

City of Newton Municipal Energy Report

FY 22/23
 Prepared Feb. 2023
 Rev. June 15, 2023

Criterion 3 - TABLE 2 PROGRESS

Table 2 Instructions:

- If you haven't already, enter your community name on the General Instructions tab. If you have already entered your community name on the General Instructions tab and your Baseline year hasn't updated, then please manually enter your community's baseline year (indicating whether it's a Fiscal Year or Calendar Year).
- Enter total MMBtu per category (Rows 16-18) for the baseline year and the current reporting year. In MassEnergy Insight, this information is available in the top table in "Annual Report Table 2" report.
- If you're reporting on a calendar year, enter the energy consumption for each year as needed.
- If your community is not listed on the Annual Report list page, enter energy use for 2021 and 2022.
- If your baseline includes a portion of energy consumed by a regional school district, provide the pro-rated energy use in Row 18 for non-weather-normalized use and Row 22 for weather-normalized use. Attach a worksheet back to the workbook listing the buildings, their total energy use, and calculations on how you arrived at their prorated use.
- If your community needs to pro-rate energy use due to building stock changes, use the calculator provided on the tab to the left and enter the resulting numbers in Row 17 for non-weather-normalized data and in Row 22 for weather-normalized data.

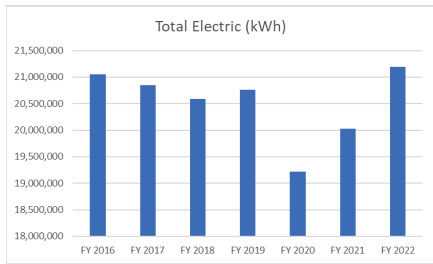
Weather Normalized Data Instructions

DOER is requiring Green Communities to assess their progress using weather-normalized data through DOER-approved weather normalization methodology. Qualifying methods include use of InWeather Insight or Energy Star Portfolio Manager. Enter weather-normalized Grand Total energy consumption in Row 23 on this tab. In MassEnergy Insight, this information is available within the bottom report of the "Annual Report Table 2" report page. Please contact your Regional Coordinator for assistance if you use a different energy-tracking tool.

Does the Community use Calendar Year (CY) or Fiscal Year (FY)? FY

Table 2: Timeline of Annual Municipal Energy Use

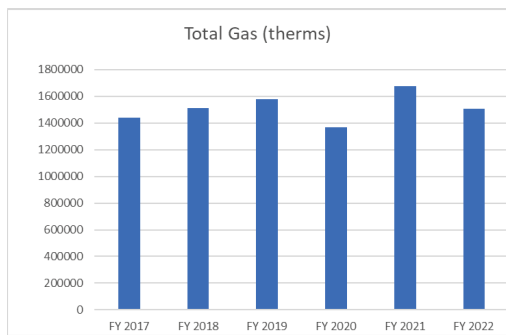
Category	MMBtu				For Most Recent Year: Change vs. Baseline (%)
	2018	2020	2021	2022	
All		145,870	217,508		Enter baseline year consumption in column D
Buildings		547	627		0.1%
Open Space		15,192	5,644		-48.9%
Street & Traffic Lights		34,753	33,862		-2.6%
Vehicles		3,489	3,619		0.4%
Water/sewer					
Adjustments					
Regional School Change (see previous tab)					(8.58)%
Regional School (see 2/13 - Correction tab for information Regional School NY)					
TOTAL ENERGY CONSUMPTION (No Weather Normalization)		199,831	254,632		-15.1%
Weather Normalized Consumption (see instructions above)		33,211	271,203		-19.6%
Adjustments					
Regional School (see previous tab)					(8.58)%
Regional School (weather-normalized)					
TOTAL ENERGY CONSUMPTION (Weather Normalized)		305,211	354,488		-12.7%



	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Total Electric (kWh)	21,056,000	20,848,148	20,584,315	20,766,353	19,220,291	20,031,152	21,192,123

Electricity-Change in kWh use

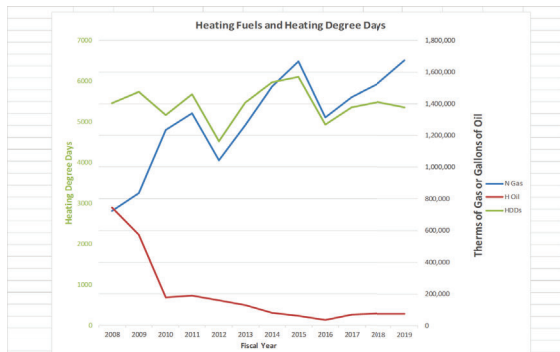
	FY 2019	FY 2022	kWh change	% Change
Main Library	856,360	1,169,889	313,529	37%
Horace Mann (Formerly Newton Cultural Ctr/Car School)	282,240	431,600	149,360	53%
Old Hill HS	600,239	739,799	139,488	23%
Newton Education Center	746,028	860,414	114,385	15%
Courtyard ES	203,788	281,022	77,236	38%
Angier Elementary School (NEW)	474,312	560,008	85,696	18%
Police Department Headquarters	383,628	430,959	47,328	12%
EV Charging Stations	13,994	65,112	41,118	305%
Abundant Library	7,947	41,759	34,712	493%
Franklin ES	215,836	246,235	30,399	14%
Bowen ES	212,789	240,389	27,600	13%
Underwood ES	126,391	162,179	35,875	28%
C C Butt ES	188,848	195,531	6,683	3%
FD #3 and HQ New	476,400	562,685	86,285	18%
Lincoln Ellet (Formerly Aquinas School)	248,400	273,240	24,840	10%
Mason-Rice ES	232,440	255,600	23,160	10%
Prince ES	128,340	149,580	21,240	17%
80 Crafts St	64,608	85,520	21,012	33%
Newton City Hall	606,400	594,000	(12,400)	-2%
Police Headquarters Garage	57,710	43,392	(14,318)	-25%
110 Crafts St Garage/Storage	176,400	169,488	(12,040)	-7%
Newton Senior Center	111,360	84,520	(26,840)	-24%
Bigelow MS	400,800	351,600	(49,200)	-12%
74 Elliot Street - Operations Center (Water/Utilities)	122,480	67,240	(55,240)	-45%
PA Day HS	1,210,228	1,067,734	(142,494)	-12%
Newton North HS (2016)	3,367,887	3,516,626	148,739	4%
Newton South HS	2,847,714	2,436,161	(411,553)	-14%



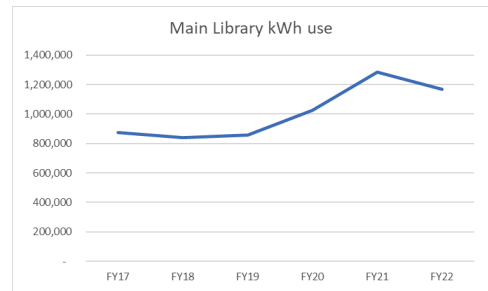
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Gas (therms)	1442381	1513016	1579870	1368288	1677089	1504288

Natural Gas -Change in therm use

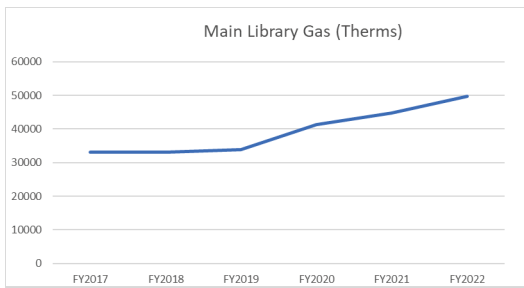
Facility	Fuel (units)	Use	Use	Change	Change
				therms	%
Bowen ES	Gas (therms)	46,981	70,856	23675	50%
Main Library	Gas (therms)	33,883	49,718	15835	47%
Oak Hill MS	Gas (therms)	41,900	50,396	8496	20%
Mason-Rice ES	Gas (therms)	26,323	33,986	7663	29%
Franklin ES	Gas (therms)	57,609	64,530	6921	12%
John Ward ES	Gas (therms)	45,626	52,253	6627	15%
C C Burr ES	Gas (therms)	17,097	21,471	4374	26%
Angier Elementary School (NEW)	Gas (therms)	25,082	20,485	-4597	-18%
Countryside ES	Gas (therms)	45,647	39,930	-5717	-13%
Zervas New School	Gas (therms)	20,370	13,582	-6788	-33%
Memorial Spaulding ES	Gas (therms)	61,245	52,398	-8847	-14%
Newton South HS	Gas (therms)	178,840	164,090	-14750	-8%
Bigelow MS	Gas (therms)	55,407	40,513	-14894	-27%
Charles E Brown MS	Gas (therms)	152,552	125,302	-27250	-18%
Newton North HS (2010)	Gas (therms)	179,368	141,908	-37460	-21%
New Cabot School	Gas (therms)	61,618	23,852	-37766	-61%



FY	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
H-Gas (Therms)	723,203	836,899	1,232,457	1,341,240	1,040,524	1,283,525	1,507,989	1,647,039	1,312,175	1,442,381	1,526,114	1,676,224
H-Oil (gall)	5465	5743	176,201	389,119	159,659	138,924	78,218	40,317	32,546	67,200	75,083	76,621
HDDs	5465	5743	5171	5683	4526	5476	5966	6107	4925	5399	5493	5354



FY17	FY18	FY19	FY20	FY21	FY22
876,320	839,940	856,360	1,024,840	1,285,300	1,169,889



	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Gas (therms)	33,020	33,019	33,883	41,396	44,831	49,718

FY 23 Main Library kWh Use and Cost

		FY21		FY22		FY23 thru Dec.		\$/kWh
		kWh	\$	kWh	\$	kWh	\$	
8-2022	SOLAR			200,729	\$16,058	188,316	\$15,062	\$ 0.08
2630394100	Electric (kWh)	1,285,300	\$110,014	376,740	\$34,674			
3071427001	Electric (kWh)			592,420	\$53,883	661,229	\$134,462	\$ 0.20
	TOTAL	1,285,300	\$110,014	1,169,889	\$104,616	849,545	\$149,524	
						Solar: 22% of kWh 10% of cost		

Electricity Contract-Cost Savings Compared to Eversource Basic Service

		use in kWh	Eversource Supply rate \$/kWh	Newton supply rate\$/kWh	Savings per kWh	Savings \$
Small Bus. B2	July-Dec. 2022	4,333,138	\$ 0.18	\$ 0.09	\$ 0.09	\$ 368,750
	Jan.-June 2023	5,350,000	\$ 0.26	\$ 0.09	\$ 0.17	\$ 899,335
Large Bus. B7	July-Sept. 2022	2,562,682	\$ 0.22	\$ 0.09	\$ 0.13	\$ 323,154
	Oct.-Dec. 2022	2,379,681	\$ 0.31	\$ 0.09	\$ 0.21	\$ 507,110
	Jan.-March 2023	2,617,000	\$ 0.40	\$ 0.09	\$ 0.31	\$ 801,064
	estimated April-June 2023	2,816,824	\$ 0.18	\$ 0.09	\$ 0.09	\$ 239,712
TOTAL SAVINGS						\$ 3,139,125

B7=(NHS,SHS,Library,FA Day, Police HQ,Oak Hill, Angier, Zervas, Cabot)

Gas Contract -Natural Gas Savings

Period	NGrid supply rate \$/therm	Newton supply rate \$/therm	Savings \$/therm	use in therms	Savings
July 1-July 31, 2022	\$ 1.04	\$ 0.53	\$ 0.51	4,054	\$ 2,068
Aug 1-Aug 31, 2022	\$ 0.67	\$ 0.53	\$ 0.14	3,406	\$ 477
Sept 1 -Oct. 31, 2022	\$ 1.03	\$ 0.53	\$ 0.50	9,995	\$ 4,998
Nov 1-Nov 30, 2022	\$ 1.04	\$ 0.53	\$ 0.51	74,679	\$ 38,086
Dec 1, 2022-Jan 31, 2023	\$ 0.99	\$ 0.53	\$ 0.46	498,997	\$ 228,042
Feb 1, 2023-Apr 30, 2023	\$ 0.89	\$ 0.53	\$ 0.36	797,182	\$ 286,986
May 1, 2023-Apr 30, 2023	\$ 0.67	\$ 0.53	\$ 0.14	115,975	\$ 16,237
				TOTAL SAVINGS	\$ 576,892

Energy Supply Contracts

- Natural Gas Contract: Mass OSD (Operational Services Division)
 - Nov. 1, 2019- Oct. 31, 2023 @ \$.539/therm
 - Extension: Nov. 1, 2023- Oct. 31, 2025 @ \$.98/therm
- Electricity Contract: Energy Broker (Freedom Energy Logistics)
 - Nov. 1, 2020-Nov. 30, 2024 @ \$.0929/kWh
 - Jan. 1, 2023- Clean Energy Standard bump to \$.0945/kWh
- RECs Contract: Energy Broker FEL
 - Jan. 1, 2021-Dec. 31, 2024 @ \$38.50/REC
 - 2,100 RECs cost \$80,850 per year

OSD Price Tracking

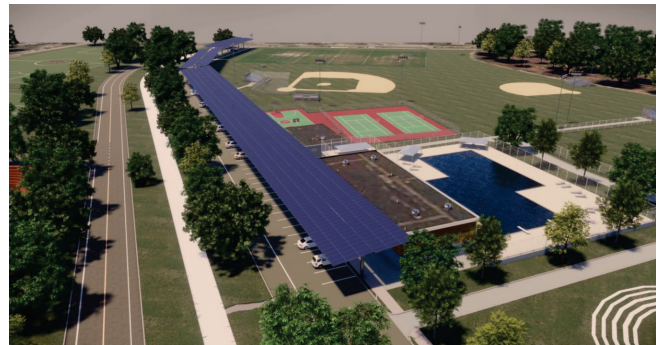


Solar Project Savings: Phases 1 and 2 and 3				rev. 5.31.23	
	Total NMC	Cost	Net Savings	kWh	
FY 2018					
Phase 1	\$ 128,403	\$ 68,892	\$ 59,511	622,475	
Phase 2	\$ 291,413	\$ 168,455	\$ 122,958	1,097,129	
Rumford	\$ 621,819	\$ 249,986	\$ 371,833	2,396,870	
		\$ 354,303	\$ 416,647		
FY 2019					
Phase 1	\$ 160,297	\$ 78,295	\$ 82,002	734,813	
Phase 2	\$ 353,129	\$ 185,365	\$ 167,764	1,169,869	
Rumford	\$ 713,204	\$ 255,209	\$ 457,995	2,518,530	
		\$ 797,761	\$ 642,913		
FY 2020					
Phase 1	\$ 158,293	\$ 89,316	\$ 68,977	761,117	
Phase 2	\$ 343,346	\$ 217,035	\$ 126,311	1,330,357	
Rumford	\$ 727,677	\$ 343,725	\$ 383,952	2,843,120	
		\$ 579,240	\$ 4,934,584		
FY 2021					
Phase 1	\$ 141,917	\$ 75,985	\$ 65,932	729,053	
Phase 2	\$ 337,595	\$ 210,356	\$ 127,239	1,285,919	
Rumford	\$ 681,699	\$ 336,374	\$ 345,325	2,650,900	
Phase 3	\$ 1,161,211	\$ 31,614	\$ 51,800	395,150	
		\$ 654,329	\$ 538,496	5,061,022	
FY 2022-actual					
Phase 1	\$ 135,910	\$ 86,779	\$ 49,131	731,066	
Phase 2	\$ 375,597	\$ 213,945	\$ 161,652	1,273,322	
Rumford	\$ 787,758	\$ 341,632	\$ 446,126	2,667,579	
Phase 3			\$ 115,493	1,062,742	
Total	\$ 1,299,265	\$ 642,352	\$ 772,468	6,734,708	
FY 2023-estimated					
Phase 1	\$ 206,308	\$ 89,378	\$ 116,929	736,813	
Phase 2	\$ 419,690	\$ 218,224	\$ 201,466	1,311,530	
Rumford	\$ 901,306	\$ 349,964	\$ 553,342	2,650,900	
Phase 3	\$ 154,000	\$ 138,000	\$ 15,000	1,579,017	
Total	\$ 1,527,303	\$ 811,566	\$ 1,007,738	6,278,260	

Phase 3 Solar - Update June 15, 2023											
Completed		In progress						Estimated Construction Timeline		SMART Application Approved	
Roof Sites	Total First Year Output (kWh)	KW (AC)	KW (DC)	Location	Type	Solar Company	Construction Timeline	SMART Application Approved			
1	56,779	67	81	Roof	BTM	Ameresco	Completed				
2	77,395	67	63	Roof	BTM	Ameresco	Completed				
3	216,094	133	182	Roof	BTM	Ameresco	Completed				
4	96,208	73	88	Roof	BTM	Ameresco	Fall 2024	6/21/2023			
5	145,409	109	122	Roof	BTM	Ameresco	Fall 2024	5/16/2023			
6	66,161	50	57	Roof	BTM	select	Fall 2024	5/16/2023			
7	87,855	59	68	Roof	BTM	select	Fall 2024	6/13/2023			
Total Phase 3 Roof sites kWh											
793,881											
Parking Lot Canopy Sites											
8	335,119	216	284	Parking lot	FTM	Ameresco	TBD	3/16/2023			
9	197,117	136	150	Parking lot	BTM	select	TBD	6/13/2023			
10	204,698	146	182	Parking lot	FTM	Ameresco	TBD	5/16/2023			
11	120,656	100	108	Parking lot	FTM	Ameresco	TBD	6/13/2023			
12	200,834			Parking lot	BTM	select	TBD				
13	582,786	360	492	Parking lot	FTM	Ameresco	Completed				
14	254,312	220	267	Parking lot	BTM	Ameresco	Completed				
15	221,318	216	277	Parking lot	FTM	Ameresco	TBD				
16	313,100	220	270	Parking lot	BTM	Ameresco	TBD				
17	379,230	240	347	Parking lot	BTM	Ameresco	Completed				
Total Phase 3 Canopy sites kWh											
3,009,460											
1,854											
Municipal Use											
Phases											
Phase 3 Total kWh-completed, estimated FY 2023 kWh											
1,704,676											
Phase 3 Total kWh-proposed											
420											
Phase 2 Total kWh-actual FY 2021 kWh											
3,933,819											
Phase 1 Total kWh-actual FY 2021 kWh											
736,813											
All Phases kWh											
8,443,173											
Municipal Total Use kWh FY 2021											
20,044,000											

Solar Phase 4

- New schools and new roofs:
 - Lincoln Eliot School renovation
 - Bigelow new roof
 - Countryside School
 - Franklin School
- Parking lot Canopies:
 - Revisit Phase 3 canopies at Auburndale Cove and Albermarle

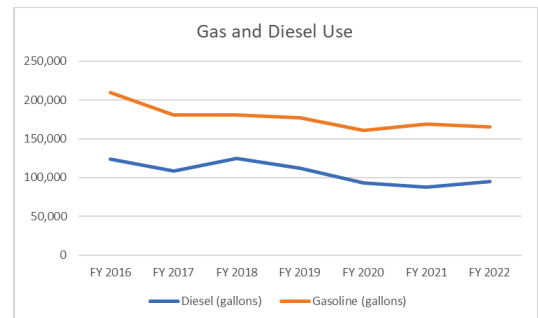




2/27/2023						
2022 Green Communities Grant						
	Total Project Cost	Green Comm. Grant	Utility Rebates	City Funds	Request City Energy Stabilization Funds	Annual Cost Savings
South High School LED lighting and controls-Goodwin	\$ 99,232.00	\$ 50,000.00	\$ 27,520.00		\$ 21,712.00	\$ 12,897.00
Fire Station #1-insulation	\$ 8,090.00	\$ 2,093.00	\$ 1,005.00		\$ 5,000.00	\$ 838.00
Fire Station #1-weatherstripping	\$ 4,500.00	\$ 1,912.00	\$ 1,011.00		\$ 1,577.00	\$ 843.00
Fire Station #1- T-stats and control valves	\$ 12,800.00	\$ 6,544.00	\$ 1,256.00		\$ 5,000.00	\$ 1,046.00
Fire Station #1- Hyper Heat Pumps	\$ 96,550.00	\$ 39,451.00	\$ 17,500.00	\$ 39,599.00		\$ (1,204.00)
Total	\$ 221,172.00	\$ 100,000.00	\$ 48,292.00		\$ 33,289.00	\$ 14,420.00

Grants and Rebates

Category	Total to Date	latest
Green Communities Grants since 2010	\$ 1,783,486	\$ 100,000
Utility Rebates to date since 2013	\$ 2,458,466	\$ 48,292
Demand Response payments since 2017	\$ 236,494	\$ 42,017
EV Charger grants since 2018	\$ 49,000	\$ 28,000
Grand Total	\$ 4,527,446	\$ 218,309



	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Fuel (gallons)	Use	Use	Use	Use	Use	Use	Use
Diesel (gallons)	123,668	108,715	125,151	112,345	91,545	87,656	94,702
Gasoline (gallons)	209,217	181,229	180,021	177,051	167,120	186,724	165,454

Auburndale Cove

