

Town of Harvard Energy Advisory Committee

BRIAN SMITH – CHAIR
 DAVID FAY
 PAUL GREEN
 FORREST HODGKINS
 ELLEN SACHS-LEICHER

ASSOCIATE MEMBERS:
 STUDENT MEMBER:
 LIAISONS:

PETER KELLY-JOSEPH
 OPEN
 KARA MINAR, SELECT BOARD
 SUSANMARY REDINGER, SCHOOL COMMITTEE
 SUSANMARY REDINGER, CAPITAL PLANNING
 TBD, FINANCE COMMITTEE

Meeting Minutes 10/14/2020

Attendees: B. Smith, D. Fay, F. Hodgkins, P. Green, E. Sachs-Leicher, Peter Kelly-Joseph
 Pete Jackson (PT)

Location: **This Meeting was held virtually in accordance with the Governor’s Executive Order Suspending Certain Provisions of the Open Meeting Law, G.L.c.30A. S.20.;**
Zoom Meeting ID: 847 8144 0242

	Meeting Discussion/Status
Admin	1. The minutes of 9/9/2020 were approved 4-0 (Smith, Fay, Hodgkins, Sachs-Leicher). Green abstained.
Schools	1. HES Existing Solar Panels ~6kW – Need a site that is feasible to accept the panels. - No update 2. Charging Station – The HES Building project scope includes the infrastructure but not the dual charging station. Brian is working with Horizon Solutions. Brian received a list of questions from Horizon for the HES project team. – No update 3. HES Solar ~245 kW Behind the Meter project earliest June 2021– Energy Power Purchase Agreement (PPA) proposal from Solect Energy. PILOT and Lease required. <ul style="list-style-type: none"> a. Interconnect Application – denied by National Grid to Solect Energy. The Ayer substation requires upgrade in 4-5 years. Solect requesting a written response from NGRID. Solect says to apply to DOER for an award incentive without an I/C approved. HEAC discussed other ways to push NGRID to make this a priority. One idea is to add battery storage to the project to minimize impact. However, Solect has decided not to invest any more time into the project or invest any funds (~\$10k) for a feasibility study. b. David and Ellen attended the NGRID Meeting on 9/17 about infrastructure upgrades which included the Ayer substation. The area has reached a saturation point requiring additional capacity prior to adding larger solar projects. c. David delivered report to the School Building Committee on 9/17.
Town Energy Project Updates	1. GC Projects – 2019 Competitive Grants – awarded 9/3/19. <ul style="list-style-type: none"> a. Reporting – Final grant report overdue to DOER - Brian to complete. b. GC Annual Report – due to submit by 11/6. c. Need ideas for GC2020 application – TBS Economizer, battery storage, sewer plant and DPW opportunities were mentioned. School Insulation – Brian discussed with RISE Eng and was referred to NGRID. Brian to create a separate list and assign owners. Brian review Police Station lighting (5 lights). Determine opportunities based on Energy Review report by John Snell and department Energy reviews. 2. Annual Town Building Energy Reviews – Pete Jackson serving as Facility Director of Library. David presented an Energy Review of usage through FY20 and opportunities. <ul style="list-style-type: none"> a. The MEI tool shows that the Library is the most energy intensive building (per square foot) in town. It is also high compared to other libraries in MA. Pete explained that hours of operation need to be considered because the Library is often used from 9-9 ~60 hrs a week, especially by school programs. Also, water and electric are used by other activities in the field in front of the Library.

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	<ul style="list-style-type: none"> b. Pete identified that computers/copiers are turned off every night. He also explained that a spike in summer AC was due to an issue with AC units running at high setting for weeks until they were reset. c. The final stage of the lighting project should show reduction in overall energy use during FY21. d. Insulation – There are some areas that could be improved in the old section but considered minimal. e. The main RTU is responsible for the majority of energy usage in the building. The fan is used for ventilation. Long term, the recent Energy Evaluation report suggested replacing with heat pumps. f. Opportunities – daylighting in lobby and west side. Pete will review reducing the unoccupied set points lower in the new building section (60 to 55F?)
<p>Subcommittees/ Initiatives</p>	<ul style="list-style-type: none"> 1. Community Resiliency Working group CRWG (Chair Peter Kelly-Joseph) <ul style="list-style-type: none"> a. Consultant KLA is to complete the Climate Action Plan (CAP) by September. KLA working on a greenhouse gas inventory and will refer to the MEI energy use data. KLA issued a framework for a Climate Action Plan. Note that in the combined municipal operations and community usage 50% is due to transportation and 40% to buildings. b. MVP Phase 3 – Planning phase for Energy Module – this may involve a battery storage system CRWG would apply for a grant for an Energy Module effort. An Energy strategy or goal would be part of this effort. Review with Chris Ryan. 2. Energy Policy Subcommittee (Chair Paul Green)– Plan to integrate this into the Climate Action Plan effort. 3. Master Plan Status - Residential Energy Conservation Forum – to be considered in the FY21 plans. – No progress 4. Community Choice Aggregation – Colonial Power will provide an update of participation, impact and future rates at the Nov HEAC meeting. 5. Solar in Harvard Historical District – HEAC encourages installation of solar. Need to ensure that the local Harvard Historical Commission is not violating state law.
	<p>Meeting adjourned 9:20 pm</p>
<p>Future Meetings</p>	<p>2020 Nov 19, Dec 9 2021 Jan 13 Feb 10 Mar 10 HEAC Meeting Location/Time: Volunteer Government Room, Town Hall 8 pm. – Virtual until further notice</p>

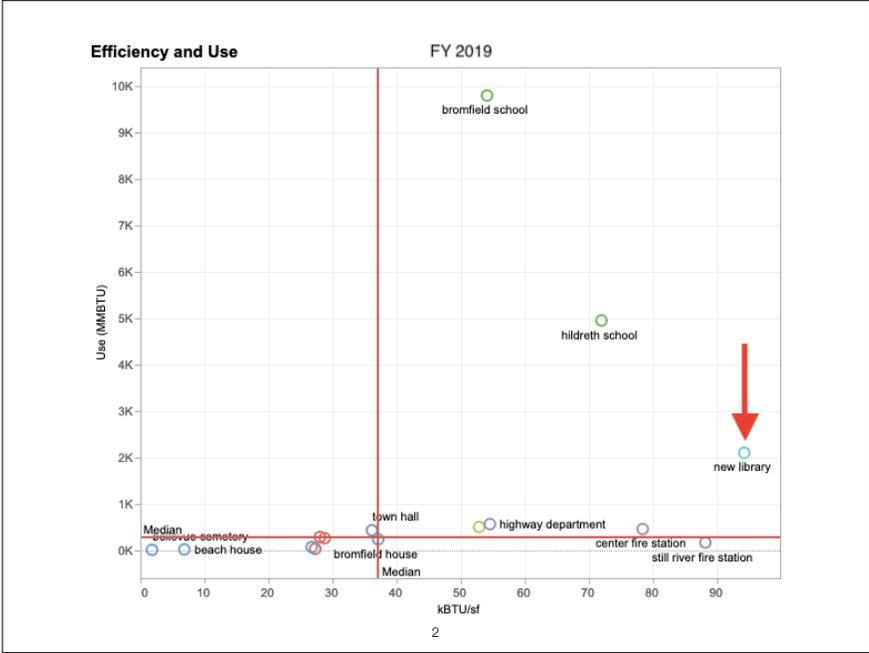
Energy Review

New Library

14 October 2020

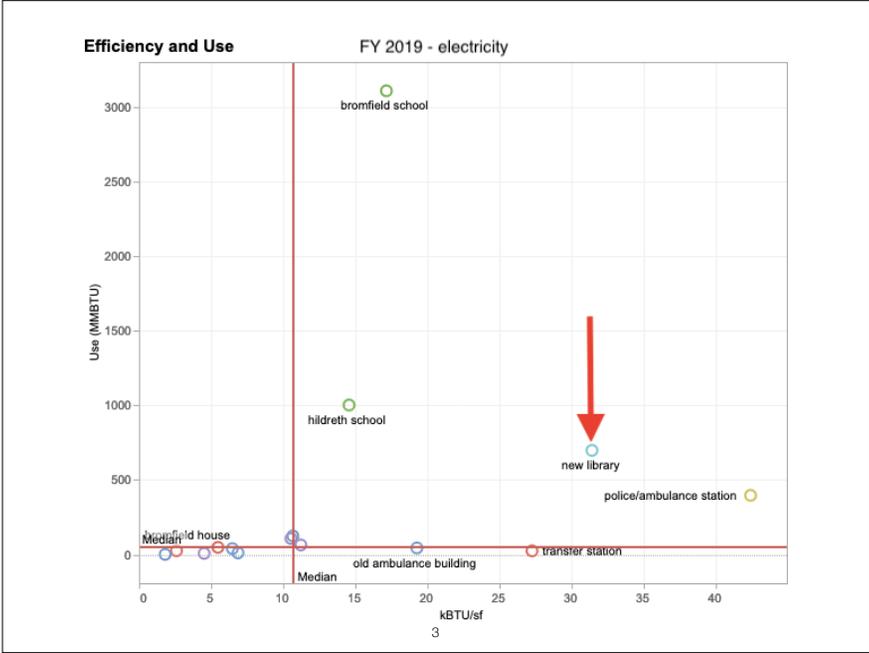
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The most recent data we are using in this review is from FY2019 rather than FY2020, since FY2020 includes the unique event of the pandemic shutdown.



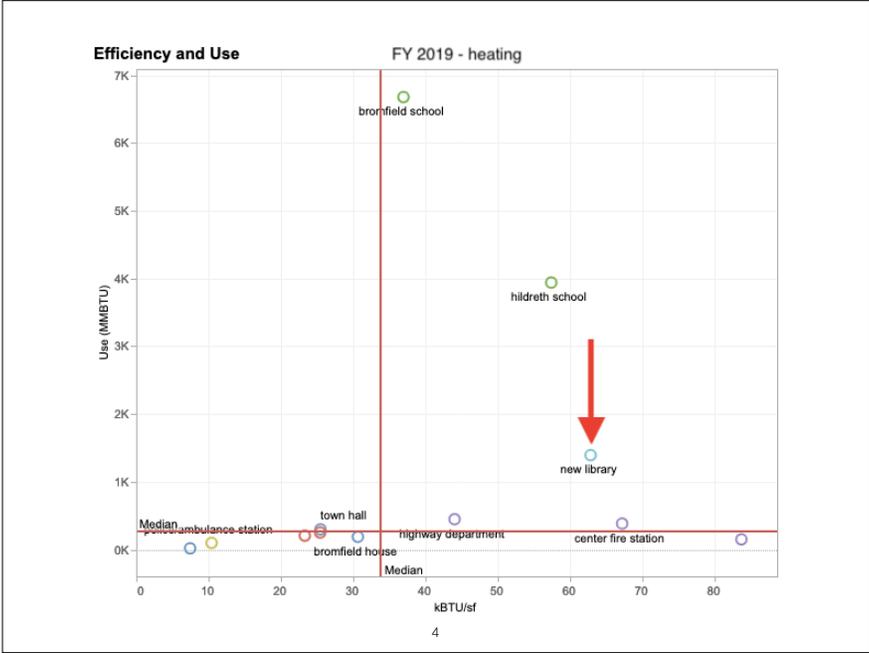
This chart compares the total energy usage of the New Library (red arrow) to other town buildings.

The New Library (red arrow) uses more energy than any other building in town except for the schools (reference the y-axis). And that's not because of its size. If we divide the energy use by the floor area, to get energy use per square foot (reference the x-axis), it is also the most energy intensive of all the town's buildings. It uses more energy per square foot than even the almost-uninsulated, cinder block fire stations.



This chart compares just the electricity usage (lights, cooling, computers, etc.) of the New Library (red arrow) to other town buildings.

The New Library is particularly energy intensive (reference the x-axis) in its use of electricity. It exceeds the intensity of every town building but the police/ ambulance station, which keeps a backup for the Dispatch Center powered up at all times.



This chart compares the heating usage of the New Library (red arrow) to other town buildings.

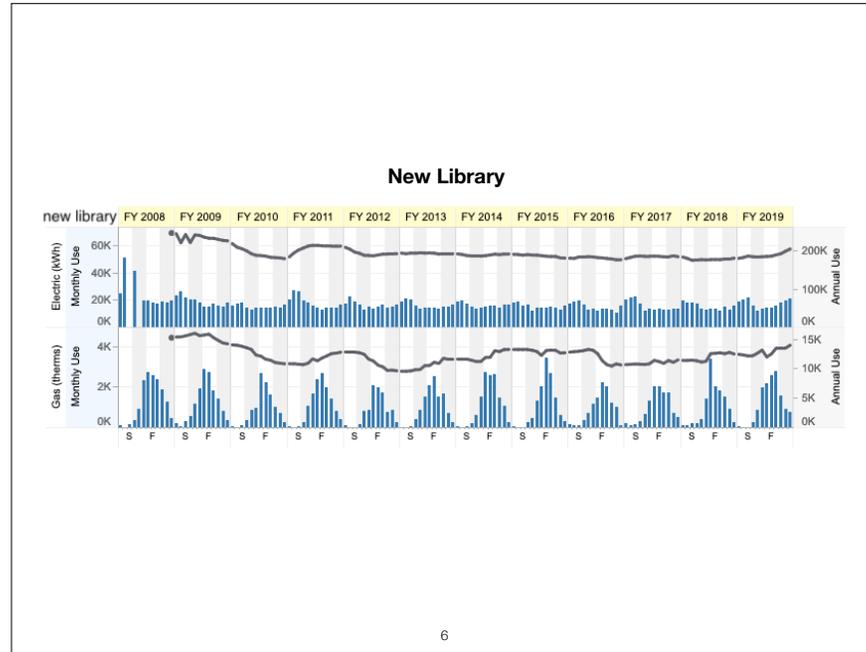
The New Library is unusually energy intensive in its heating (reference the x-axis), being exceeded only by the two fire stations, which have cinder block walls and are barely insulated.

From: Green Communities Program Review - Town of Harvard, September 9, 2020

As Figure 2 shows, most of Harvard's facilities have lower energy use per square foot than other similar municipal buildings. Hildreth School's EUI (72) is slightly above average and the New Library's EUI (94) is in the bottom quartile energy performance of all municipal libraries. The upper public safety red line represents the Center Fire Station (78) and the lower public safety

This quote comes from the Green Communities Program Review for the Town of Harvard, September 9, 2020, written by John Snell.

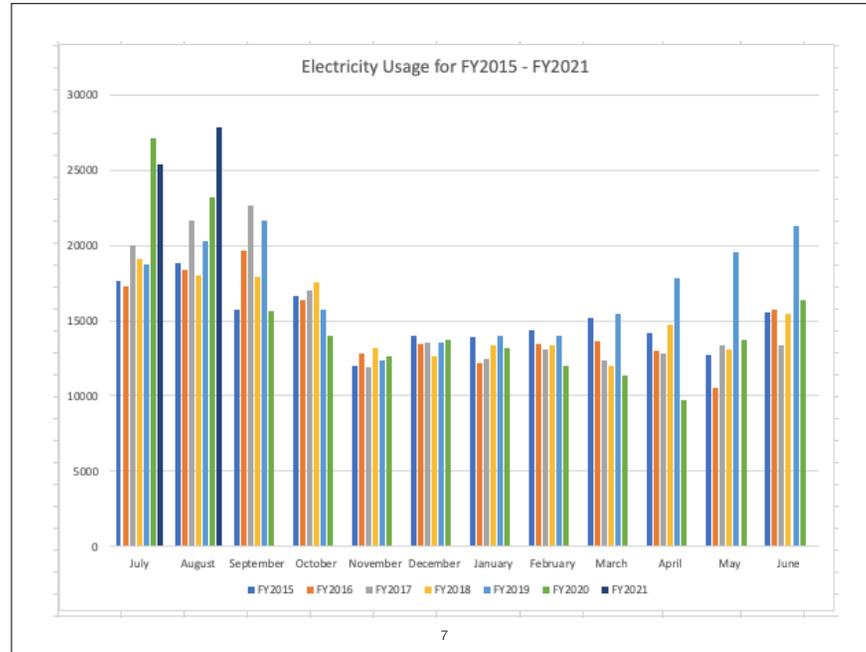
"EUI" is short for Energy Use Intensity, or energy use per square foot of floor space, measured as kBTU/square_foot.



This chart shows the electricity (top) and gas (bottom) usage for the New Library over the last 12 years.

The electricity usage peaks at the beginning in the first quarter of each fiscal year (July, August, September bills). Since these are warm months, this peak presumably reflects HVAC cooling of the building. Otherwise, the electricity usage has been remarkably stable over this period (see moving average). Note, however, the rise in usage in the second half of FY2019. This needs to be investigated.

Gas usage (mostly for heating) fell from its high point in FY2008-09 to a low around FY2012, but has been creeping up since (see moving average). Is this due to weather or a change in building controls?



This chart shows the electricity usage for the New Library for FY2015 - FY2021 (first two months only), arranged by month.

Notice the increase in electricity usage starting in March of FY2019 (light blue), which then stays unusually high in the warm months of FY2020 (green) and FY2021 (black). Is this weather (or climate?) or has something changed in the way the building is controlled?

What can be done about the New Library's high energy intensity?

- Shut down electrical equipment in off-hours (e.g., computers, copy machines)
- Investigate electricity increases during the warm season since March 2019
- Monitor electricity usage to verify improvements from lighting upgrade
- Search for other causes of high electricity usage (using SiteSage)
- Select energy efficient equipment when current equipment needs to be replaced (e.g., heat pumps)
- Pay special attention to RTU1, which consumes ~40% of building electricity