

The State of CHP: MA



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

Installed CHP

CHP Technical Potential

CHP Economics

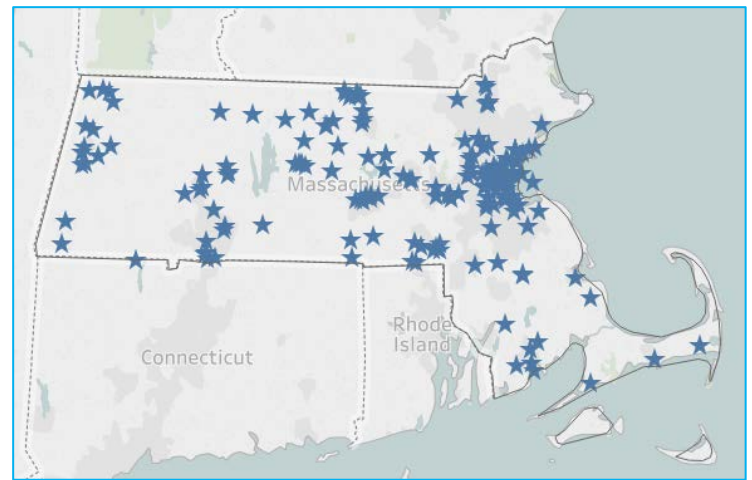
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Massachusetts Installed Base of CHP

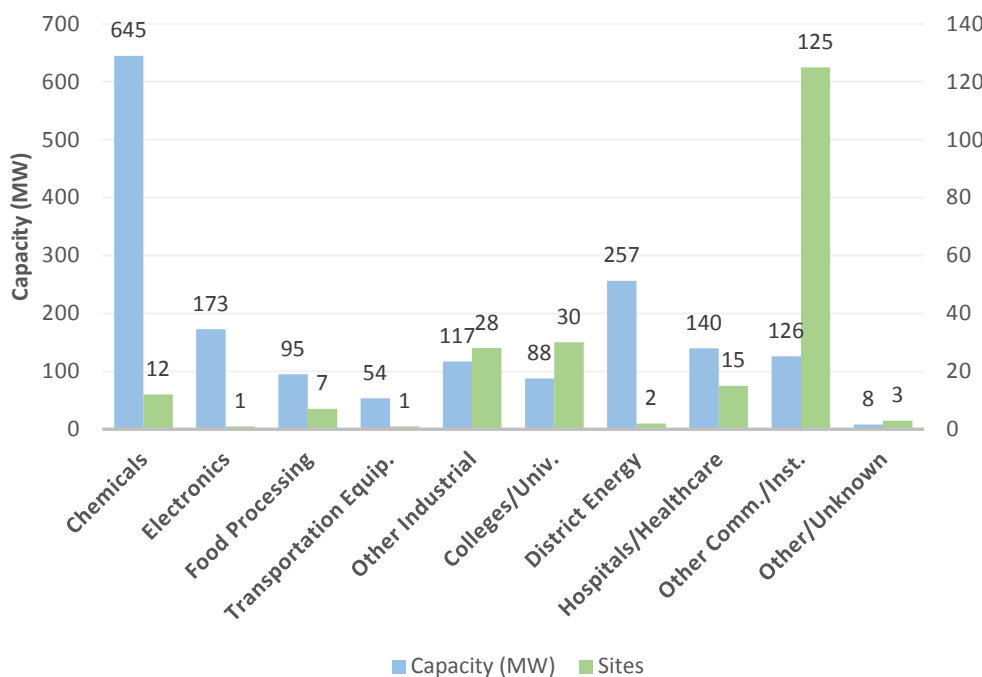
[U.S. DOE Combined Heat and Power Installation Database](#)

Sector	Installations	Capacity (MW)
Industrial	46	1,081
Commercial/Institutional	172	610
Other	6	11
Total	224	1,701

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

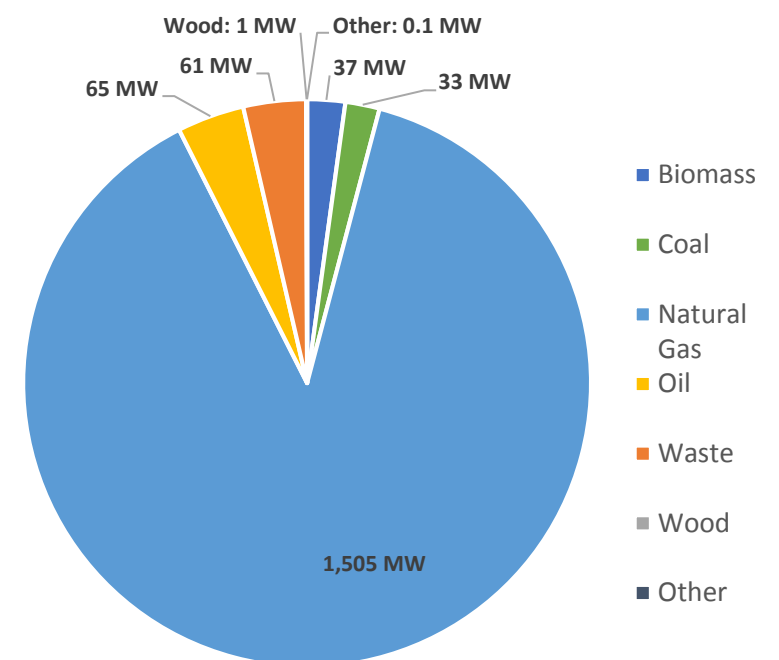


Massachusetts CHP by Application



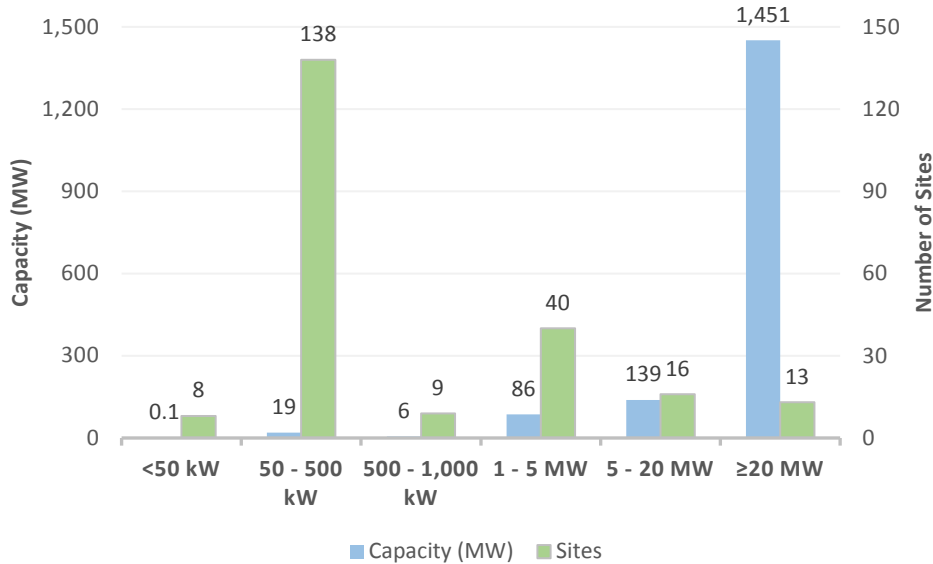
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Massachusetts CHP Capacity (MW) by Fuel Type



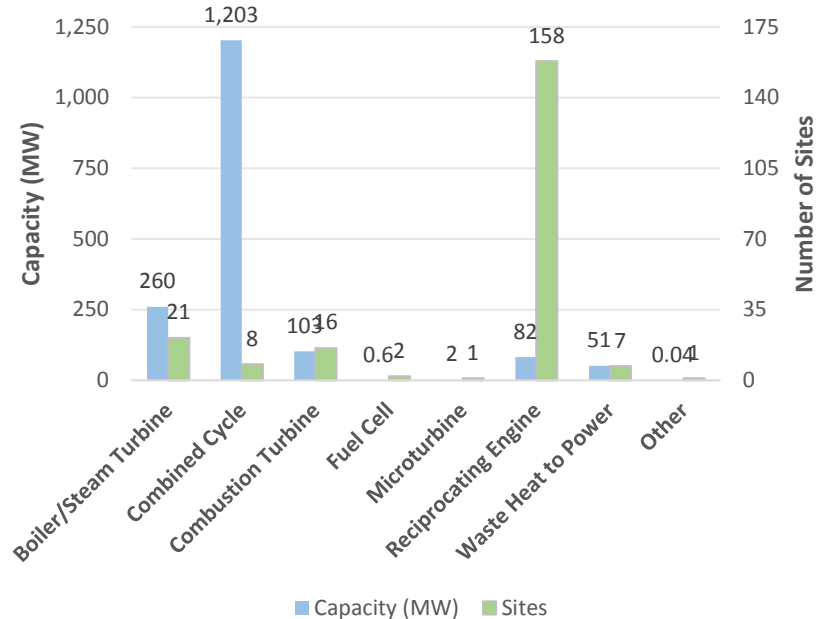
Source: DOE CHP Installation Database (U.S. installations as of Dec. 31, 2016)

Massachusetts CHP by Size Range



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

Massachusetts 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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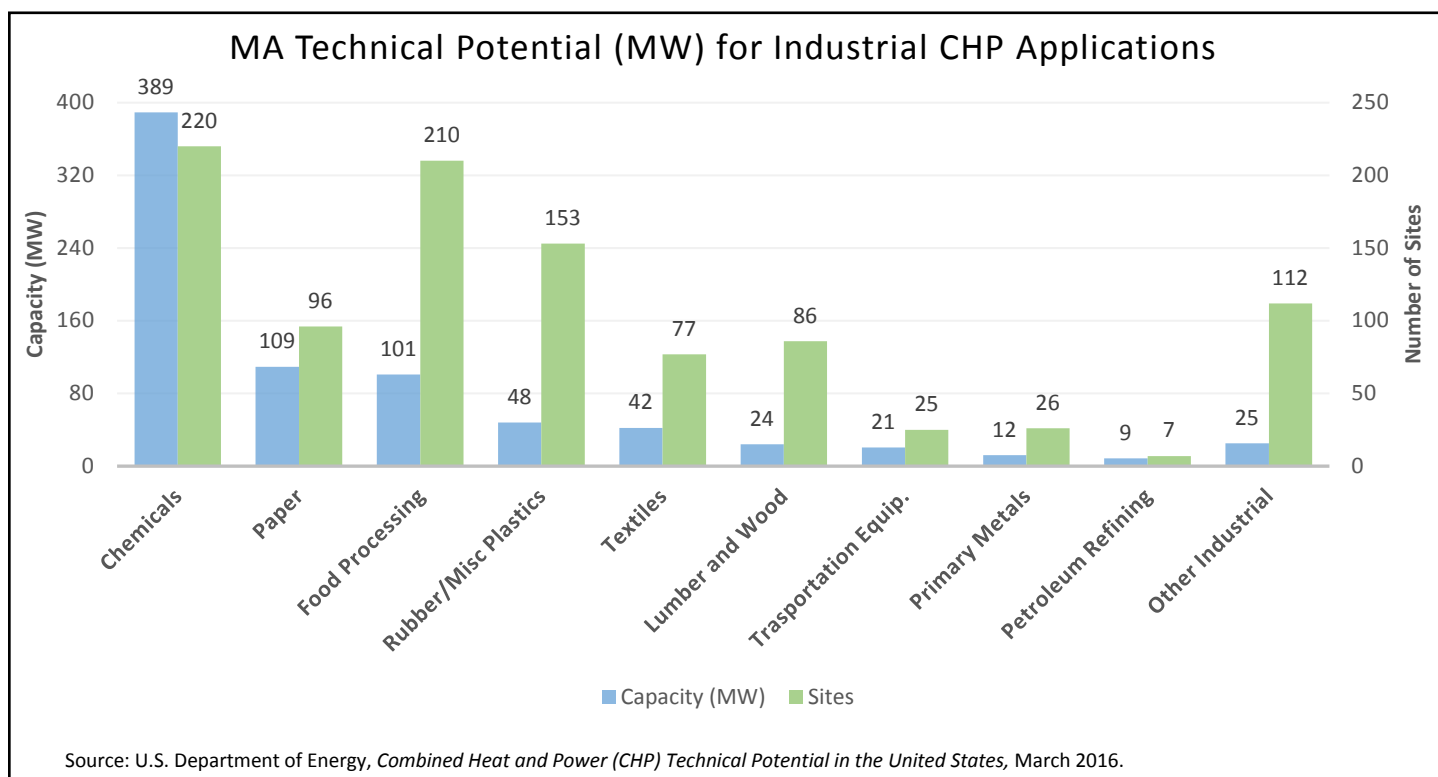
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Massachusetts Technical Potential for New CHP Installations

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

Sector	Potential Sites	Potential Capacity (MW)
Industrial	1,012	780
Commercial/Institutional	5,646	2,655
Total	6,658	3,434

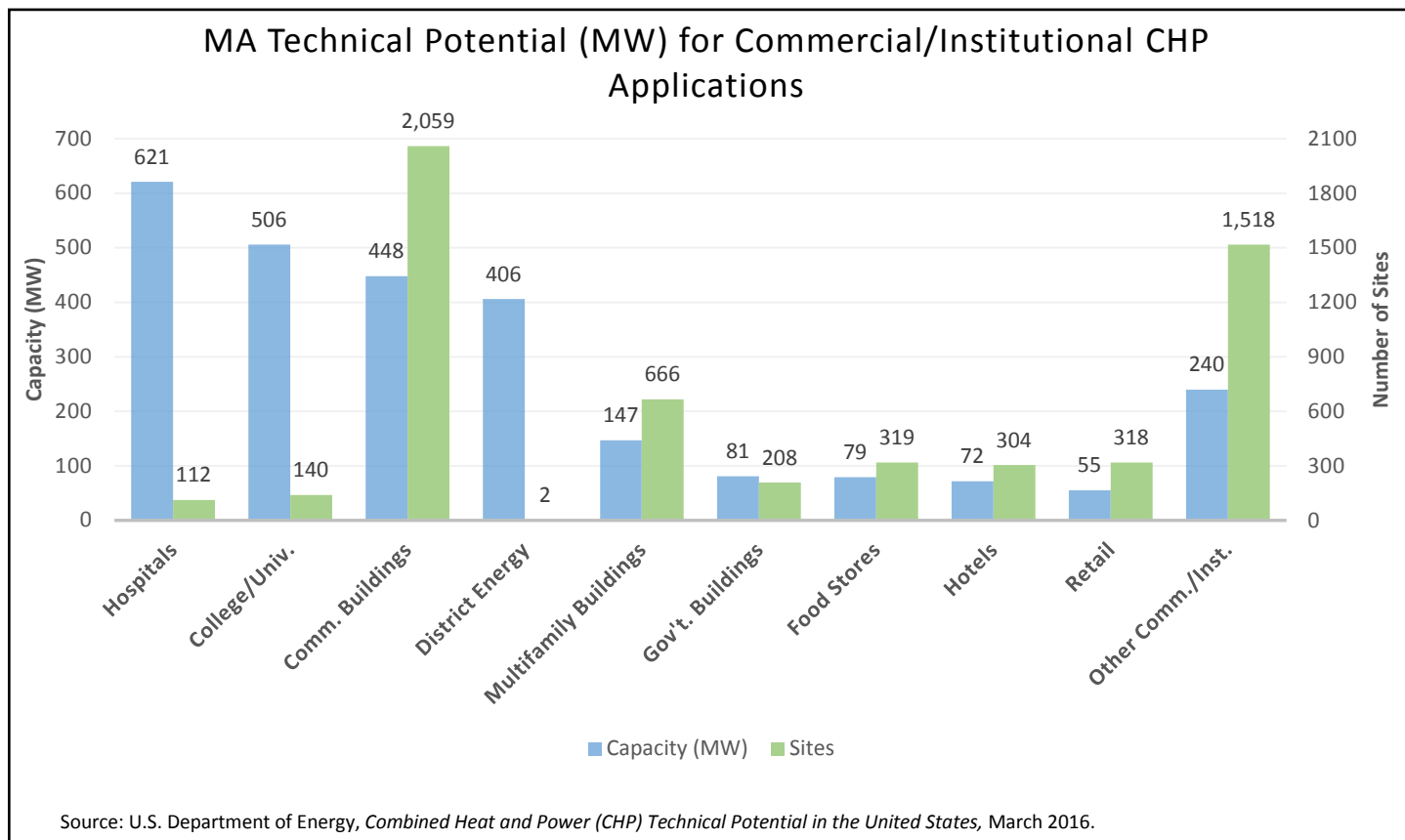


Source: U.S. Department of Energy, *Combined Heat and Power (CHP) Technical Potential in the United States*, March 2016.

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	127	24	25	18	53	112	11	87	4	149	220	389
Paper	57	14	14	9	21	46	4	39	0	0	96	109
Food Processing	167	29	22	17	18	34	3	21	0	0	210	101
Rubber/Misc Plastics	135	20	11	8	6	13	1	7	0	0	153	48
Textiles	54	11	9	7	14	24	0	0	0	0	77	42
Other Industrial	216	31	23	16	15	26	2	17	0	0	256	90
Total	756	129	104	75	127	254	21	172	4	149	1,012	780

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
Hospitals	33	10	27	19	46	86	5	28	1	479	112	621
College/Univ.	79	15	17	11	26	57	13	127	5	296	140	506
Commercial Buildings	1,211	61	606	242	242	145	0	0	0	0	2,059	448
Multifamily Buildings	469	35	170	85	26	26	0	0	0	0	666	147
Government Buildings	162	20	24	16	19	28	3	16	0	0	208	81
Other Comm./Inst.	2,353	318	67	45	37	62	3	29	1	399	2,461	852
Total	4,307	458	911	419	396	404	24	200	7	1,173	5,646	2,655

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

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Massachusetts 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.

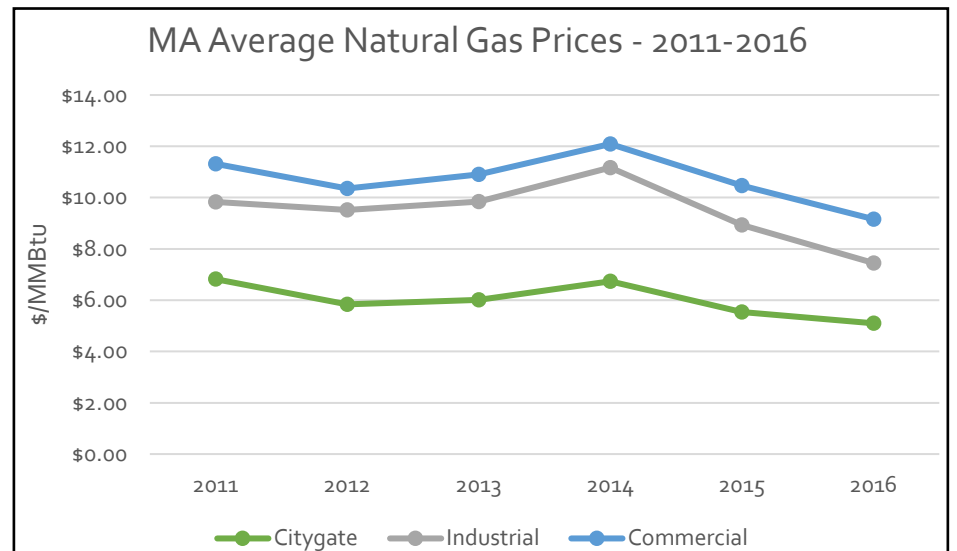
Massachusetts Natural Gas Prices

Massachusetts Average Gas Prices - 2016

Sector	MA Price (\$/MMBtu)	U.S. Price (\$/MMBtu)
Citygate*	5.10	3.75
Industrial	7.45	3.39
Commercial	9.16	7.22

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



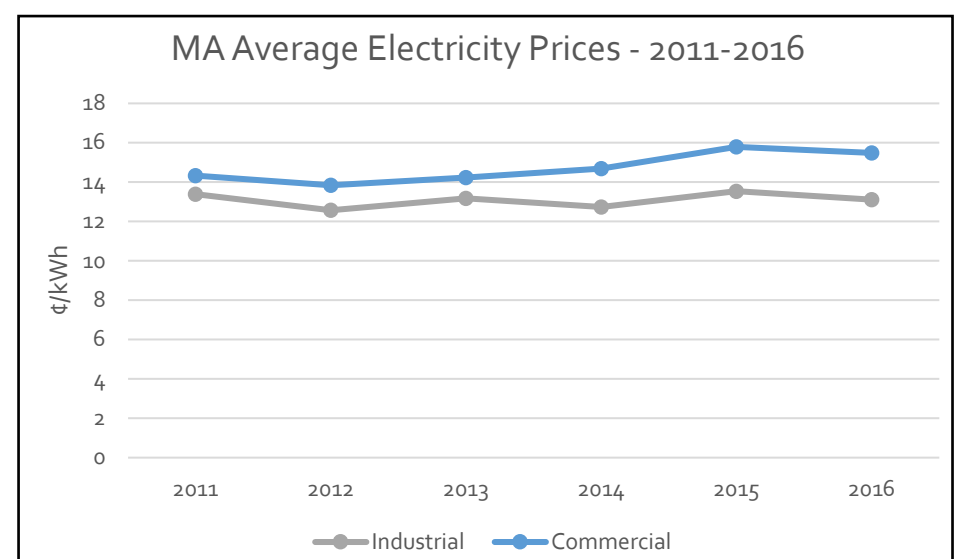
Massachusetts Electricity Prices

Massachusetts Average Electricity Prices - 2016

Sector	MA Price (¢/kWh)	U.S. Price (¢/kWh)
Industrial	13.11	6.75
Commercial	15.48	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.



Massachusetts Average Delivered Electricity Prices by Utility

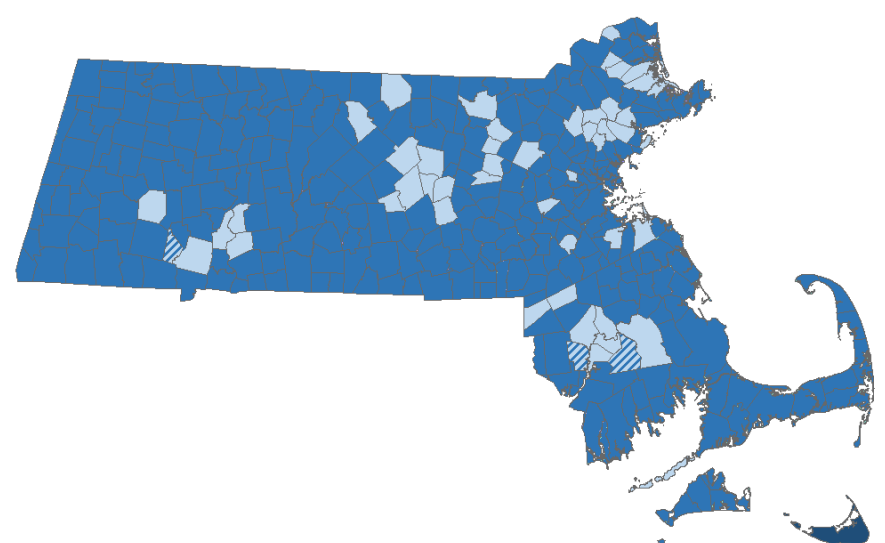
Utility	Industrial Price (¢/kWh)	Commercial Price (¢/kWh)	Average Price** (¢/kWh)
Nantucket Electric Co	23.53	21.43	22.48
Unitil	13.78	22.11	17.95
Massachusetts Electric Co	18.08	17.00	17.54
NSTAR Electric Company	16.90	17.86	17.38
Western MA Electric Co	15.64	18.83	17.23
Municipal systems average	12.78	14.27	13.53

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.

Massachusetts Electricity Prices – Heat Map



- Light blue: Municipal systems - average
- Dark blue: Unitil / Massachusetts Elec / NSTAR Elec / Western MA Elec
- Black: Nantucket Electric Co

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CHP Technical
Potential

CHP Economics

CHP Partners

Department of Energy CHP Partnerships

Northeast CHP Technical Assistance Partnership



U.S. DEPARTMENT OF ENERGY
CHP Technical Assistance Partnerships

NORTHEAST

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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](#).

- [Boston, MA](#)
- [Commonwealth of Massachusetts](#)
- International District Energy Association (IDEA)
- National Grid

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