RESILIENT BUILDINGS
GROUP
Superior energy performance

Barrington Community Center

Level II Energy Audit

ADDENDUM ADDED September 26, 2023

Prepared by: *Resilient Buildings Group*, Inc.

Barrington Community Center 105 Ramsdell Ln, Barrington, NH 03825	**Resilient Buildings Group, Inc.** 46 South Main St, Suite 7 Concord, NH 03301 (603) 226-1009	**CDFA** 14 Dixon Ave, Suite 102 Concord, NH 03301 (603) 226-2170 smaslansky@nhcdfa.org

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Executive Summary

Resilient Buildings Group (RBG) conducted a site visit of the Barrington Community Center building in Warner, NH. The Community Development and Finance Authority helped fund the Audit. During the audit, RBG examined the building's shell and all other pertinent building systems.

The assessment shows that the energy performance of the building can be improved. This report will provide an overview of the building's existing conditions and an initial outline of problem areas and recommendations for cost-effective ways to reduce energy use and costs.

Existing Conditions at the Barrington Community Center Building

Site

- **Size:** 10,960 ft²
- **Sewer:** Private
- **Water:** Private
- **Year built:** 1972/1987
- **Building Type:** Gym; food pantry; library

Shell

- **Number of Levels:** 2
- **Foundation and Insulation:** Slab on grade, uninsulated
- **Exterior Wall Construction and Insulation:** Metal stud with fiberglass batt (assumed R-19)
- **Roof Type and Insulation:**
  - Food Pantry → lean-to asphalt shingle roof against Gym, attic floor insulated with R-30 fiberglass batt
  - Gym and Library → pitched metal roof, insulation unknown
- **Doors and Windows:**
  - **Windows:**
    - Gym → single pane plastic
    - Library → double pane vinyl windows
  - **Doors:** Mix of double wide and single wide hinged metal doors

Heating, Plumbing, Ventilation, and Air Conditioning

- **Heating Fuel:** oil and electricity
- **Heat Generation Equipment:**
  - Two Smith Cast Iron Boilers
    - Model: 8 Series S/W – 6
    - Efficiency: unable to access, assumed 85%
  - Three Westinghouse pumps
    - Model: KJ77
- **Domestic Hot Water (DHW):**
  - Food Pantry → Electric Water Heater
    - Model: 153.313430
  - Gym → Indirect Tank with a Taco Pump (Pump Model: 007-F5-7IFC)
  - Library → Electric Water Heater
- **Heating and Air-Conditioning Equipment:**
  - Library → Five Mitsubishi Ductless Heat Pumps
    - Model: PUY-A12NHA3

        - EER: 10.1
    - Gym offices → One Daikin Ductless Heat Pump
        - Model: 3MXL24RMVJUA
        - EER: 12.7
- **Temperature Controls:** Digital thermostats
- **Ventilation Equipment**: Exhaust fans in all bathrooms; ventilation fans in the food pantry (only enabled in the summer)

Notable Issues

Missing sealant around boiler exhaust

Blower Door Testing

Purpose of Blower Door Testing

An effective building envelope provides a barrier between the outside and inside air while retaining a high percentage of the energy used to condition the inside air (heating or cooling energy). This is achieved only when the envelope is well insulated and a continuous air barrier is implemented. The best way to properly investigate the current condition of a building envelope or shell is to perform a full blower-door test. The blower-door test quantifies the amount of uncontrolled outside air that enters the building through cracks, gaps, poorly sealed penetrations, etc. Shell shortcomings, such as a lack of air sealing and lack of insulation, further compromise the temperature of the indoor air which the owner has paid to condition (heat or cool).
Blower door testing creates a measurable building pressure and airflow that allows us to evaluate a building's air leakage. ACH50 is the number of Air Changes per Hour at -50 pascals (created by the fan). CFM50 is the cubic feet per minute of air being pulled into the building while it is depressurized to 50 pascals. Natural air changes per hour (ACHn) represents infiltration into the building under normal conditions and tells how many times the entire volume of air in the building is replaced (by infiltration through building imperfections) per hour. These values allow for comparison of the leakiness of different-sized buildings.
For this audit, we had the choice of blower door testing the food pantry, the gymnasium/recreational area, or the library. The gym was too large to test and the food pantry seemed to have some clear, large air leakage points. After discussing with the building owner on-site, we determined that the library would be the best option for blower door testing. Below are the results of the library testing.

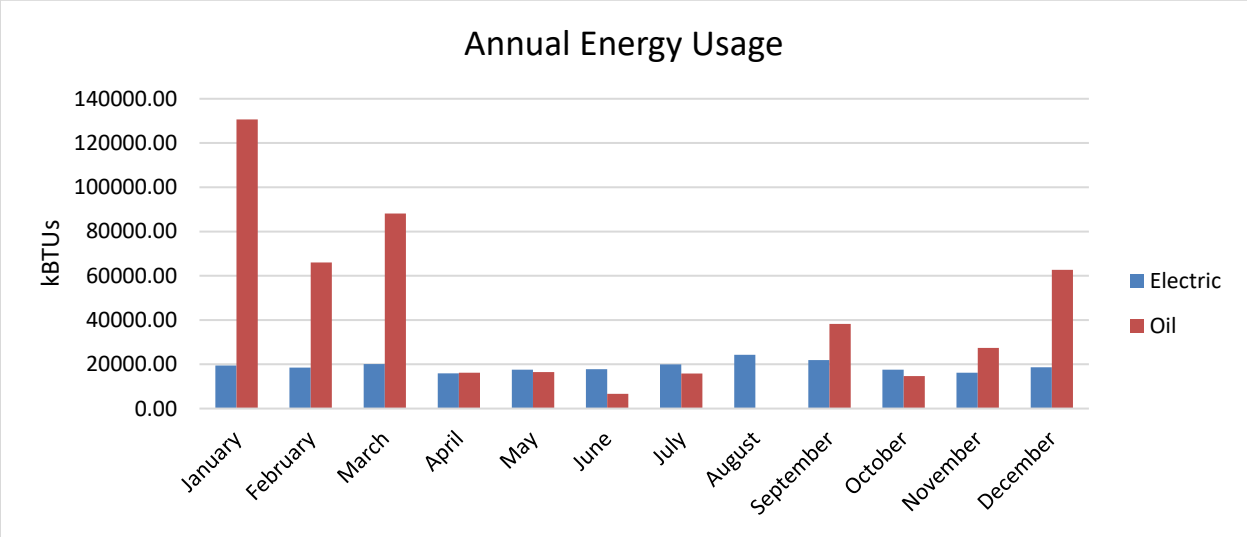
Testing Results

	Volume (Ft^3)	CFM @ -20 pascals	ACHn	ACH_{50}
Library	**38,400 ft^3**	**10,622 CFM**	**1.04**	**16.60**

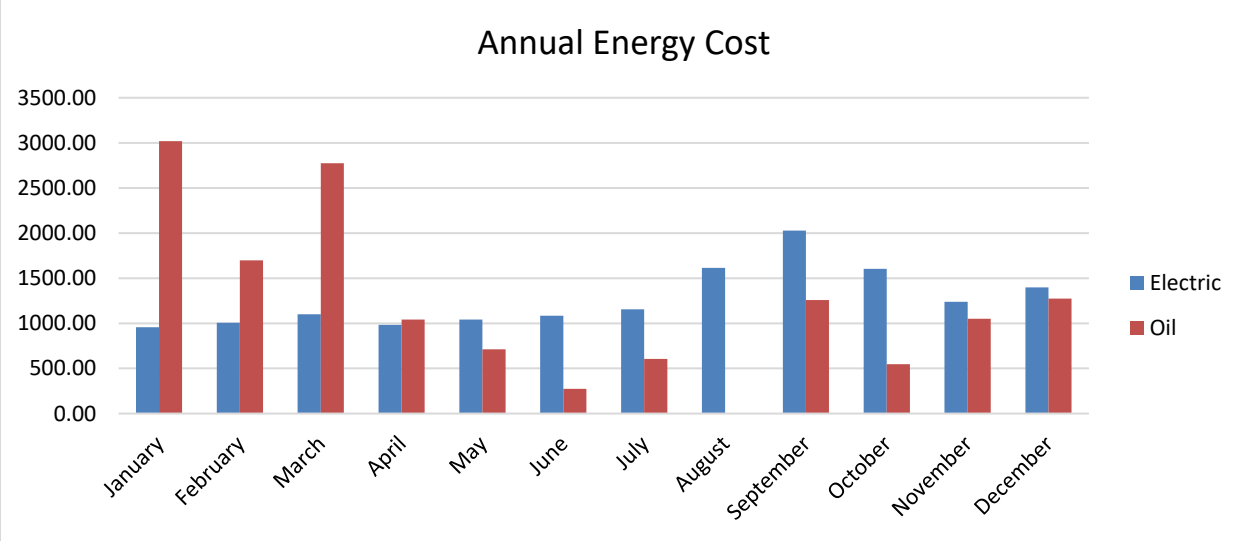
Goal:	**6.0**

The findings of the blower door test suggest that there is ample room to air seal the building and reduce the amount of air infiltration through the envelope. Based on these results and visual analysis on site, we believe there is air communication between the library and the gym space at the roof-wall connection for the interior wall that separates the library from the gym. This should be investigated and treated with air-sealing measures (see the later section on energy efficiency measures for more information, specifically see *B6. EEM*).

Energy Usage and Cost Analysis



Using past utility bills for the Barrington Community Center building, we calculated an average yearly consumption of 3,483 gallons of oil and 66,854 kWh of electricity, which translates to a total of 711,149 kBtu of energy consumed per year on average.*



The building's average energy costs are $14,254 for fuel oil and $15,211 for electricity, which equates to a combined average of $29,465 per year.*

*Based on 1 year of oil and 1 year of electricity bills. The analysis includes 1 building with a total square footage of 10960 ft². The costs are based on an estimated $4.09 per gallon of oil and 0.23 cents per kWh of electricity.

Preliminary Building Benchmarking

RBG analyzed the historical energy consumption of this building to calculate a Building Benchmarking rating. Building Benchmarking rates your building's performance on two metrics: Energy Use Intensity (EUI) and Cost Use Intensity (CUI).
EUI is the annual energy use in British Thermal Units (Btu), usually displayed as kBtu to signify thousands of Btu per square foot of conditioned space in the building (kBtu/SF/yr). CUI displays the annual energy cost per square foot in the building ($/SF/yr).
EUI is often split into two numbers, one providing the annual Btu used at the site for all purposes (as used in the previous energy tables), and the other combining the site use figure with the additional Btu required to generate and transmit electrical energy from its source. At RBG, we are chiefly interested in the source number because it provides the most accurate accounting for the total greenhouse gas emissions associated with a building's energy consumption. RBG accounted for both Site and Source kBtu in the EUI numbers given below.
Our source EUI and CUI are calculated using the 1 year of oil and electricity use and cost data.

Current EUI/CUI Data:	
Site EUI:	64.9 kBtu/ ft²/Year
Source EUI:	106.5 kBtu/ ft²/Year
CUI:	$2.69 / ft²/Year

ENERGY STAR® Portfolio Manager® Technical Reference

Primary Function	Further Breakdown (where needed)	Source EUI (kBtu/ft²)	Site EUI (kBtu/ft²)	Reference Data Source - Peer Group Comparison
Recreation	Fitness Center/Health Club/Gym	**112.0**	**50.8**	CBECS – Recreation
Library	N/A	**143.6**	**71.6**	CBECS – Library

The national average Source EUI for a typical recreation building is 112.0 kBtu/ft²/Yr and the average Site EUI is 50.8 kBtu/ft²/Yr. The Barrington Community Center, which mostly consists of space dedicated to the gym for recreational purposes, has Source and Site EUIs of 106.5 kBtu/ft^2/Yr and 64.9 kBtu/ft^2/Yr respectively. The source EUI is slightly lower than the average, but the site EUI is higher than the national average. This suggests that the building is performing below the average recreational building and that there is plenty of room for improvement.

Energy Efficiency Measures

Three major areas of activity were examined for energy-saving opportunities: building envelope, mechanical systems, and electrical systems. The proposed energy efficiency recommendations could qualify for the energy efficiency incentives offered by NHSaves.

Building Envelope

Infiltration and Insulation

A well-sealed and insulated building envelope is an essential element to create a high-performance building and can make a tremendous difference in comfort. Investment in measures to achieve such an envelope will reduce costs in building construction and operation. In a well-sealed and insulated building, heat systems can be smaller and therefore less expensive and less fuel intensive.

The *Energy Impact of Air Leakage in US Office Buildings* study prepared by the Building and Fire Research Laboratory in Maryland, analyzed nationwide infiltration levels. They found that infiltration - when outdoor air leaks into and out of buildings - is responsible for about 15% of the total annual heating load of the typical building. This section will provide strategies to improve the Center's building's envelope.

Building Envelope Recommendations:

- **B1. EEM: Gym, Replace South East Wall and Windows.** The metal wall and plastic window currently in place do not adequately prevent heat transfer and therefore drastically compromise the building's energy efficiency. During the interview with the owner, we learned that this whole wall would be replaced. When replacing the metal wall, we recommend installing one with R-35 polyisocyanurate insulation. We also recommend replacing the plastic window with a fixed translucent daylight panel that has a minimum R-value of R-5 (U-value maximum of 0.2) (e.g. a Kalwall product).

Southeast Wall of Gym

- **B2. EEM: Gym, Install Retrofit Insulation System and in Ceiling.** We recommend installing a retrofit insulation system between the metal purlins. With this system, a contractor will lay in suspended sealed layers of fiberglass insulation. This approach is quite a popular, cost-effective way to insulate gym roofs. There are contractors in New Hampshire that install these systems (e.g. TruTeam). The metal purlins in the gym seem to be about 10" in height, allowing for a 9" retrofit system. This would equate to about R-30.

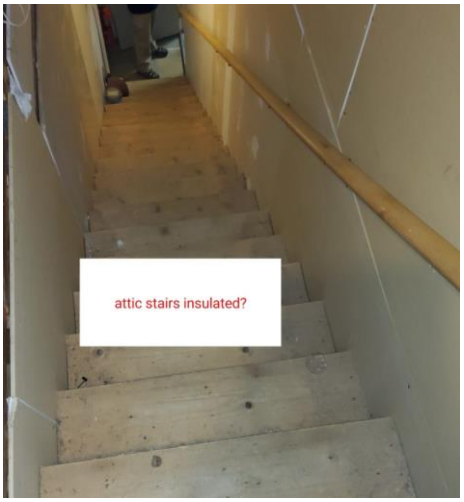
  [*Navigate to this link to learn more about this type of insulation system: https://cmi-insulation.com/insulation-systems/retro-fit/*]

Gym Retrofit Insulation System

- **B3. EEM: Food Pantry, Air Seal and Reinsulate Attic Floor and Fill Hole in Metal Wall with Spray Foam.** The surrounding walls and attic/roof of the gym and food pantry should be well-insulated and air-sealed to ensure an efficient building envelope. The space above the food pantry is currently being used for miscellaneous storage and does not seem to be included in the food pantry's conditioned space (space that is intended to be warm in the winter and cold in the summer). Therefore, the attic floor above the food pantry space and the exposed section of the gym wall should be continuously air-sealed and insulated. At present, there is a large gap in the metal wall for the gym and the wall is not adequately insulated (discontinuous layer of 6" fiberglass batts). The attic floor has several un-sealed openings and is insulated with a discontinuous layer of 12" fiberglass batts, which equates to an R-value of only about R-30. We typically recommend establishing a continuous air-barrier and thermal barrier with an R-value of R-60. To approach this target in the food pantry, a weatherization contractor should use air-sealing measures and insulating measures to address the issues noted. A series of measures we recommend are: apply 6" of closed cell spray foam to the hole in the metal wall, air-seal the attic floor with one-part spray foam or caulking, insulate that attic floor with 10" loose-blown cellulose, and reinstall plywood boards if the space will continue to serve as storage space.

Uninsulated wall dividing gym and attic space

- **B4. EEM: Food Pantry, Spray Foam Under Stairs to Access.** Related to B3, the current attic access for the food pantry interrupts the continuous air-sealed and insulated barrier around the conditioned space on the first floor. The current stairway, including the door, the wood stairs, and the interior wall adjacent to the food pantry space, are all directly adjacent to the unconditioned attic space above. This is an issue because these surfaces will allow heat and air to transfer between the attic and the food pantry, which is inefficient. To remedy this, 3" of spray foam should be applied to the underside of the attic stairs, which will both insulate AND air-seal this surface.



Attic stairway

- **B5. EEM: Food Pantry, *If Not Needed,* Remove Exhaust Fans and Cap/Insulate Whole.** The current exhaust fans in the food pantry are large holes in the exterior wall that allow for a large amount of heat transfer via air communication. If these fans are not essential, we highly recommend removing the fans and filling the holes by capping and insulating them.
- **B6. EEM: Library, Air Seal the Roof-Wall Connection.** The blower door results were much higher than we would have expected for the library space. Based on the results and our prior inspection of the dividing wall between the gym and the library, we believe the excessive leakage is due to leakage over the top of the wall at the roof-wall connection.

This connection should be inspected and air-sealed (e.g. using spray foam to fill cavities) by a weatherization contractor.

- **B7. EEM: Replace Roof and Add Insulation with Radiant Barrier.** During our interviews with the owner, we learned that the roof may be due to be replaced soon. This is an excellent opportunity to improve the thermal resistance of the roof and the overall efficiency of the building. For a high-performing roof assembly, we typically recommend achieving R-60. With the ceiling retrofit system (B2 above), the ceiling would achieve R-30. To increase the insulation value by approximately R-13, we recommend adding 2" of foil-faced polyisocyanurate insulation when replacing the roof. This additional insulation and radiant barrier will significantly inhibit heat loss during the winter and heat gain during the summer.
- **B8. EEM: Sprayfoam Library Roof Deck.** Presumably *after* a new insulated roof is installed (B7), we would recommend increasing the insulation value of the library roof plane by applying 3" of spray foam to the underside of the roof deck. This would increase the current roof from about an R-16 to an R-36. With a new roof containing 2" of polyisocyanurate, the R-value would be about R-49.

Mechanical System

Once the building envelope is improved, the next step is to address the necessary mechanical improvements. High-efficiency heating, cooling, and ventilating systems, especially when reduced to a size appropriate to the needs of the improved building, can make an immediate difference in expenditures for heating and electricity.

The mechanical systems in any building – heating, cooling, ventilating, and plumbing – are the biggest users of fuels and electricity. For the building owner to save energy and money, it is essential that the building's need for all those services be reduced as much as possible. That means making the building envelope as resistant to the loss of conditioned (heated or cooled) air and the gain of excess outside air as is economically feasible.

Mechanical Recommendations:

- **M1. EEM: Food Pantry & Gym, Upgrade to Condensing Boilers and Switch to Low Temperature Distribution.** Atmospherically vented boilers like those in the mechanical room of the gym typically have an efficiency rating between 80% and 85%. Modern condensing boilers are typically rated at 95%. Thus, as one mechanical EEM option, we recommend replacing the current boilers with condensing boilers. To maximize the efficiency of the new condensing boilers, the supply hot water temperature will need to be kept below 140 degrees, which is too low for the current fin tube radiation and hot water unit heaters that serve the gym and food pantry. To resolve this issue and maximize the efficiency of the heating distribution systems in these spaces, we recommend replacing the fin tube radiators and unit heaters with radiant panels. These provide effective heating at lower temperatures and are more appropriate for large, open spaces than the current systems. In the food pantry, remove the furnace in the attic and install ceiling radiant panels.
- **M2. EEM: Gym, Insulate Hot Water Pipes in Mechanical Room.** If the building is to continue to be heated with boilers and hot water distribution systems, the hot water pipes in the mechanical room should be insulated to prevent distribution heat loss.

- **M3. EEM: Gym, Install Air Source Heat Pumps.** An alternative to upgrading the current, fossil-fuel-based system is to swap it out for air-source heat pumps. Such a system would operate at an efficiency of approximately 350%, which would be much higher than the current boilers that likely operate at 80%-85% efficiency. This system would also be able to provide cooling in the summer.
- **M4. EEM: Food Pantry, Replace Electric Water Heater with a Heat Pump Water Heater.** The current electric water heater could be replaced with a heat pump water which will be up to three times as efficient.
- **M5. EEM: Install Programmable Thermostats.** The current thermostats are digital thermostats that must be manually set. We recommend replacing these with programmable thermostats which will use simple technology to reduce energy used to heat the building when it is not needed.

Electrical System

Improving electrical systems includes analyzing the electrical demands, or the loads, in a building – lighting, appliances, computers, the electrical portion of the operation of mechanical equipment, etc. – and devising ways to reduce their requirements for energy and make them more efficient. Installation of all demand reduction techniques should be implemented first. After envelope and mechanical improvements, installing high-performance, efficient electricity-using devices, remains a high priority in any building retrofit. The cheapest kilowatt hour is the one you do not need to buy.

Electrical Recommendations

- **E1. EEM: Gym, Replace Existing Metal Halide Lights with High Bay LED Fixtures.** The current light fixtures in the gym are metal halide lights and should be replaced with high bay LED fixtures. LED technology will provide the same light intensity at a much lower wattage, which will save energy and money.
- **E2. EEM: Gym, Replace Old Refrigerator and Freezer in Storage.** The current refrigerator and freezer in the back storage room of the gym offices are both old and inefficient. We recommend replacing these with new ENERGY STAR-certified appliances. Such appliances will meet the staff's refrigeration/freezing needs at a much lower wattage, and therefore save energy.

Renewable Energy

The use of renewable energy to meet buildings' thermal and electrical needs is expanding rapidly. Incentives are now in place at the federal, state, and even local government levels. Any building upgrade project under consideration today should take advantage of the opportunities presented by renewable energy technologies including stabilizing energy supply costs, reducing the environmental impact of the greenhouse gas emissions from buildings, and cost savings.
A key goal for RBG in building upgrade projects is to recommend and help implement measures that will dramatically reduce a building's reliance on fossil fuels. Renewable resources can help building owners achieve independence from fossil fuels.

Renewable Recommendations:

- **R1. EEM: Install a 40.2 kW Solar Electric System.** The south-facing roof of the gym is ideal for installing a solar electric system to generate renewable electricity for the community center. This is especially true if the building owner has plans to replace or upgrade the current roof, as this work could be done in conjunction with installing a photovoltaic (PV) system. We used the PV Watts calculator to estimate that there is sufficient space for a 40.2 kW system that is capable of producing 45,210 kWh annually (see attached PV Watts report). This would cover about 68% of the building's current electricity use of 66,854 kWh. It should be noted that if the building owner elects to install heat pumps in place of using a boiler plant, this will drive up electric usage. Combining such an upgrade with solar would significantly offset this, but would not completely cover the building's electricity use.

No Cost/Low-Cost Energy Savings Opportunities

There are Energy Efficiency Measures (EEMs) that will cost little or no money to implement at the workshop. It is important to encourage employees to slightly change their behavior. This is not easy, but such efforts will produce energy savings without any other investment. For this reason, RBG provided these initiatives as part of this analysis. By encouraging the building's occupants to alter routines, energy can be saved regardless of energy-saving investments. These No-Cost /Low-Cost Initiatives are:

❶ **Refrigerator replacement:** We recommend replacing refrigerators more than 15 years old with Energy Star-rated refrigerators.

❷ **Thermostat Setback (3°F+/-):** To reduce demands on the heating source, thermostat settings can be cut back by 3°F when outside temperature allows. Studies have shown that when the average outside temperature is above 38°F, a slight adjustment of interior temperature settings does not influence comfort. Over an eight-hour workday, this practice can produce a noticeable energy use reduction. It is suggested that the maintenance staff perform a test to see if comfort levels are affected. Resource: https://www.energystar.gov/products/heating_cooling/programmable_thermostats

❸ **Task Lighting:** To reduce electrical demands from lighting, task lighting should be encouraged where appropriate. A task lighting initiative would encourage building occupants to shut off the ceiling-mounted lighting and utilize task lighting (portable desk lamps, workstation under-shelf lighting, etc.) to provide the illumination they need, whenever possible. Providing task lighting devices for spaces appropriate to their use may entail a small expense if task lights do not presently exist. Furthermore, we recommend replacing existing single-bulb incandescent or CFL fixtures (such as the task lighting mentioned above, or ceiling-mounted lighting) with appropriate LEDs.

❹ **Computer Settings:** An easy way to reduce plug load and electricity use is to turn off all computers at night and when not in use for extended periods. Ensure that the staff's computer towers and monitors are shut off when not in use and at the end of each day.

Financial Modeling Results

The following table identifies each EEM's projected cost, **estimated** annual energy savings and cost savings, simple payback, internal rate of return, and net present value.
We used the NHSaves Technical Reference Manual published by the New Hampshire utilities to estimate energy savings from the recommended EEMs. Cost estimates were derived from several sources: RS Means construction estimating tools, actual contractor estimates, and RBG staff with field knowledge of installed work.

Assumptions :	Electric		Fuel Oil		Total Energy per Year	
Baseline Energy Usage:	66,854	kWH	3,483	Gallons	711,165	kBTU
Baseline Energy Cost:	$15,211	Cost	$14,254	Cost	$29,465	Cost
Baseline Unit Cost:	$0.23	($/kWh)	$4.09	($/Gallon)		

EEM #	Building Envelope Upgrades	Capital Investment	Annual Energy Cost Savings	Annual kBTU Savings	Simple Payback (Years)	IRR	NPV
B1	Gym, Replace South East Wall and Windows.	$58,281	$1,710	57,967	34.1	3.84%	($8,962)
B2	Gym, Install Retrofit Insulation System and in Ceiling.	$13,000	$513	17,390	25.3	5.83%	$1,582
B3	Food Pantry, Air Seal and Reinsulate Attic Floor and Fill Hole in Metal Wall with Spray Foam.	$4,697	$143	4,831	33.0	4.06%	($595)

B4	Food Pantry, Spray Foam Under Stairs to Access.	$950	$299	10,144	3.2	36.50%	$7,240
B5	Food Pantry, If Not Needed, Remove Exhaust Fans and Cap/Insulate Whole.	$344	$57	1,932	6.0	21.36%	$1,224
B6	Library, Air Seal the Roof-Wall Connection.	$800	$242	8,212	3.3	35.27%	$5,832
B7	Replace Roof and Add Insulation with Radiant Barrier.	$74,957	$841	28,500	89.1	-1.49%	($48,504)
B8	Sprayfoam Library Roof Deck.	$23,386	$399	13,526	58.6	0.67%	($11,412)

EEM #	Mechanical System Upgrades	Capital Investment	Annual Energy Cost Savings	Annual kBTU Savings	Simple Payback (Years)	IRR	NPV
M1	Food Pantry & Gym, Upgrade to Condensing Boilers and Switch to Low Temperature Distribution.	$146,268	$399	13,526	366.5	-7.68%	($128,443)

M2	Gym, Insulate Hot Water Pipes in Mechanical Room.	$1,080	$513	17,390	2.1	52.51%	$12,935
M3	Gym, Install Air Source Heat Pumps.	$98,000	$10,243	395,975	9.6	14.72%	$185,380
M4	Food Pantry, Replace Electric Water Heater with a Heat Pump Water Heater.	$3,506	$183	2,737	19.2	7.92%	$1,628
M5	Install Programmable Thermostats	$530	$242	8,212	2.2	50.72%	$6,089

EEM #	Electrical System Upgrades	Capital Investment	Annual Energy Cost Savings	Annual kBTU Savings	Simple Payback (Years)	IRR	NPV
E1	Gym, Replace Existing Metal Halide Lights with High Bay LED Fixtures.	$2,190	$441	6,615	5.0	25.04%	$9,918

E2	Gym, Replace Old Refrigerator and Freezer in Storage	$1,500	$1,019	15,283	1.5	72.94%	$26,303

EEM #	Renewable System Upgrades	Capital Investment	Annual Energy Cost Savings	Annual kBTU Savings	Simple Payback (Years)	IRR	NPV
R1	Install a 40.2 kW Solar Electric System.	$120,600	$15,211	228,106	7.9	17.14%	$299,048

	Capital Investment	Annual Energy Cost Savings	Annual kBTU Savings	Simple Payback (Years)	IRR	NPV
Package 1: Select envelope upgrades (B2, B4, B5, B6), new heat pumps and water heater (M3 & M4), new gym lights and refrigeration equipment (E1 & E2), and new solar electric system	**$240,890**	**$27,429**	**655,755.82**	**8.8**	**15.78%**	**$516,961**

IRR and NPV assume a 5% inflation rate and a 5% Cost of Capital, Utility rebates and tax credits are not included.

ADDENDUM [9-26-23]

Jack Bingham, member of the Barrington Energy Committee, requested that RBG estimate the adjusted capital cost and energy savings of completing EEM B1 with no window, and instead replacing the entire area of the wall with new insulation material. We have included the results of those calculations below, showing the building envelope EEM table and the new EEM package with this EEM included. **NOTE**, neither B1.1 nor B1.2 represent the cost of *replacing* the wall, they are estimates for improving the insulation.

EEM #	Building Envelope Upgrades	Capital Investment	Annual Energy Cost Savings	Annual kBTU Savings	Simple Payback (Years)	IRR	NPV
B1.1	Gym, Replace South East Wall and Windows.	$58,281	$1,710	57,967	34.1	3.84%	($8,962)
B1.2	REPLACE EAST WALL WITH NO WINDOW	$32,700	$2,067	70,044	15.8	9.55%	$25,097
B2	Gym, Install Retrofit Insulation System and in Ceiling.	$13,000	$513	17,390	25.3	5.83%	$1,582
B3	Food Pantry, Air Seal and Reinsulate Attic Floor and Fill Hole in Metal Wall with Spray Foam.	$4,697	$143	4,831	33.0	4.06%	($595)
B4	Food Pantry, Spray Foam Under Stairs to Access.	$950	$299	10,144	3.2	36.50%	$7,240
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B8	Sprayfoam Library Roof Deck.	$23,386	$399	13,526	58.6	0.67%	($11,412)

	Capital Investment	Annual Energy Cost Savings	Annual kBTU Savings	Simple Payback (Years)	IRR	NPV
Package 1: Select envelope upgrades WITH NO EAST WINDOW (B1.2, B2, B4, B5, B6), new heat pumps and water heater (M3 & M4), new gym lights and refrigeration equipment (E1 & E2), and new solar electric system	**$273,590**	**$27,620**	**662,227.86**	**9.9**	**14.31%**	**$491,014**

IRR and NPV assume a 5% inflation rate and a 5% Cost of Capital, Utility rebates and tax credits are not included.

Next Steps

With the completion of this Level II Energy Assessment, the Barrington Community Center should consider potential next steps to take advantage of the recommended energy-saving and comfort-improving opportunities. Both the NHSaves program and the USDA provide grants and incentives that will reduce the implementation cost of many of the proposed energy efficiency measures in this report.

Disclaimer: This report is delivered without any warranties, expressed or implied. This report contains information about the Barrington Community Center building only – and is based upon our observations and analysis and upon information which we received from employees. RBG has used care, its best professional judgment, and the services of qualified vendors and sub-contractors to research and prepare this report. We believe we are presenting an accurate and complete assessment of your building and the opportunities present for energy improvements. Please note that no project pricing displayed within this report includes the cost of the design, plans, or specifications for construction.

Furthermore, RBG shall not be liable for any inaccuracies in this report, for any damages that may result from the implementation of measures recommended in this report, or for discrepancies between the avoided energy cost estimates listed in this report and those which the building realizes from the implementation of the outlined plan.

Rebates, grants, and low-interest loans often affect the financial results of energy-related improvements. As these opportunities often change, we have not included these advantages in our financial results. Efforts to define their availability should be made when the decision to implement the recommended energy measures is made.

Confidentiality Restrictions: This report contains data and information submitted to fulfill an Agreement between RBG and the Barrington Community Center and is provided in full confidence. The recipient shall have a limited right as outlined in the Agreement to disclose the data herein.