

Preliminary Energy Model

MPLCP Level of Design

December 23, 2025

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Whitinsville Public Library

Preliminary Energy Use Index

December 19, 2025

Summary:

BALA has developed a preliminary energy model using ASHRAE 90.1-2019 to evaluate the envelope and system of Whitinsville Public Library for overall Energy Use Index (EUI). The results from IESVE energy models demonstrate an EUI of **29**.

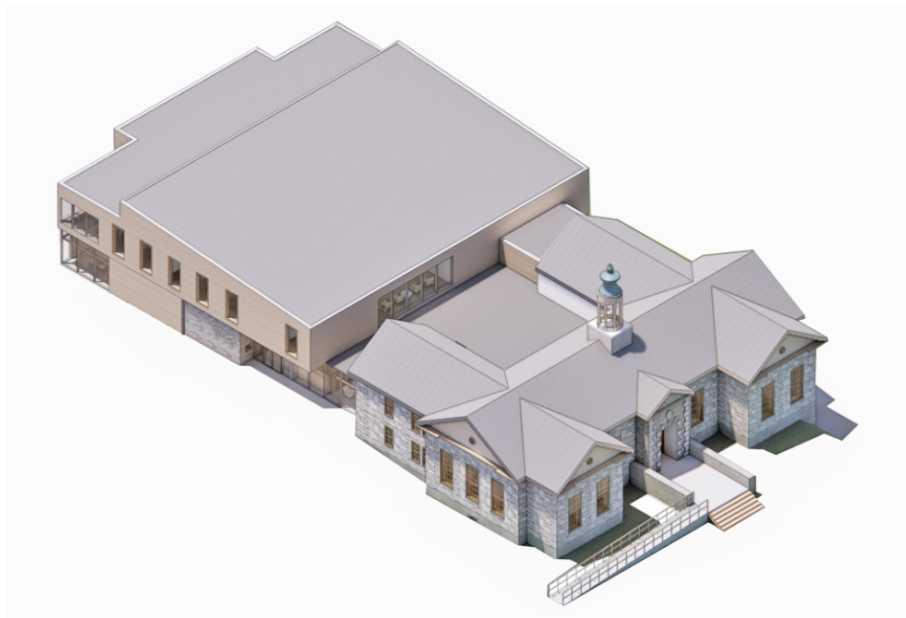


Figure 1: Whitinsville Public Library Conceptual Image

The energy model was conducted utilizing IESVE version 2025.0.0.0. The model inputs are based on building information available at schematic design. Hereinafter are our basic assumptions, inputs, and results.

HVAC & Energy Assumptions:

Indoor Conditions:

Office Areas:

- Summer 75°F Unoccupied setback: 80°F
- Winter 69°F Unoccupied setback: 60°F

Weather:

- Worcester.Rgnl.AP_TMY3
- Summer 89.8 DB / 75.9 WB (0.4%)
- Winter 9.9 DB (99.6%)

Envelope:

All U-values listed below represent assembly values.

- Walls
 - **U: 0.200**
 - Existing: Using estimated value based on existing construction.
 - **U: 0.050**
 - New: Using MA code minimum values as a placeholder. The model will be updated with actual design values during detailed design.

- Windows
 - **U: 0.24; SHGC: 0.47**
 - Using triple pane estimated values as placeholder. More information is needed to determine window values.

- Roof
 - **U: 0.032**
 - Using MA code minimum values as a placeholder. The model will be updated with actual design values during detailed design.

- Glass to Wall Area Ratio
 - Glass Area - WWR: 17%

Internal Loads:

- Proposed model inputs as follows:
 - Lighting Power Density: 0.70 W/SF
 - Equipment Loads: 0.75 W/SF
 - Occupancy: 200 SF/Person

Proposed System:

- Variable Refrigerant System with Energy Recovery Ventilator

Results:

Energy Consumption	Proposed
	Energy Consumption (kBTU/yr)
LIGHTING	199,360
SPACE HEATING	305,980
SPACE COOLING	97,150
HEAT REJECTION	6,186
PROCESS	474
FANS	146,116
EQUIPMENT	245,126
Total Energy (kBTU)	1,000,392
EUI (kBTU/sf)	29