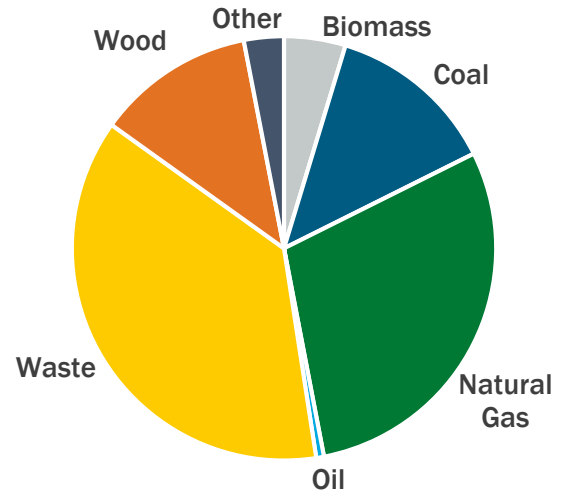
- University of Maine
- [dvorak@maine.edu](mailto:dvorak@maine.edu)
- 207-581-2338



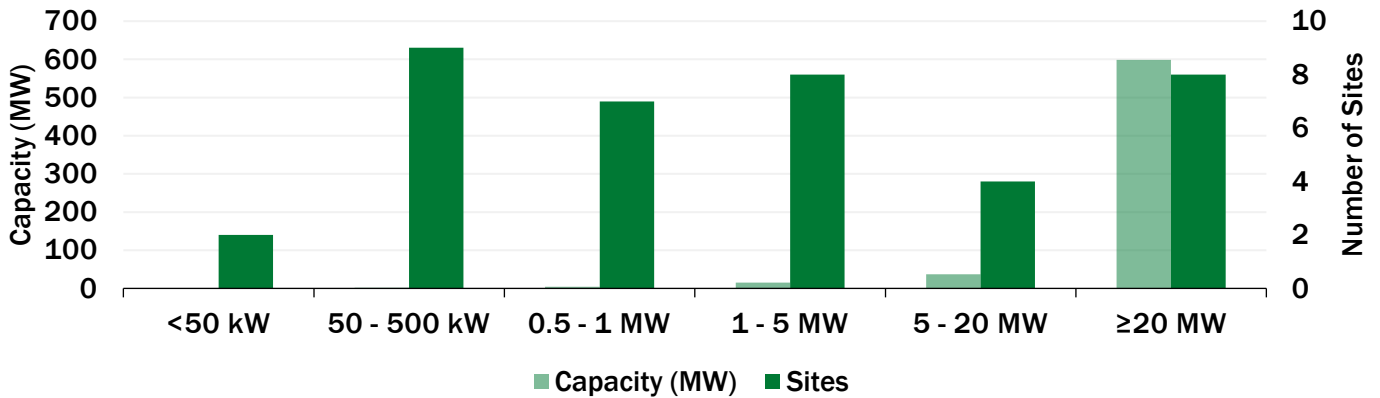
Maine CHP by Technology



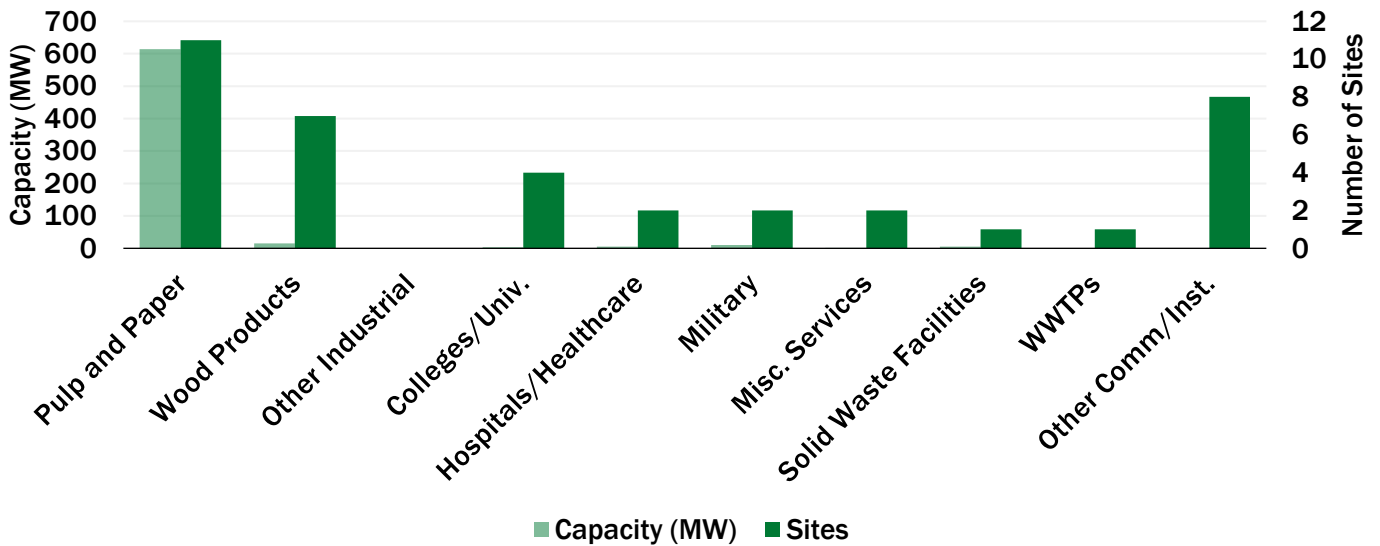
Maine CHP Capacity (MW) by Fuel



Maine CHP by Size Range



Maine CHP by Application



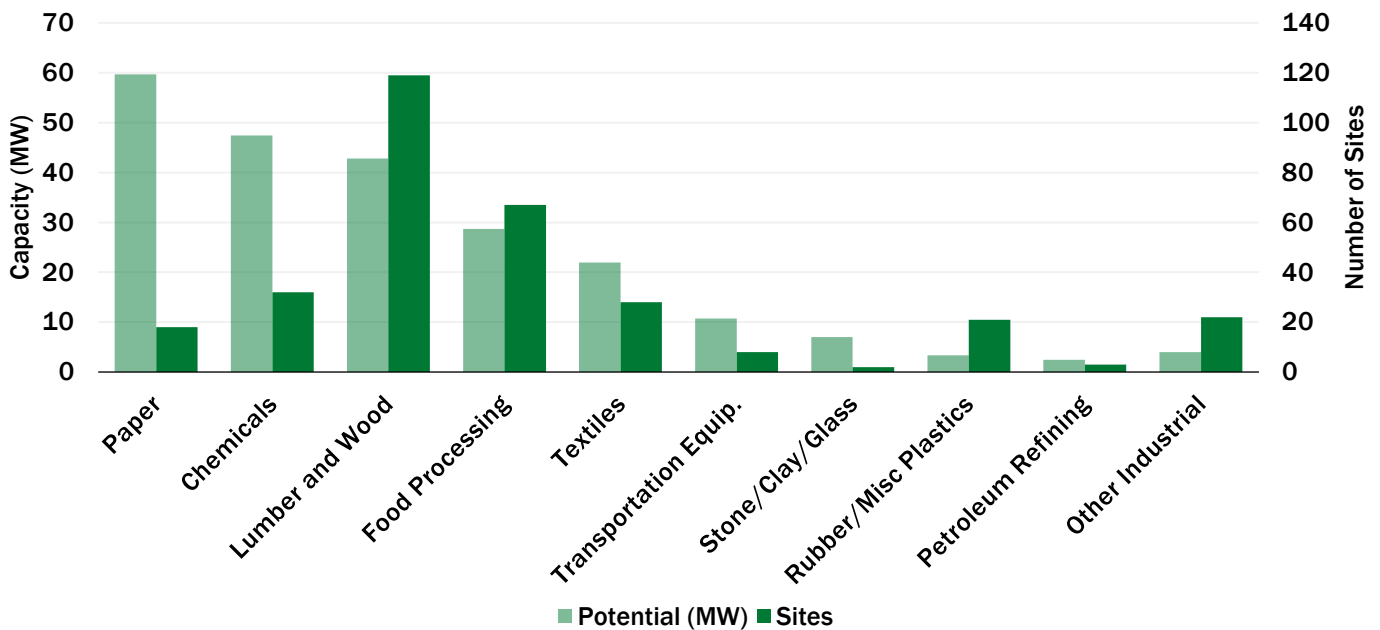
## Maine: Technical Potential for New CHP Installations

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](#).

## Maine CHP Technical Potential

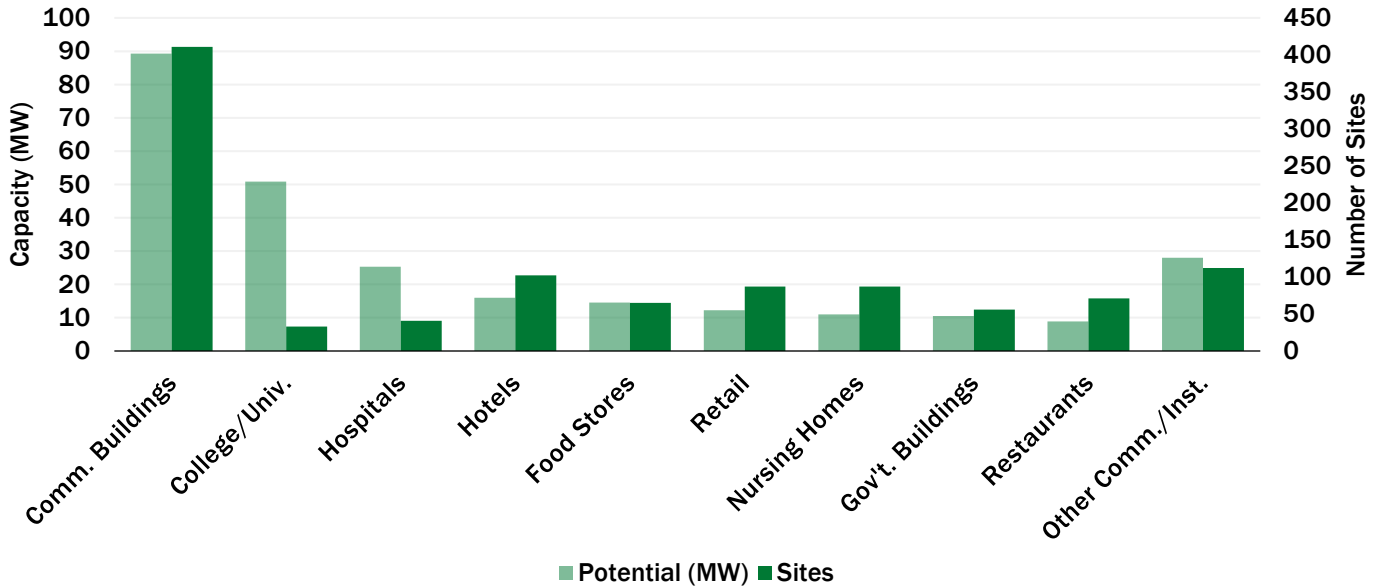
Sector	Potential Sites	Potential MW
Industrial	320	228
Commercial/Institutional	1,065	266
<b>Total</b>	<b>1,385</b>	<b>494</b>

Maine 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
Paper	5	1	2	1	9	21	1	7	1	30	18	60
Chemicals	18	3	4	3	7	12	3	30	0	0	32	47
Lumber and Wood	101	17	10	7	8	19	0	0	0	0	119	43
Food Processing	50	8	10	8	7	12	0	0	0	0	67	29
Textiles	18	4	4	3	6	15	0	0	0	0	28	22
Other Industrial	48	7	4	3	3	10	1	7	0	0	56	27
<b>Total</b>	<b>240</b>	<b>41</b>	<b>34</b>	<b>25</b>	<b>40</b>	<b>88</b>	<b>5</b>	<b>43</b>	<b>1</b>	<b>30</b>	<b>320</b>	<b>228</b>

## Maine 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	242	12	121	48	48	29	0	0	0	0	411	89
College/Univ.	18	3	4	3	8	19	3	25	0	0	33	51
Hospitals	24	6	9	6	8	14	0	0	0	0	41	25
Hotels	96	12	5	3	1	1	0	0	0	0	102	16
Food Stores	64	14	1	1	0	0	0	0	0	0	65	15
Other Comm./Inst.	388	43	17	11	6	10	1	5	0	0	413	70
<b>Total</b>	<b>832</b>	<b>90</b>	<b>157</b>	<b>72</b>	<b>71</b>	<b>73</b>	<b>4</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>1,065</b>	<b>266</b>

## 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>

## Maine: 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.

### Maine Natural Gas Prices

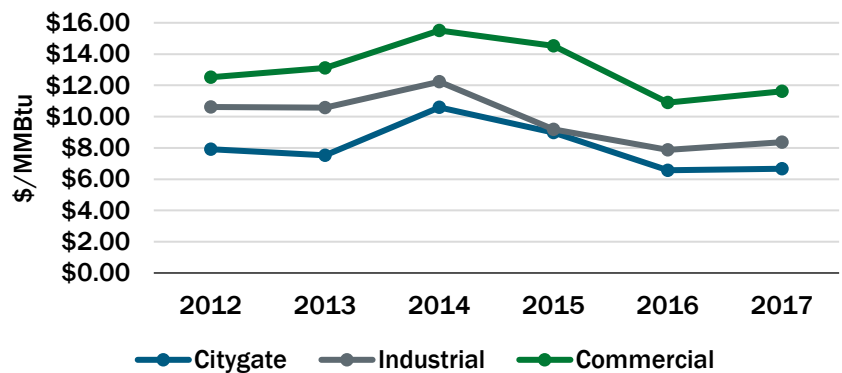
The EIA industrial natural gas price is a full tariff rate, and most large consumers are purchasing gas commodities from marketers at a lower rate.

#### Maine Average Gas Prices (\$/MMBtu) - 2017

Sector	ME Price	U.S. Price
Citygate*	6.66	4.26
Industrial	8.35	4.20
Commercial	11.61	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.

#### Maine Average Natural Gas Prices



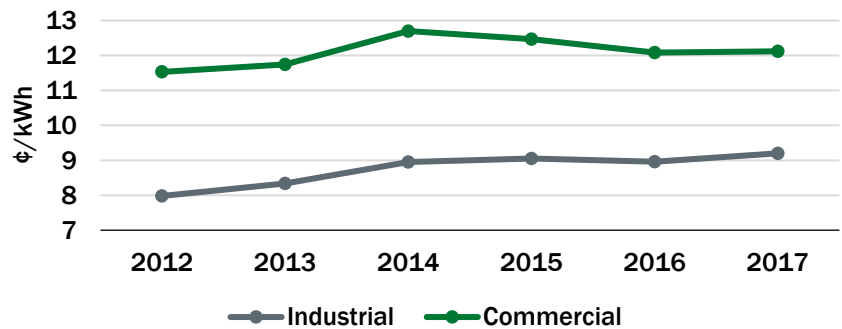
### Maine Electricity Prices

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

#### Maine Average Electricity Prices (\$/kWh) - 2017

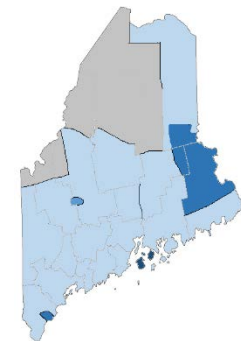
Sector	ME Price	U.S. Price
Industrial	9.20	6.88
Commercial	12.12	10.66

#### Maine Average Electricity Prices



#### Maine Average Delivered Electricity Prices by Utility

Utility	Industrial Price (\$/kWh)	Commercial Price (\$/kWh)	Average Price (\$/kWh)
Fox Islands Electric Coop	-	24.76	24.76
Kennebunk Light & Power	17.68	12.47	15.08
Eastern Maine Electric	14.05	15.79	14.92
Town of Madison	10.13	15.84	12.99
Emera Maine	9.96	11.77	10.86
Central Maine Power Co	9.20	11.49	10.35
Houlton Water Company	9.57	10.43	10.00



- Emera Maine / Houlton / Central Maine Power
- Town of Madison
- Eastern Maine Electric / Kennebunk
- Fox Islands Electric Coop
- No utility information