This document will analyze a residential building in Lakewood, CO using the SABER tool. The details of the building are given in the .pdf document in this folder. SABER will be used to analyze the building and provide recommendations for energy efficiency improvements. First the table below provides the inputs required for the analysis. The description of the each of the inputs is provided in the DetailedDocumentation.md file in the docs folder of this repository. The screenshots of the various input screens are also provided in the ***DetailedDocumentation.md*** file.

Inputs

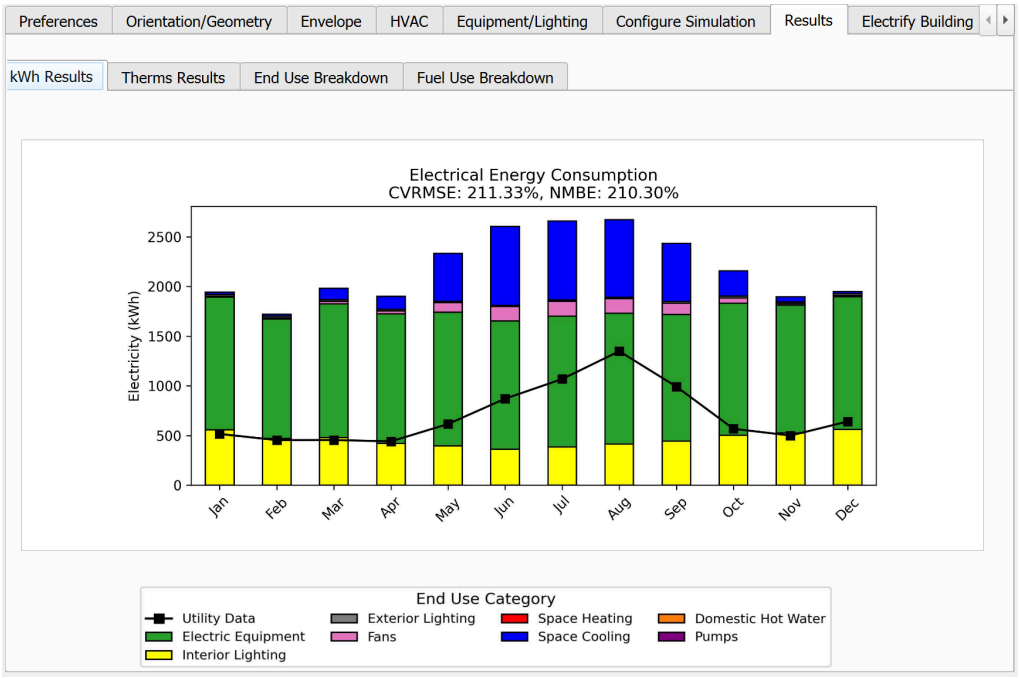
Input Parameter	Value
Project Name	LakewoodResidentialBuilding
Building Type	Single Family Residential Building
Location	Denver, CO
Floor Plan	Rectangle
Orientation	East
Floor Area (sqft)	1800
Floor Quantity	2
Wall Height (ft)	8
x1 (ft)	36
x2 (ft)	0
y1 (ft)	24
y2 (ft)	0
Exterior Wall Construction	2x4 insulated wood stud with brick finish
Exterior Wall Insulation Level	R-7 Fiberglass
Exterior Roof Construction	Asphalt shingles
Exterior Roof Insulation Level	R-30 Fiberglass
Foundation Type	Slab on Grade

Input Parameter	Value
Infiltration Air Leakage Rate (ACH50)	4.0
Window Material	Single Pane Clear
WWR Front (%)	5.5%
WWR Back (%)	5.5%
WWR Left (%)	8.3%
WWR Right (%)	0.1%
Shading Overhang Depth (ft)	0
Window Height (ft)	3
Number of windows per wall	2
Cooling Equipment Type	Air Conditioner
SEER	Other.. - 11
Cooling Setpoint Temperature (°F)	74
Cooling Setback (°F)	0
Heating Equipment Type	Gas Furnace
AFUE	92.5%
Heating Setpoint Temperature (°F)	65
Night Setback (°F)	0
Hot Water Equipment Type	Gas Boiler
Tank Size (gallons)	40
Cooking Range Type	Range-Radiant; Not Energy Star Certified;
Refrigerator Type	Small; Not Energy Star Certified;
Dishwasher Type	None
Clothes Washer Type	Medium; Not Energy Star Certified;
Clothes Dryer Type	Medium; Not Energy Star Certified;

Input Parameter	Value
Miscellaneous Plug Loads	None
Interior Lighting	#26 Fluorescent; #20CFL
Exterior Lighting	#5 Fluorescent
Daylight Controls	No
Occupancy Controls	No

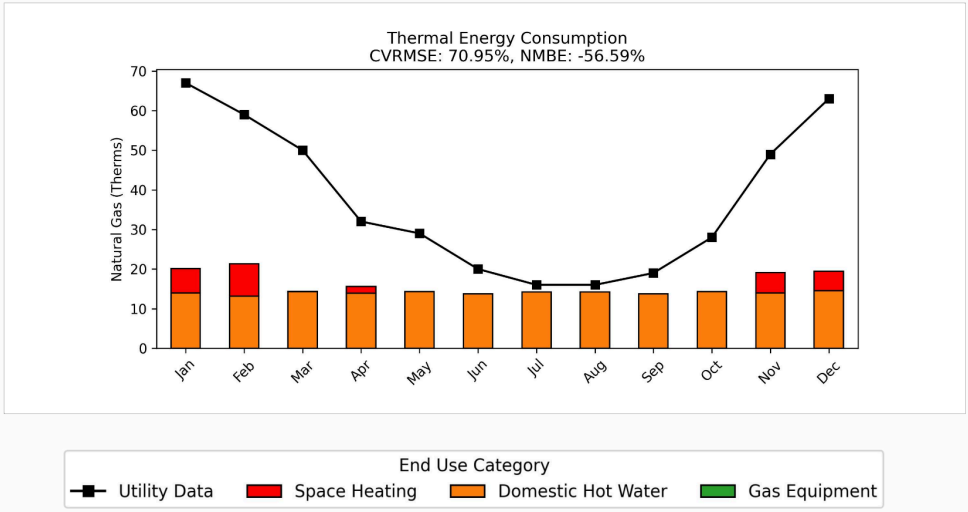
Outputs

Pre-Calibration



Preferences | Orientation/Geometry | Envelope | HVAC | Equipment/Lighting | Configure Simulation | Results | Electrify Building

kWh Results | Therms Results | End Use Breakdown | Fuel Use Breakdown



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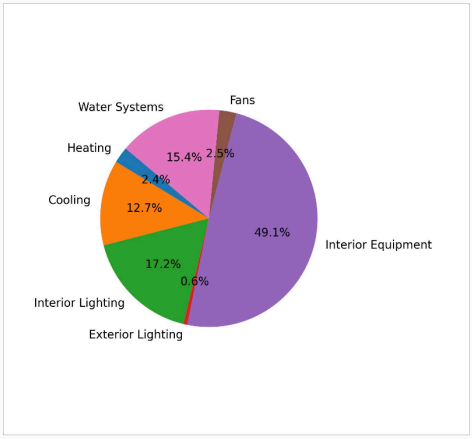
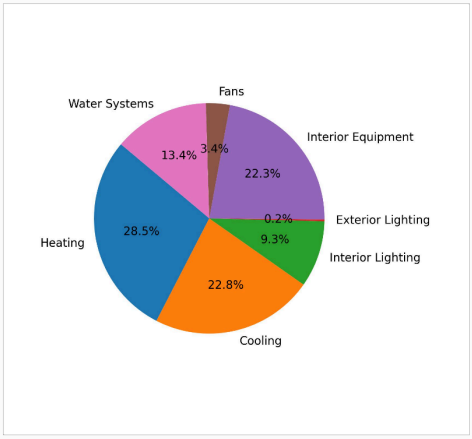
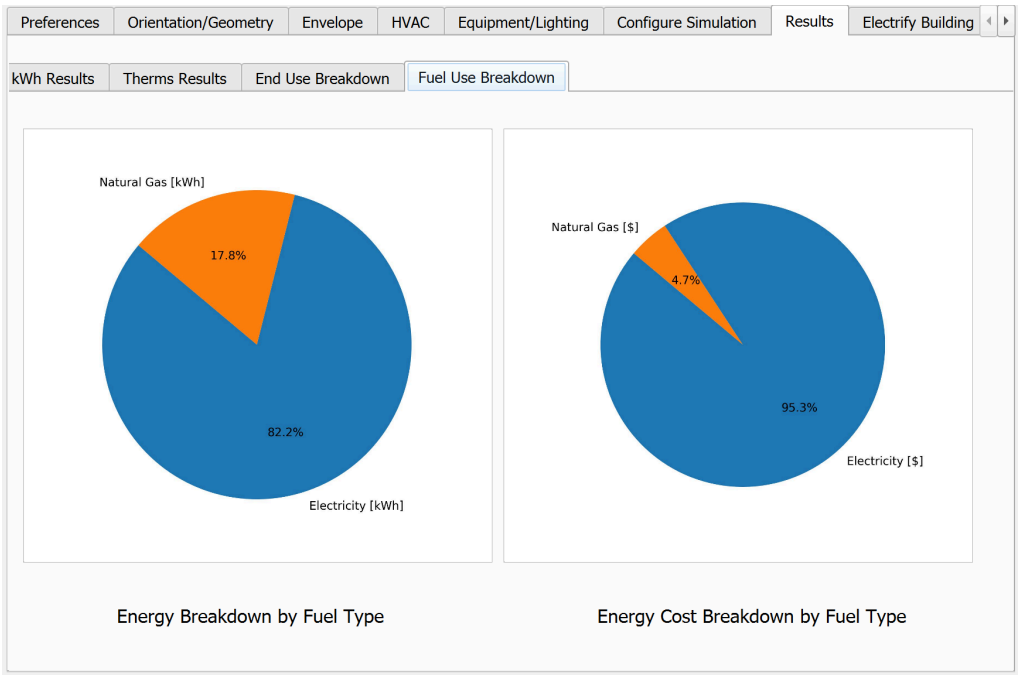


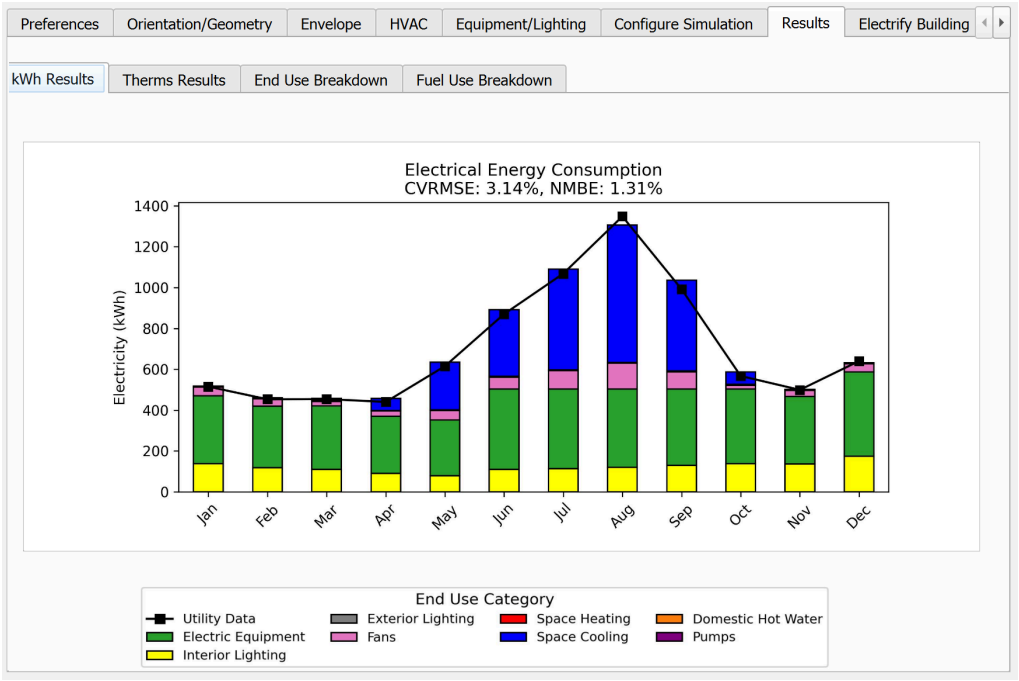
Total Energy End Use Breakdown



Peak Demand End Use Breakdown



Post-Calibration



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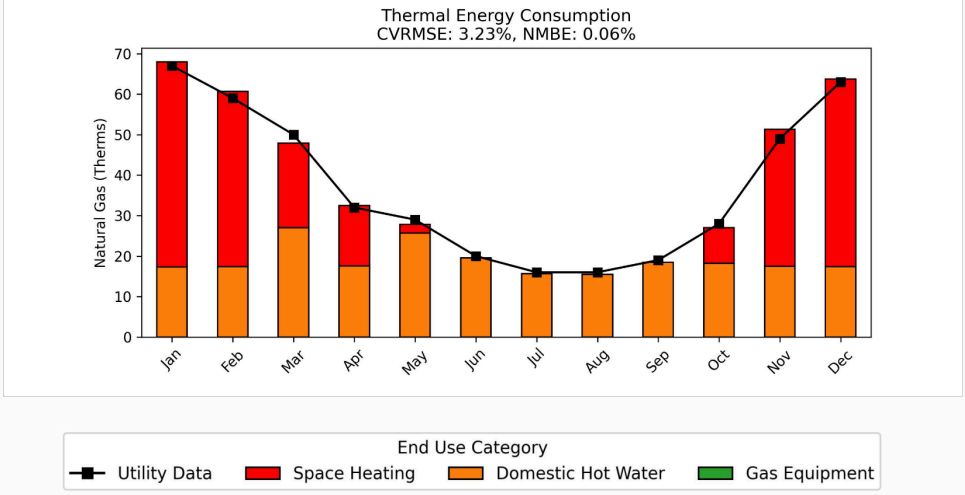
kWh Results | Therms Results | End Use Breakdown | Fuel Use Breakdown



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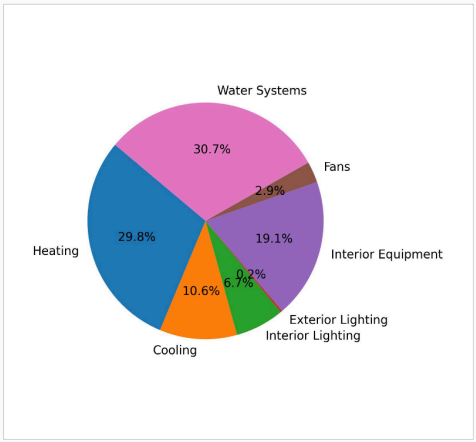
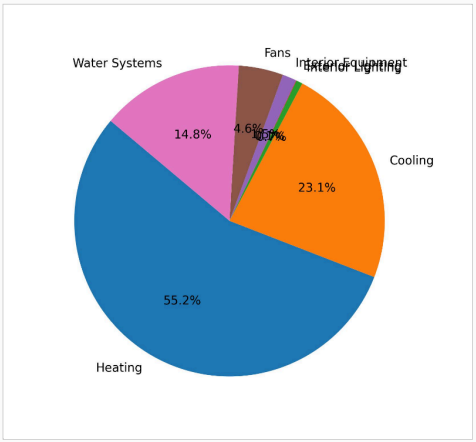
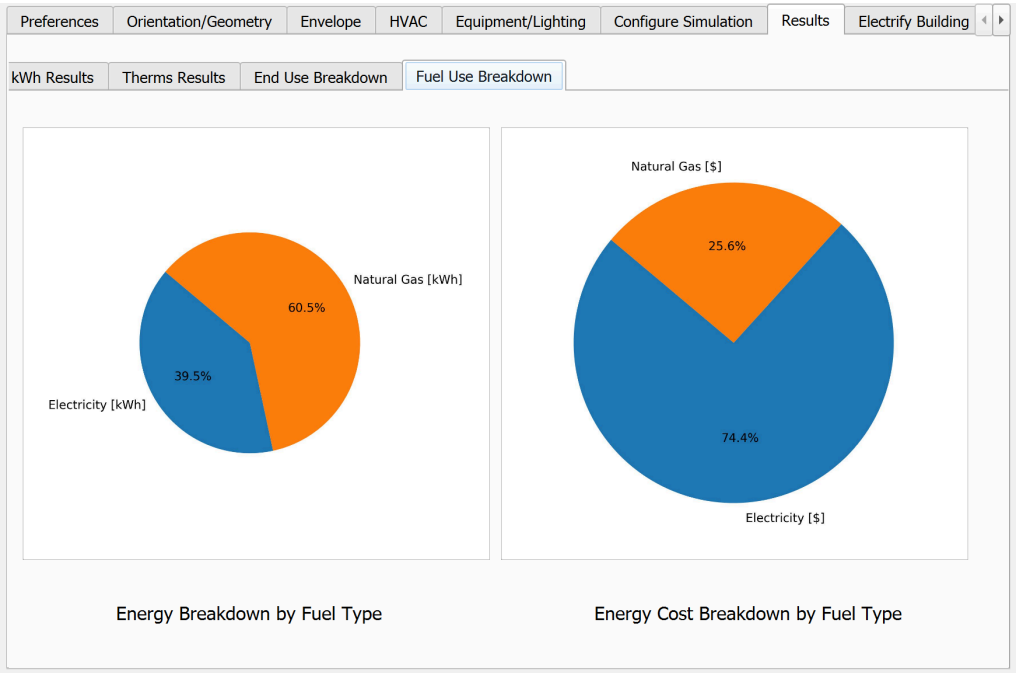


Total Energy End Use Breakdown



Peak Demand End Use Breakdown

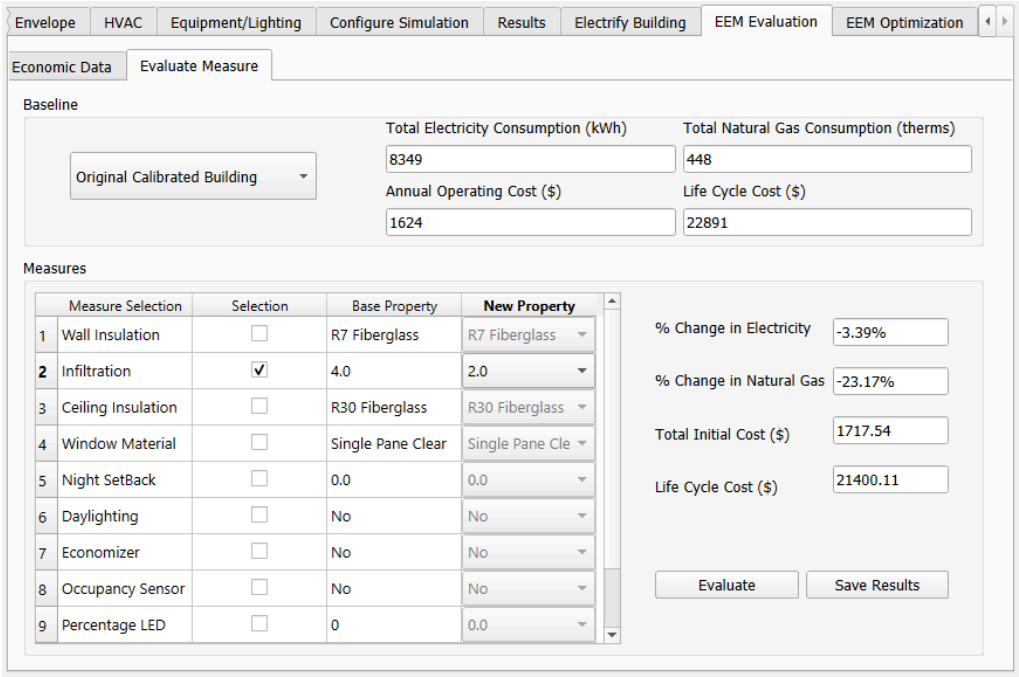


Measure Evaluation

The calibration model can now be used to evaluate various energy efficiency measures. The following measures were evaluated for this building:

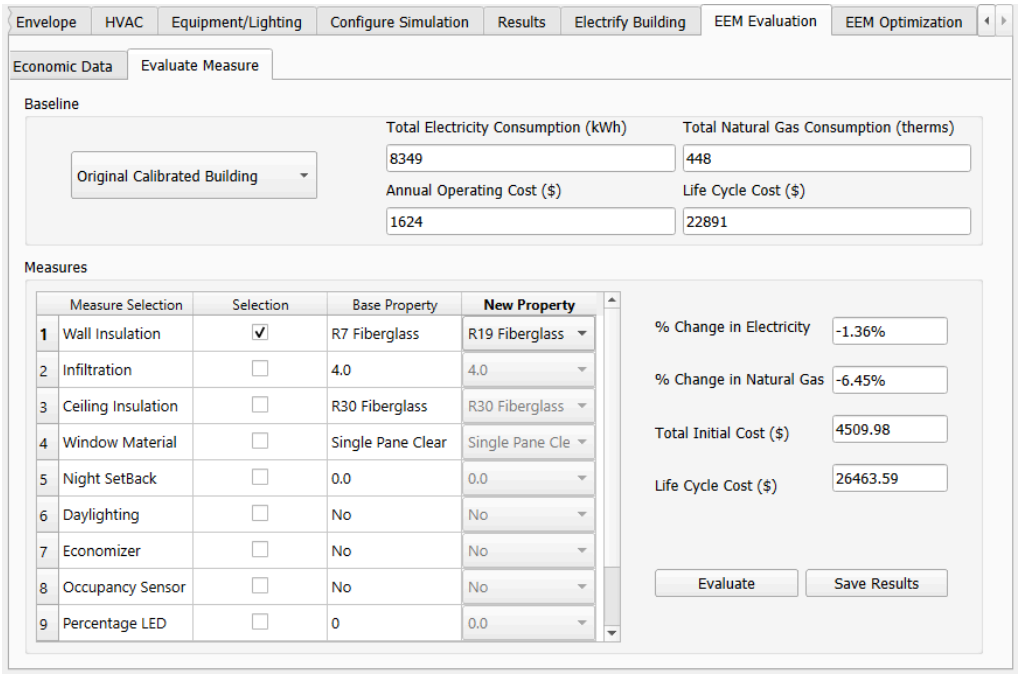
Infiltration Level

Reduce infiltration from 4.0 ACH50 to 2.0 ACH50



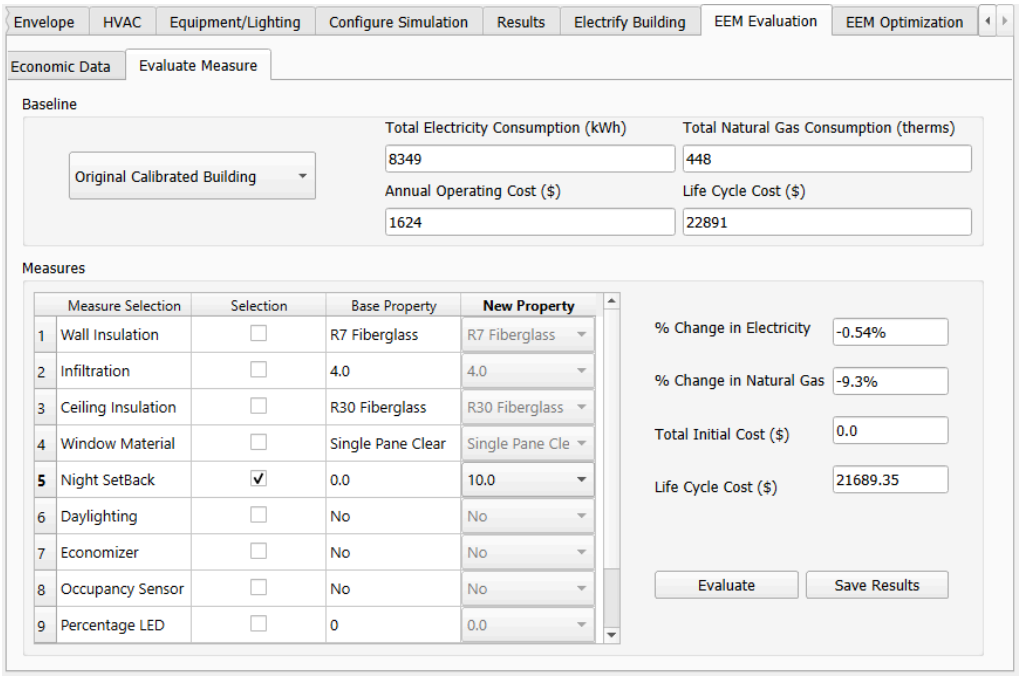
Insulation Level

Increase wall insulation from R-7 to R-19



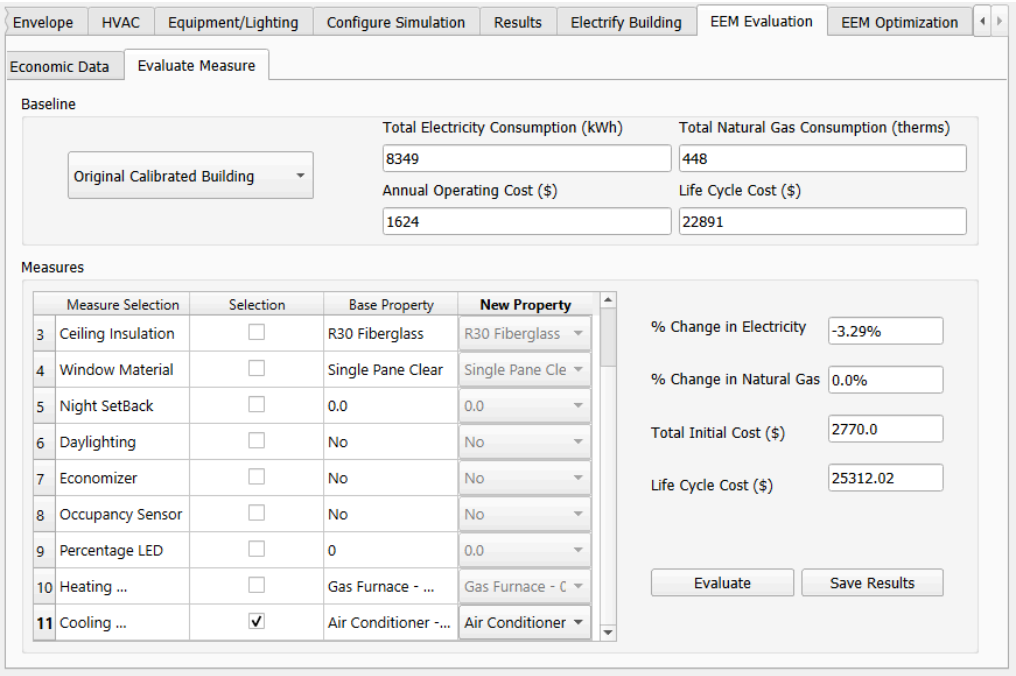
Night Setback

Implement a night setback of 10°F for heating



Cooling Equipment

Replace existing AC with a SEER 13 unit



Measure Package

Combine all the above measures into a single package