

Municipal Energy Profile for Worcester, Massachusetts – FY19

Prepared by UMass Clean Energy Extension, August 2020

Overview

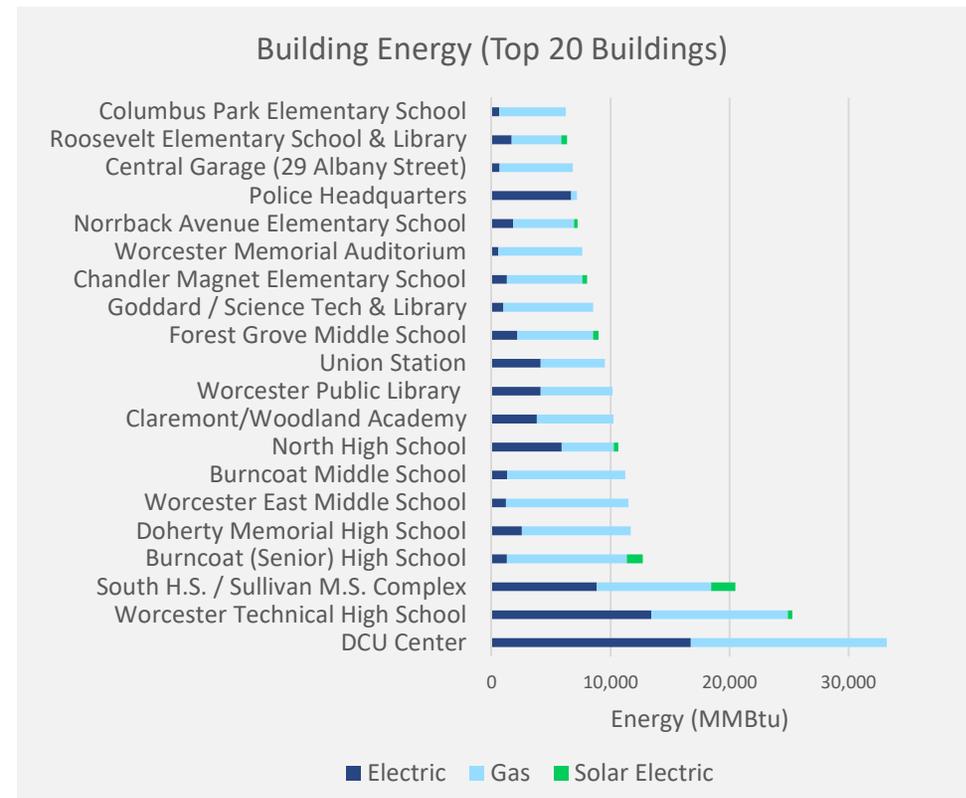
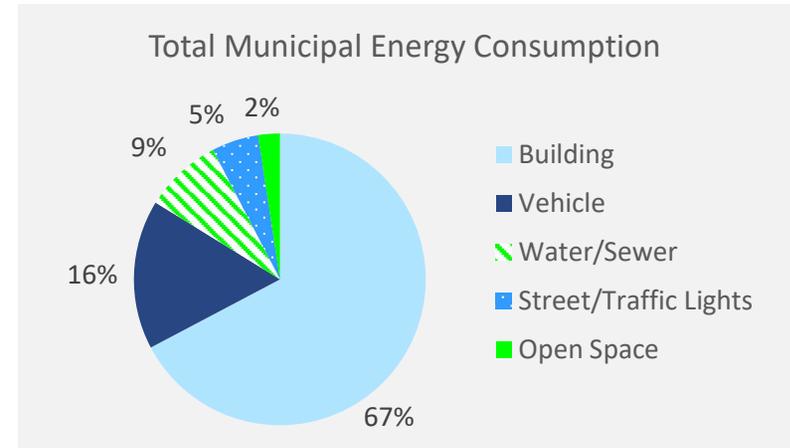
This profile provides a summary of the City of Worcester’s municipal energy use, along with information to help improve energy efficiency. Most of the city’s energy use is in buildings (67% in FY19), followed by vehicles (16%) and water and sewer systems (9%). Natural gas accounts for approximately two-thirds of energy used in buildings and electricity accounts for nearly one-third, with very small amounts of oil and diesel fuel. 6% of electricity was generated with solar energy. Total municipal energy consumption in FY19 was 584,010 MMBtu.

Top Energy-Consuming Buildings

The buildings that used the most energy in FY19 are shown in the table and graph below. Energy efficiency improvements will likely be necessary in many of these buildings for the city to meet the Green Communities program goal of reducing energy consumption by 20%.

Energy use intensity (EUI) is an indicator of building efficiency. While EUI will vary depending on building type and use, a lower value generally indicates higher efficiency. This metric can be useful in comparing buildings – especially those of the same type, such as schools – and identifying which may have the most opportunity to improve efficiency. Energy efficiency should also be considered in all facilities during new construction, renovations, equipment replacement, selection of new equipment, and changes to building use.

	Portion of City’s Building Energy Use	Energy Use Intensity (kBtu/sq.ft.)
DCU Center	8%	135
Worcester Technical High School	6%	63
South H.S. / Sullivan M.S. Complex	5%	47
Burncoat (Senior) High School	3%	88
Doherty Memorial High School	3%	70
Worcester East Middle School	3%	74
Burncoat Middle School	3%	76
North High School	3%	50
Claremont/Woodland Academy	3%	75
Worcester Public Library	3%	134

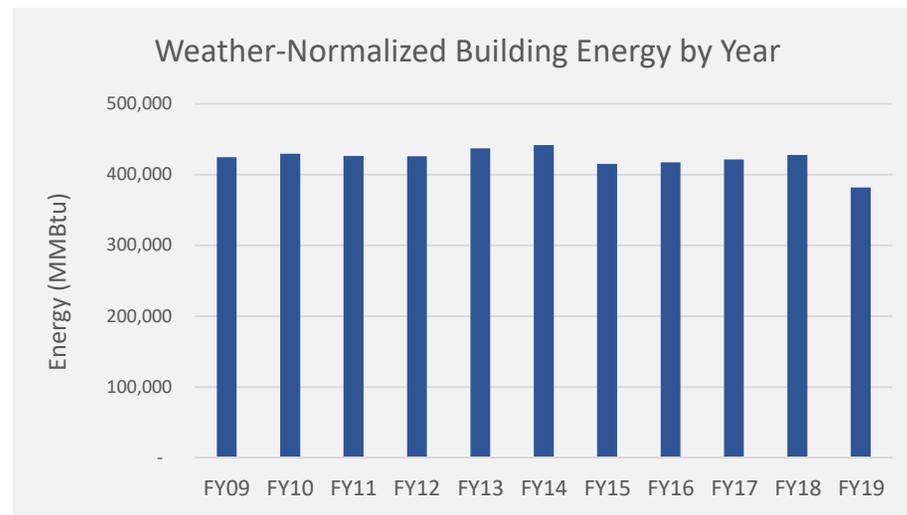


Changes Since Baseline Year

Worcester was designated a Green Community in 2010, with a goal of reducing municipal energy consumption by 20% from the baseline year of FY09. The table below details energy reduction results as of FY19, including a minor building stock adjustment to account for the larger size of some building replacements. The graph shows building energy consumption, using weather-normalized data to make it easier to compare performance between each year.

	Energy Consumption (MMBtu)		Reduction (negative values indicate increases)
	FY09 Baseline	FY19	
Buildings	427,958	383,968 *	10.3%
Vehicles	97,714	96,293	1.5%
Water/Sewer	47,632	50,168	-5.3%
Street/Traffic Lights	31,232	30,154	3.5%
Open Space	10,385	13,946	-34%
Unknown	1,171	1,976	-69%
Total	616,092	576,505	6.4% *

* On a weather-normalized basis, FY19 building energy was 376,657 MMBtu and the total reduction from the baseline was 7.1%.



Recommendations

- Review the values in this report. If any appear inaccurate, they should be checked and corrected if necessary. Contact us for help investigating data questions.
- Have audits of the larger water/sewer pumping stations and the buildings with the highest energy consumption and/or highest EUI if they have not been audited in the past five years. Contact your Mass Save representative, Sean McGloin at sean.mcglain@nationalgrid.com, to arrange free audits and obtain information on incentives to support implementation. Request comprehensive audits of the whole buildings, including both electric and gas fueled equipment, control systems, and the building envelope. Review our checklist at ag.umass.edu/clean-energy/building-checklist to learn about measures that should be considered.
- Contact Lauren Mattison (laurenm@umass.edu, 413-545-0651) to arrange a free, in-depth audit of the Water Filtration Plant through the UMass Industrial Assessment Center program, described at ceere.org/iac.
- See ag.umass.edu/clean-energy/vehicles for guidance on reducing fuel use by existing vehicles and purchasing efficient or hybrid/electric models.

Background Information

This is provided in support of the Green Communities Designation and Grant Program, administered by the Massachusetts Department of Energy Resources (DOER). The program provides financial and technical support to communities that develop a plan to reduce municipal energy use by 20% and meet four other criteria established in the Green Communities Act. Since 2010, 271 of the 351 cities and towns across the Commonwealth have achieved designation. Learn more at mass.gov/green-communities. Data in this profile was sourced from the city's MassEnergyInsight (MEI, massenergyinsight.net) account and FY19 Green Communities annual report. MEI is a web-based tool provided by DOER at no cost to municipalities, enabling them to track and analyze municipal energy use and costs in comparison to a baseline.

This profile shows data for FY19 (July 1, 2018 to June 30, 2019), the most recent fiscal year for which complete data is available. Energy consumption is expressed in Btu (British thermal units, MMBtu = million Btu, kBtu = thousand Btu), a basic unit of energy that allows easy comparison across all fuel types.

See more information about energy efficiency and renewable energy technologies, best practices and resources on our website at ag.umass.edu/clean-energy/municipal.