



City of Newburyport Municipal Buildings Report: CY 2023

MARCH 5, 2024

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Introduction

In October 2021, the City Council passed an ordinance requiring the annual creation of a consolidated report on the physical conditions and utility usage of buildings under City custody. This report is to use the information collected by MassEnergyInsight and states that required metrics include “(i) total GHG emissions in metric tons of CO₂e per square foot of gross floor area per year; (ii) energy use intensity (EUI) in million British Thermal Units (MBTUs or MMBTUs) per square foot per year; (iii) water use in gallons per square foot per year; and (iv) estimated total waste in short tons per square foot per year.”

This is the second iteration of this report and it provides the requested information and, where possible, includes calendar year 2022 data for comparison. Information was provided using the MassEnergyInsight system and trash collection estimates from Molly Ettenborough, the City’s Recycling, Energy, and Sustainability Manager. Facility information was provided by Steve Bergholm for Public Schools, Mike Bartlett for facilities under the Department of Public Services’ custody, and Chief Bradbury and Marshal Murray for the Fire and Police facilities, respectively. Many thanks go to Tom Watkins and Dan Maguire of the DPS Water Division for completing water meter readings for the public buildings.

As always, this report should be read in context with other valuable city publications providing information on buildings and energy use, including our annual state required Green Communities Report, the Facilities Master Plan, and Capital Improvement Plan. Each section of the report includes the required metrics, information on structural conditions and identified capital needs, and personal and premises protection. Last year, the report led to helpful conversations around capital planning and energy management. We hope this report is equally helpful for staff, the City Council, and the public.

Thank you to all staff who contributed to this report, and we look forward to building on this information as we start the FY25 budget process.

Goals and Green Communities

The State of Massachusetts through its Climate Act of 2021 and Solid Waste Master Plan has set targets for 85% less carbon from base year 1990 and 90% waste reduction target from 2021 both to be reached by 2050.

This year, Newburyport finished its seventh grant cycle with Green Communities for energy efficiency upgrades at Newburyport High School (lighting) and the State Street Library (HVAC). Green Communities grants for Newburyport total \$1,191,463 since becoming a Green Community in 2010.

The state has announced a new program called Climate Leaders, a step up from the green communities designation. This new program will give access to resources to help achieve sustainability goals, support clean energy and climate initiatives, access grant funds and be publicly recognized as a leader in the State.

To be considered and accepted the following criteria must be met:

- Be a Green Community in good standing
- A municipal decarbonization commitment
- The development of a municipal decarbonization roadmap
- A Zero-Emission Vehicle (ZEV) First policy
- Specialized stretch code adoption

Overall Takeaways

The City's Green Communities FY 2023 Annual Report showed that total municipal energy usage in MMBTUs in all City facilities has decreased 21% since our benchmark year of 2009. By comparison, the FY 2022 data showed only an 18% decrease. Data review from our baseline year shows building usage down by 29%, street lights down by 50%, and vehicle fuel use down by 28%. Water/sewer use has continued to rise, and is up by 8% over the 2009 baseline, but down 8% from last year.

Like last year, schools continue to lead the way in reduction of building energy use, with the energy management systems in place being a large reason why. We are looking to incorporate these same sorts of systems into City buildings as possible to improve all our buildings' energy efficiency.

This year, we have comparison figures for water usage based on our metrics from last year. Water is not on MassEnergyInsight, so we rely on meter readings. In some cases we had discrepancies based on incorrect readings in the year before and did not list baselines because of it. We now have baseline data for all buildings that can be used in the future. Trash and recycling is also difficult to fully capture at this time, as our trash and recycling hauler, Mello, does not separately weigh waste from public buildings. While we are about to sign a new contract with them and could discuss this as a service, it may be too difficult for the hauler to do this. This data is instead estimated based on container size and number of pick-ups per week and will only change if there are adjustments to either of these for a building.

The GHG emissions table attached to this report as Appendix 1 from benchmark year 2009 to now shows a steady decrease in emissions alongside energy usage reduction. This year's report will give us another full set of benchmarks to use to continue to make progress on our Net Zero goals and our mission to effectively and efficiently use City buildings and resources.

Building Profiles

Newburyport Public Schools

Bresnahan School

Key Metrics

	2022	2023
Gross Floor Area (SF)	112,500	112,500
Electric Use (MMBTU)	1,864	1,848
Gas Use (MMBTU)	2,069	2,093
Total kBTU/sf	35	36
Water Use in Gallons/sf	4.89	5.77
Trash in Tons	41.6	41.6
Trash in Pounds/sf	0.74	.74
CO2 Emitted in Tons	246.1	241.2
CO2 Pounds/sf	4.8	4.7

Structural Condition

The Bresnahan was constructed in 2013/14 and there are no known structural issues at this time.

Personal and Premises Protection

- Fire sprinkler system
- Fire alarm system
- Kitchen hood fire suppression
- Video intercom and access control (fobs for staff)
- Burglar alarm system
- Security cameras
- Emergency generator
- AEDs
- Bleeding control kits

Nock Middle School

Metrics

	2022	2023
Gross Floor Area (SF)	27,900	27,900
Electric Use (MMBTU)	2,733	2,593
Gas Use (MMBTU)	3,537	3,265
Total kBTU/sf	39	37
Water Use in Gallons/sf	5.40	2.97
Trash in Tons	78	78
Trash in Pounds/sf	.98	.98
CO2 Emitted in Tons	280.4	270.3
CO2 Pounds/sf	3.9	3.7

Structural Condition

The Middle School was last renovated in 2013/14 and the roof needs to be replaced on the gym and auditorium sections of the building. This is included on the Capital Improvement Plan.

Personal and Premises Protection

- Fire sprinkler system
- Fire alarm system
- Kitchen hood fire suppression
- Video intercom and access control (fobs for staff)
- Burglar alarm system
- Security cameras
- Emergency generator
- AEDs
- Bleeding control kits

Newburyport High School

Metrics

	2022	2023
Gross Floor Area (SF)	215,000	215,000
Electric Use (MMBTU)	3,165	3,027
Gas Use (MMBTU)	6,124	5,141
Total kBTU/sf	43	38
Water Use in Gallons/sf	2.89	3.02
Trash in Tons	52	52
Trash Pounds/sf	0.48	.48
CO2 Emitted in Tons	556.8	486.1
CO2 Pounds/sf	5.7	5

Structural Condition

The High School was last renovated in 2000-2002 and a number of renovations are now needed, as reflected in the Capital Improvement Plan.

- Building A roof should be replaced as soon as possible
- Building B roof should be replaced within 3-5 years
- Other miscellaneous water infiltration issues require a forensic engineer
- Masonry issues on terraces on both the east and west sides of the building require engineering assistance
- Mechanical equipment is 20+ years old and nearing the end of its expected lifespan
- The high school phone system is in need of repair or replacement because it is becoming out of e911 compliance. This will be in this year's CIP.

Personal and Premises Protection

- Fire sprinkler system
- Fire alarm system
- Kitchen hood fire suppression
- Video intercom and access control (fobs for staff)
- Burglar alarm system
- Security cameras
- Emergency generator
- AEDs
- Bleeding control kits

General Government and Community Services

City Hall

Metrics

	2022	2023
Gross Floor Area (SF)	27,900	27,900
Electric Use (MMBTU)	372	312
Gas Use (MMBTU)	891	759
Total kBTU/sf	45	38
Water Use in Gallons/sf	5.40	2.58
Trash in Tons	7.8	7.8
Trash Pounds/sf	0.56	.56
CO2 Emitted in Tons	74.6	62.3
CO2 Pounds/sf	5.9	4.9

Structural Condition

City Hall was built in 1851 and renovations were last completed in 2007. The current capital needs are for roof repairs and mechanical systems upgrades. The shingle roof section of City Hall is past its useful life and has now moved from an annual regular maintenance expense to a repair request. A metal standing seam roof is the most viable option and will provide necessary aesthetic, water proofing and an expected life span of fifty years. Regarding mechanical upgrades, the heating system/boiler is over 30 years old and maintenance has been costly. In addition, several areas of City Hall lack heat/AC or ventilation altogether, including 2 departments located in the basement. Areas that lack central air are cooled with window units, which require annual installation, routine replacement and high electrical usage. The auditorium lacks AC and, therefore, limits the availability to use the space in warmer months. Finally, the windows are at a point again that they will need to be replaced or rehabilitated.

Personal and Premises Protection

- Fire sprinkler system
- Fire alarm system
- Panic button security system
- Exterior door fob system
- AEDs

Newburyport Public Library

Metrics

	2022	2023
Gross Floor Area (SF)	27,270	27,270
Electric Use (MMBTU)	1,330	1,321
Gas Use (MMBTU)	881	838
Total kBTU/sf	81	79
Water Use in Gallons/sf	8.58	9.86
Trash in Tons	6.8	6.8
Trash Pounds/sf	0.50	.5
CO2 Emitted in Tons	143.9	137.4
CO2 Pounds/sf	11.6	11.1

Structural Condition

The Public Library was last renovated in 2001 and is in very good structural condition. Their capital requests include custodial work, like rug replacement, and preventative maintenance. Additional work includes external landscaping foundation work. Also, the ceiling in one section of the building needs painting and the floor in the lobby has been requested for replacement.

They will also need a boiler replacement in the coming years, as their HVAC system is now 21 years old.

Personal and Premises Protection

- Fire sprinkler system
- Fire alarm system
- Security cameras (interior and exterior)
- Burglar alarm system
- AEDs

Senior Community Center

Metrics

	2022	2023
Gross Floor Area (SF)	16,500	16,500
Electric Use (MMBTU)	440	441
Gas Use (MMBTU)	170	157
Total kBTU/sf	37	36
Water Use in Gallons/sf	5.49	6.47
Trash in Tons	5.2	5.2
Trash Pounds/sf	0.63	0.63
CO2 Emitted in Tons	41.2	39.3
CO2 Pounds/sf	5.5	5.3

Structural Condition

The Senior Community Center was completed in 2015 and is in excellent structural condition.

Personal and Premises Protection

- Fire sprinkler system
- Fire alarm system
- Kitchen hood fire suppression system
- Security cameras (interior and exterior)
- Burglar alarm system
- Emergency generator
- AEDs

Emma Andrews Community Center

Metrics

	2022	2023
Gross Floor Area (SF)	1,392	1,392
Electric Use (MMBTU)	7	7
Gas Use (MMBTU)	56	52
Total kBTU/sf	45	43
Water Use in Gallons/sf	35.10	22945
Trash in Tons	NA	NA
Trash Pounds/sf	NA	NA
CO2 Emitted in Tons	3.5	3.3
CO2 Pounds/sf	5.5	5.2

Structural Condition

The Emma Andrew Library has a functioning apartment on the second and third floors which is rented out, and the building is under the supervision of DPS. Routine maintenance work is performed on the building and it will be in need of more extensive roof work in the next few years.

A priority capital project of exterior painting of the whole structure should be reviewed within the next few years.

Personal and Premises Protection

- Fire alarm system
- Burglar alarm system

Brown School

Metrics

	2022	2023
Gross Floor Area (SF)	37,655	37,655
Electric Use (MMBTU)	64	21
Gas Use (MMBTU)	0	0
Total kBTU/sf	2	1
Water Use in Gallons/sf	0.00	0.00
Trash in Tons	0	0
Trash Pounds/sf	0.00	0.00
CO2 Emitted in Tons	4.7	1.5
CO2 Pounds/sf	0.3	.1

Structural Condition

The former Brown School building and gymnasium are currently not in use and discussions by the City Council are continuing on the scope and nature of adaptive reuse. The site needs significant work including building renovations, hazardous materials remediation, site improvements, and more. This has been addressed through other City studies, including the 2022 report by EGA on the costs to rehabilitate the gym.

Personal and Premises Protection

- Fire alarm system
- Burglar alarm system

Public Safety

Harbormaster Building

Metrics

	2022	2023
Gross Floor Area (SF)	1,700	1,700
Electric Use (MMBTU)	144	141
Gas Use (MMBTU)	0	0
Total kBTU/sf	85	83
Water Use in Gallons/sf	53.89	48.93
Trash in Tons	1.3	1.3
Trash Pounds/sf	1.53	1.53
CO2 Emitted in Tons	10.5	9.9
CO2 Pounds/sf	13.6	12.9

Structural Condition

This building was completed in 2017 and is in excellent condition. The only identified capital need is the installation of solar panels on the roof. This would support the City's Green Communities initiatives and reduce electrical usage at the central waterfront. The City will seek grant opportunities to complete this project.

Personal and Premises Protection

- Fire alarm system
- Fire sprinkler system
- Fob security system on exterior doors
- Security cameras (exterior)
- AEDs

Fire Headquarters

Metrics

	2022	2023
Gross Floor Area (SF)	13,665	13,665
Electric Use (MMBTU)	276	267
Gas Use (MMBTU)	695	599
Total kBTU/sf	71	63
Water Use in Gallons/sf	6.09	6.76
Trash in Tons	15.6	15.6
Trash Pounds/sf	2.28	2.28
CO2 Emitted in Tons	57.1	50.7
CO2 Pounds/sf	9.2	8.2

Structural Condition

The Fire Headquarters building was built in 1978 and has had very few upgrades since. It does not meet current code, has no gender separation, and is not ADA compliant. The station lacks the required fire separation from the residence hall and the apparatus bay, and does not meet current life safety code. The building also has energy efficiency issues and has no meeting spaces. Early discussions around the Fire Headquarters are for a complete renovation and potential addition to the NFD Headquarters station.

Personal and Premises Protection

- Security Cameras (interior and exterior)
- Fire Alarm System
- Emergency Generator

Fire Station 2

Metrics

	2022	2023
Gross Floor Area (SF)	2,300	2,300 (then 0)
Electric Use (MMBTU)	69	24
Gas Use (MMBTU)	194	106
Total kBTU/sf	114	43
Water Use in Gallons/sf	27.48	9.86
Trash in Tons	5.2	1.73
Trash Pounds/sf	4.52	1.51
CO2 Emitted in Tons	15.4	7.3
CO2 Pounds/sf	14.7	6.5

Structural Condition

The District 2 fire station was built in 1972 and use was discontinued in May 2023 to begin construction on the new building. Use for this year is only through five months, and the new building will be opened later in 2024.

Police Station

Metrics

	2022	2023
Gross Floor Area (SF)	21,000	21,000
Electric Use (MMBTU)	956	943
Gas Use (MMBTU)	709	847
Total kBTU/sf	79	85
Water Use in Gallons/sf	2.99	3.04
Trash in Tons	7.8	7.8
Trash Pounds/sf	0.74	.74
CO2 Emitted in Tons	107.5	111.3
CO2 Pounds/sf	11.3	11.7

Structural Condition

The Police Station, last renovated in 1997, is overall in good structural condition and is in need mostly of smaller improvements to specific areas. Light maintenance, including upgrading carpets and providing for weatherproofing, are needed. The exception is the Dispatch Center, which is 27 years old and the equipment is outdated and in need of replacing. Updating these systems and equipment will allow for better use of technology and the ability to use the security cameras in public facilities more easily.

Flooring throughout the building starting to show wear and should be added to the capital program.

Personal and Premises Protection

- Security Cameras
- Door Fob System
- Fire Alarm
- Fire Sprinkler
- Fire Extinguishers
- Generator
- AEDs

Public Services

DPS Highway Barn/Administration Building

Metrics

	2022	2023
Gross Floor Area (SF)	30,000	30,000
Electric Use (MMBTU)	128	511
Gas Use (MMBTU)	984	931
Total kBTU/sf	37	48
Water Use in Gallons/sf	2.27	1.72
Trash in Tons	26	26
Trash Pounds/sf	1.73	1.73
CO2 Emitted in Tons	61.7	57.6
CO2 Pounds/sf	4.5	4.2

Structural Condition

There are currently no capital requests for the maintenance of DPS headquarters, following the successful completion of the salt shed.

The DPS Garage will need a new roof in the future and possible addition to the existing structure to account for existing and future growth.

Personal and Premises Protection

- Fire sprinkler system
- Fire alarm system
- Security cameras (exterior)
- Emergency generator
- Exterior door and gate fob system
- AEDs

Wastewater Treatment Plant

Metrics

	2022	2023
Gross Floor Area (SF)	15584	15584
Electric Use (MMBTU)	8,672	7,485
Gas Use (MMBTU)	2,096	1,846
Total kBTU/sf	691	599
Water Use in Gallons/sf	NA	1.6
Trash in Tons	15.6	15.6
Trash Pounds/sf	2.00	2.00
CO2 Emitted in Tons	744.3	624
CO2 Pounds/sf	95.5	80.1

Structural Condition

While the Wastewater Treatment plant has a number of capital needs, none are related to the structural integrity of the buildings.

Personal and Premises Protection

- Fire sprinkler system
- Fire alarm system
- Security cameras (exterior)
- Emergency generator
- Exterior door and gate fob system
- AEDs

Water Treatment Plant

Metrics

	2022	2023
Gross Floor Area (SF)	24784	24784
Electric Use (MMBTU)	5,176	5,508
Gas Use (MMBTU)	448	524
Total kBTU/sf	227	243
Water Use in Gallons/sf	NA	2.84
Trash in Tons	15.6	15.6
Trash Pounds/sf	1.26	1.26
CO2 Emitted in Tons	401.6	414.8
CO2 Pounds/sf	32.4	33.5

Structural Condition

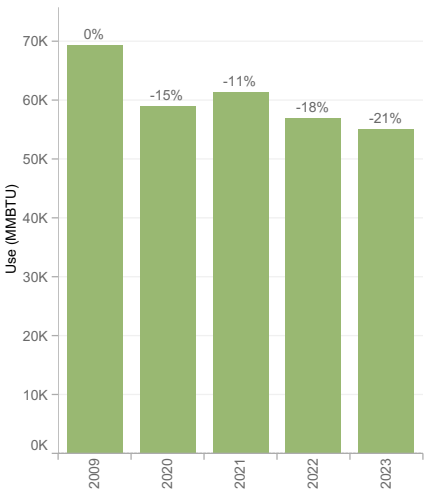
While the Water Treatment plant has a number of capital needs, none are related to the structural integrity of the buildings.

Personal and Premises Protection

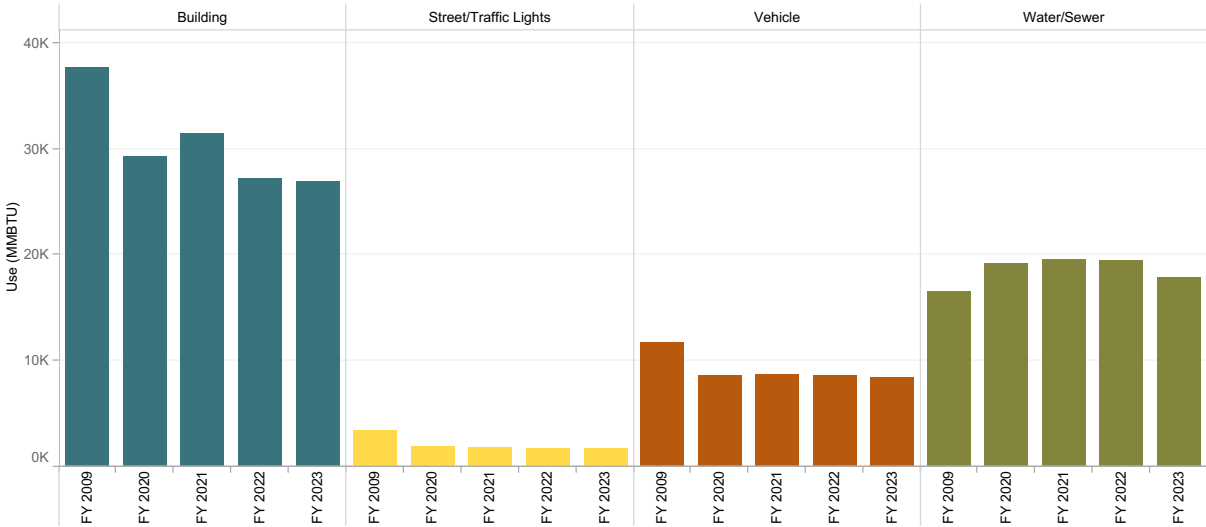
- Fire sprinkler system
- Fire alarm system
- Security cameras (exterior)
- Emergency generator
- Exterior door and gate fob system
- AEDs

Baseline Dashboard

Overall Use (with % Difference from Baseline Year)



Use by Facility Category



Show Department or Facility Category in "Use by..." Chart

Facility Category

Year

Multiple values

A Facility Category of **Null** or **blank** indicates buildings that have not yet been assigned a category.

% Difference in Use (MMBTU) from first period

-50% 50%

Buildings marked as "Exclude from Baseline" (list below) are not included in totals on this dashboard.

Kelley Youth Center

Senior Center

Drill down by Facility Category (showing Use (MMBTU))
Hover over Facility Category and Subcategory and click the plus or minus signs to expand and collapse the table.

Facility Category	FY 2009	FY 2020	FY 2021	FY 2022	FY 2023
Building	37,737	29,264	31,461	27,183	26,963
Street/Traffic Lights	3,376	1,932	1,767	1,739	1,689
Vehicle	11,770	8,525	8,659	8,577	8,475
Water/Sewer	16,501	19,184	19,522	19,435	17,872

Drill down by Department (showing Use (MMBTU))
Hover over Department, Complex, etc. and click the plus or minus signs to expand and collapse the table.

Department	FY 2009	FY 2020	FY 2021	FY 2022	FY 2023
Null	7,224	6,962	6,798	6,220	6,027
General Government	17,242	12,403	12,600	12,475	12,209
Library	2,785	2,113	2,133	2,154	2,275
Public Safety	3,471	2,795	2,754	2,887	2,836
Public Works Department	1,154	1,226	1,368	1,176	1,449
Schools	28,231	21,183	23,032	18,806	18,358
Sewer Department	9,276	12,223	12,724	13,215	11,845

Appendix 2: Newburyport Municipal Buildings: Utility and Waste Information 2023

Gas and Electric Use

Facility	Gross Floor Area (SF)	Electric Use (MMBTU)	Gas Use (MMBTU)	Total (MMBTU)	Electric Use kBtu/sf	Gas Use kBtu/sf	Total kBtu/sf	Total MMBTU/SF	2022 Value	Percent Change
Bresnahan School	112,500	1,848	2,093	3,941	17	19	36	0.036	0.035	3.0%
City Hall	27,900	312	759	1,072	11	27	38	0.038	0.045	-16.1%
DPS Building	30,300	511	931	1,442	17	31	48	0.048	0.037	29.5%
Emma Andrews Library	1,392	7	52	59	5	37	43	0.043	0.045	-5.2%
Fire Station 2 Cutter	2,300	24	106	130	9	44	53	0.053	0.114	-53.6%
Fire Station HQ (Greenleaf)	13,665	267	599	867	20	44	63	0.063	0.071	-11.3%
G.W. Brown School	37,655	21	0	21	1	0	1	0.001	0.002	-50.0%
Harbormaster Building	1,700	141	0	141	83	0	83	0.083	0.085	-1.8%
Main Public Library	27,270	1,321	838	2,159	48	31	79	0.079	0.081	-2.6%
Newburyport High School	215,000	3,027	5,141	8,168	14	24	38	0.038	0.043	-12.1%
Police Department	21,000	943	847	1,790	45	40	85	0.085	0.079	7.2%
R.A. Nock Middle School	160,000	2,593	3,265	5,859	16	20	37	0.037	0.039	-5.1%
Senior Center	16,500	441	157	598	27	10	36	0.036	0.037	-2.7%
Wastewater Treatment Plant	15584	7,485	1,846	9,331	480	118	599	0.599	0.691	-13.3%
Water Department	24784	5,508	524	6,032	222	21	243	0.243	0.227	7.1%

Trash Waste

Co2 Emission

Facility	Gross Floor Area (SF)	Trash in Tons	Pounds/sf	CO2 Emitted in Tons	Pounds/sf	2022 Value	Percent Change
Bresnahan School	112,500	41.6	0.74	241.2	4.7	246.1	-2.0%
City Hall	27,900	7.8	0.56	62.3	4.9	74.6	-16.5%
DPS Building	30,000	26	1.73	57.6	4.2	61.7	-6.6%
Emma Andrews Library	1,392	NA	NA	3.3	5.2	3.5	-5.7%
Fire Station 2 Cutter	2,300	1.73	1.51	7.3	6.5	15.4	-52.6%
Fire Station HQ (Greenleaf)	13,665	15.6	2.28	50.7	8.2	57.1	-11.2%
G.W. Brown School	37,655	0	0.00	1.5	0.1	4.7	-68.1%
Harbormaster Building	1,700	1.3	1.53	9.9	12.9	10.5	-5.7%
Main Public Library	27,270	6.8	0.50	137.4	11.1	143.9	-4.5%
Newburyport High School	215,000	52	0.48	486.1	5	556.8	-12.7%
Police Department	21,000	7.8	0.74	111.3	11.7	107.5	3.5%
R.A. Nock Middle School	160,000	78	0.98	270.3	3.7	280.4	-3.6%
Senior Center	16,500	5.2	0.63	39.3	5.3	41.2	-4.6%
Wastewater Treatment Plant	15584	15.6	2.00	624	80.1	744.3	-16.2%
Water Department	24784	15.6	1.26	414.8	33.5	401.6	3.3%

Water Us

Facility	Gross Floor Area (SF)	Water Use in Gallons	Water Use in Gallons/sf	2022 Value	Percent Change
Bresnahan School	112,500	648,912	5.77	550,251	17.9%
City Hall	27,900	71,904	2.58	150,572	-52.2%
DPS Building	30,000	51,497	1.72	67,993	-24.3%
Emma Andrews Library	1,392	22,945	16.48	48,859	-53.0%
Fire Station 2 Cutter	2,300	21,107	9.18	63,206	-66.6%
Fire Station HQ (Greenleaf)	13,665	92,356	6.76	83,252	10.9%
G.W. Brown School	37,655	-	0.00	-	NA
Harbormaster Building	1,700	83,179	48.93	91,615	-9.2%
Main Public Library	27,270	268,970	9.86	233,967	15.0%
Newburyport High School	215,000	648,912	3.02	620,616	4.6%
Police Department	21,000	63,777	3.04	62,832	1.5%
R.A. Nock Middle School	160,000	474,715	2.97	506,022	-6.2%
Senior Center	16,500	106,791	6.47	90,658	17.8%
Wastewater Treatment Plant	15584	24,904	1.60	NA	NA
Water Department	24784	70,475	2.84	NA	NA