



City of Newburyport Municipal Buildings Report

MARCH 7, 2023

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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 first such report the City has released, and provides the required information requested by the Council. 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 Acting Chief Bradbury and Marshal Murray for the Fire and Police facilities, respectively. Further information came from the Assessor’s Office, the Building Department, and other building staff.

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. This is the first iteration of the report, and can be expanded as needed in future years.

Thank you to all staff who contributed to this report, and we look forward to building on this information as we start the FY24 budget process.

Overall Takeaways

The City’s Green Communities FY 2022 Annual Report showed that total municipal energy usage in all City facilities has decreased 20% since our benchmark year (2009). Data review from our baseline year shows building usage down by 32%, street lights down by 49%, vehicle fuel down by 27 % and water/sewer up by 18%.

We are seeing a reduction in building usage due mostly to our schools’ reduction in use. This can be attributed to many factors: usage, weather, upgrades, etc. but also greatly in part due to management of those buildings. Our facilities manager, Steve Bergholm, is meticulous about these facilities and has implemented many energy efficiency measures both with Green Communities funding and without. He has worked with his own staff, as well as with teaching and administration staff to ensure proper management of the schools.

Water usage was not reported last year so we do not have comparison data. Trash and recycling is generated and picked up at each site but is not weighed so these figures are estimated based on container size and number of pick-ups per week.

As you can see from the GHG emissions table (attached to this report as Appendix 1) from benchmark year 2009 to now, there has been 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

Gross Floor Area (SF)	112,500
Electric Use (MMBTU)	1,864
Gas Use (MMBTU)	2,069
Total kBTU/sf	35
Water Use in Gallons/sf	4.89
Trash in Tons	41.6
Trash in Pounds/sf	0.74
CO2 Emitted in Tons	246.1
CO2 Pounds/sf	4.8

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

Gross Floor Area (SF)	27,900
Electric Use (MMBTU)	372
Gas Use (MMBTU)	891
Total kBTU/sf	45
Water Use in Gallons/sf	5.40
Trash in Tons	7.8
Trash in Pounds/sf	0.56
CO2 Emitted in Tons	74.6
CO2 Pounds/sf	5.9

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

Gross Floor Area (SF)	215,000
Electric Use (MMBTU)	3,165
Gas Use (MMBTU)	6,124
Total kBTU/sf	43
Water Use in Gallons/sf	2.89
Trash in Tons	52
Trash Pounds/sf	0.48
CO2 Emitted in Tons	556.8
CO2 Pounds/sf	5.7

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

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

Gross Floor Area (SF)	27,900
Electric Use (MMBTU)	372
Gas Use (MMBTU)	891
Total kBTU/sf	45
Water Use in Gallons/sf	5.40
Trash in Tons	7.8
Trash Pounds/sf	0.56
CO2 Emitted in Tons	74.6
CO2 Pounds/sf	5.9

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.

Personal and Premises Protection

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

Newburyport Public Library

Metrics

Gross Floor Area (SF)	27,270
Electric Use (MMBTU)	1,330
Gas Use (MMBTU)	881
Total kBTU/sf	81
Water Use in Gallons/sf	1.25
Trash in Tons	6.8
Trash Pounds/sf	0.50
CO2 Emitted in Tons	143.9
CO2 Pounds/sf	11.6

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. 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

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

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

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

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.

Personal and Premises Protection

- Fire alarm system
- Burglar alarm system

Brown School

Metrics

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

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

Gross Floor Area (SF)	1,700
Electric Use (MMBTU)	144
Gas Use (MMBTU)	0
Total kBTU/sf	85
Water Use in Gallons/sf	53.89
Trash in Tons	5.2
Trash Pounds/sf	6.12
CO2 Emitted in Tons	10.5
CO2 Pounds/sf	13.6

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

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

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

Gross Floor Area (SF)	2,300
Electric Use (MMBTU)	69
Gas Use (MMBTU)	194
Total kBTU/sf	114
Water Use in Gallons/sf	27.48
Trash in Tons	5.2
Trash Pounds/sf	4.52
CO2 Emitted in Tons	15.4
CO2 Pounds/sf	14.7

Structural Condition

The District 2 fire station, built in 1972, is undersized and in violation of current building and life safety codes. It is scheduled for replacement beginning in summer 2023.

Personal and Premises Protection

- Fire Alarm system
- Emergency Generator

Police Station

Metrics

Gross Floor Area (SF)	21,000
Electric Use (MMBTU)	956
Gas Use (MMBTU)	709
Total kBTU/sf	79
Water Use in Gallons/sf	2.99
Trash in Tons	7.8
Trash Pounds/sf	0.74
CO2 Emitted in Tons	107.5
CO2 Pounds/sf	11.3

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 26 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.

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

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

Structural Condition

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

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

Gross Floor Area (SF)	15584
Electric Use (MMBTU)	8,672
Gas Use (MMBTU)	2,096
Total kBTU/sf	691
Water Use in Gallons/sf	32.82
Trash in Tons	15.6
Trash Pounds/sf	2.00
CO2 Emitted in Tons	744.3
CO2 Pounds/sf	95.5

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

Gross Floor Area (SF)	24784
Electric Use (MMBTU)	5,176
Gas Use (MMBTU)	448
Total kBTU/sf	227
Water Use in Gallons/sf	266.3
Trash in Tons	15.6
Trash Pounds/sf	1.26
CO2 Emitted in Tons	401.6
CO2 Pounds/sf	32.4

Structural Condition

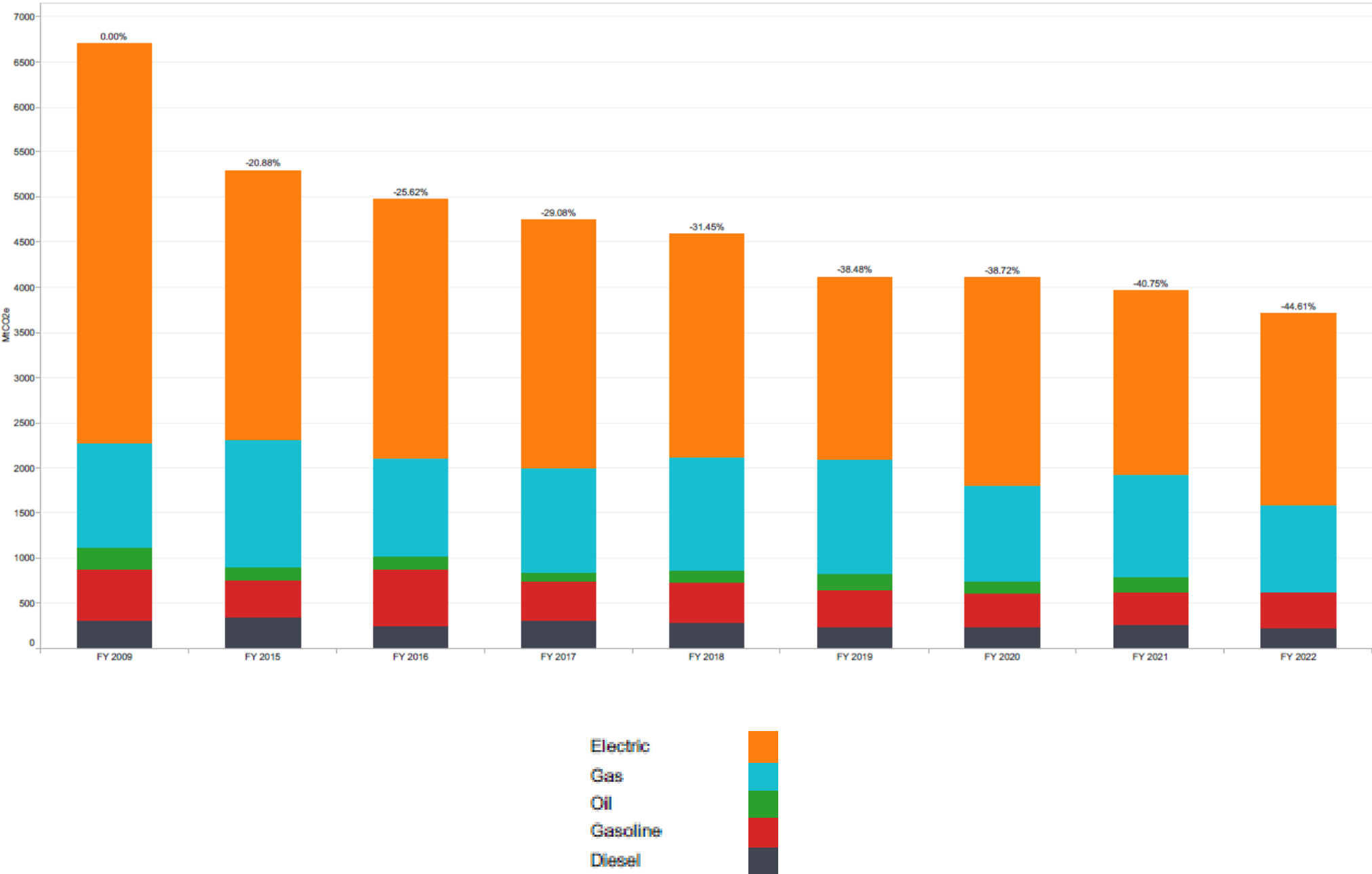
While the Water Treatment plant has a number of capital needs, none are related to the structural integrity of the buildings.

Personal and Premises Protection

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

Appendix 1: Greenhouse Gas Emissions Chart

Emissions over Time
Total Greenhouse Gases by Fiscal Year.



Appendix 2: Consolidated Report

Facility	Gross Floor Area (SF)	Gas and Electric Use						
		Electric Use (MMBTU)	Gas Use (MMBTU)	Total (MMBTU)	Electric Use kBTU/sf	Gas Use kBTU/sf	Total kBTU/sf	Total MMBTU/SF
Bresnahan School	112,500	1,864	2,069	3,933	17	18	35	0.035
City Hall	27,900	372	891	1,263	13	32	45	0.045
DPS Building	30,000	128	984	1,112	4	33	37	0.037
Emma Andrews Library	1,392	7	56	63	5	40	45	0.045
Fire Station 2 Cutter	2,300	69	194	263	30	84	114	0.114
Fire Station HQ (Greenleaf)	13,665	276	695	971	20	51	71	0.071
G.W. Brown School	37,655	64	0	64	2	0	2	0.002
Harbormaster Building	1,700	144	0	144	85	0	85	0.085
Main Public Library	27,270	1,330	881	2,211	49	32	81	0.081
Newburyport High School	215,000	3,165	6,124	9,290	15	28	43	0.043
Police Department	21,000	956	709	1,665	46	34	79	0.079
R.A. Nock Middle School	160,000	1,264	3,537	4,801	8	22	30	0.030
Senior Center	16,500	440	170	610	27	10	37	0.037
Wastewater Treatment Plant	15584	8,672	2,096	10,768	556	134	691	0.691
Water Department	24784	5,176	448	5,624	209	87	227	0.227

Facility	Gross Floor Area (SF)	Water Use		Trash Waste		Co2 Emissions	
		Water Use in Gallons	Water Use in Gallons/sf	Trash in Tons	Pounds/sf	CO2 Emitted in Tons	Pounds/sf
Bresnahan School	112,500	550,251	4.89	41.6	0.74	246.1	4.8
City Hall	27,900	150,572	5.40	7.8	0.56	74.6	5.9
DPS Building	30,000	67,993	2.27	26	1.73	61.7	4.5
Emma Andrews Library	1,392	48,859	35.10	NA	NA	3.5	5.5
Fire Station 2 Cutter	2,300	63,206	27.48	5.2	4.52	15.4	14.7
Fire Station HQ (Greenleaf)	13,665	83,252	6.09	15.6	2.28	57.1	9.2
G.W. Brown School	37,655	-	0.00	0	0.00	4.7	0.3
Harbormaster Building	1,700	91,615	53.89	5.2	6.12	10.5	13.6
Main Public Library	27,270	33,967	1.25	6.8	0.50	143.9	11.6
Newburyport High School	215,000	620,616	2.89	52	0.48	556.8	5.7
Police Department	21,000	62,832	2.99	7.8	0.74	107.5	11.3
R.A. Nock Middle School	160,000	506,022	3.16	78	0.98	280.4	3.9
Senior Center	16,500	90,658	5.49	5.2	0.63	41.2	5.5
Wastewater Treatment Plant	15584	511,497	32.82	15.6	2.00	744.3	95.5
Water Department	24784	6,600,000	266.30	15.6	1.26	401.6	32.4