

Final Project Brainstorm

IDEA 1 Building Science Game

2 categories of following:

- Research ~ my research is around retrofit strategies for building owners, and I've always wanted to do
- Explanation ~ how different upgrades save you money (through energy) a game based on upgrades

• Story -

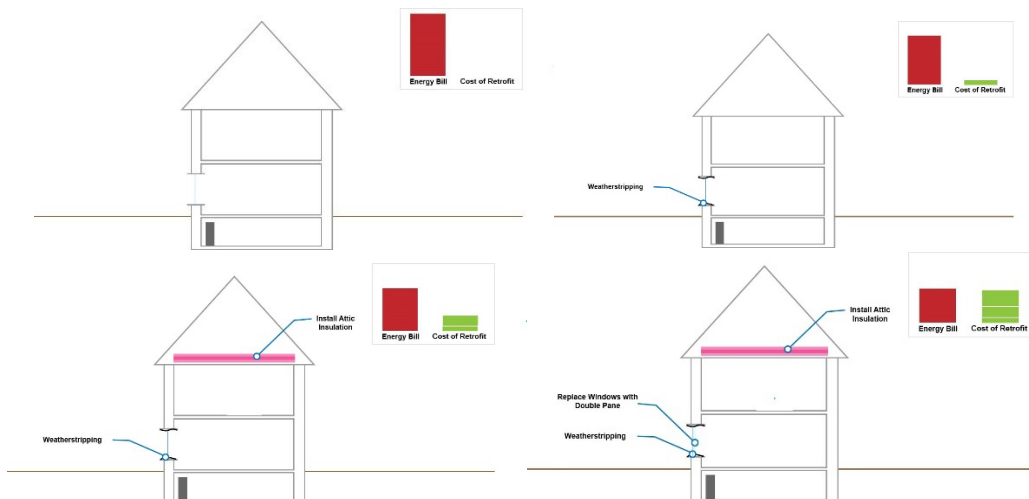
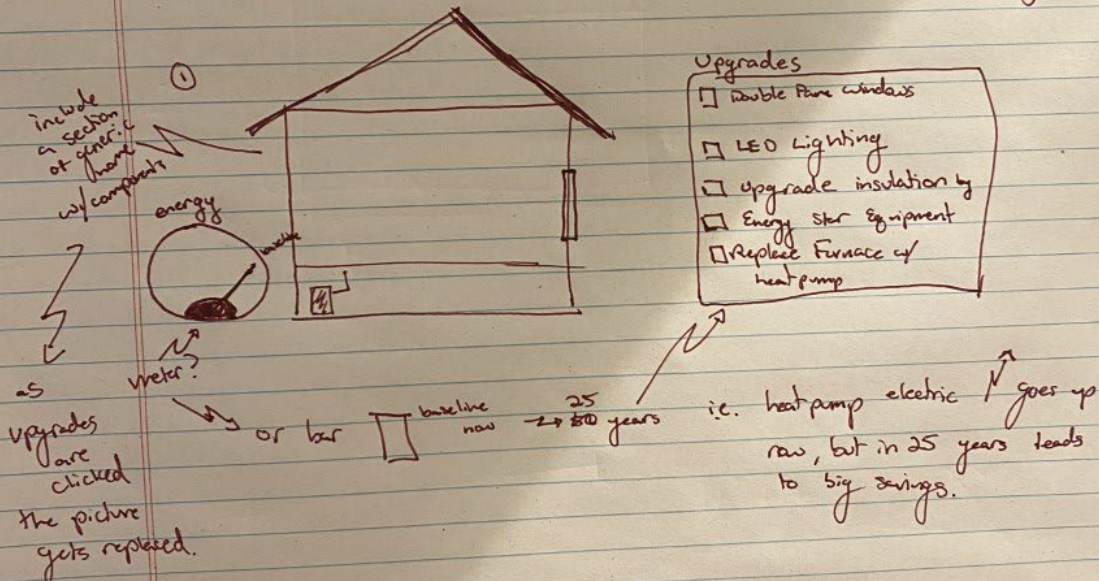
are you helping people find?

what data develop

→ First an intuition about how much energy different upgrades save you as a homeowner.

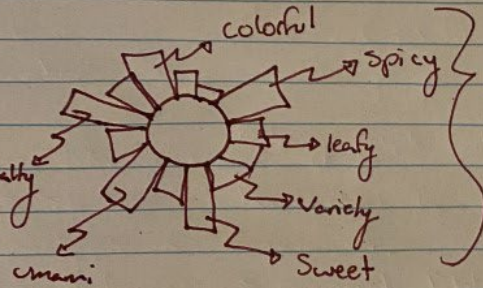
- Setting - Audience ~ General Public, homeowners → the average ones who don't know anything about buildings.

- Source - Data will be sourced from a simple shoebox energy model run in different climates with different upgrades
→ also potentially leverage ResStock data (publicly available)
a flat file (not an API) data will be pretty simple.



IDEA 2 Favorite Foods

- tacos
- gulash
- salmon
- egg sandwiches
- pan cakes
- waffles
- chicken salad
-



categorize favorite dishes
and user scrolls through each to see the "profile" for each dish

personal ; curiosity

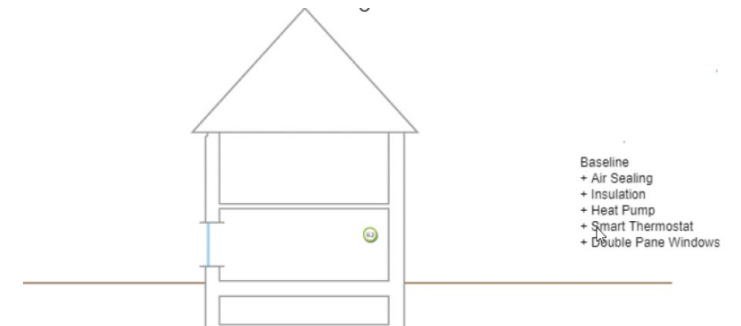
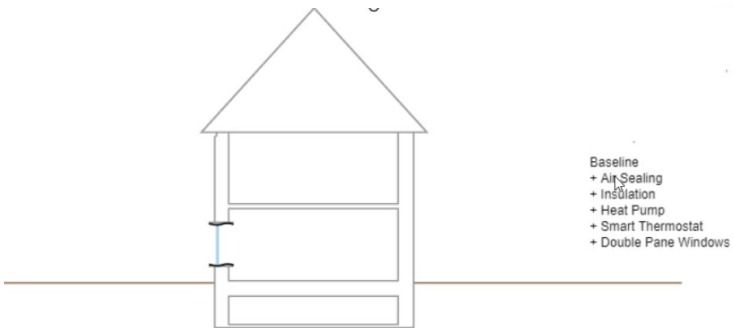
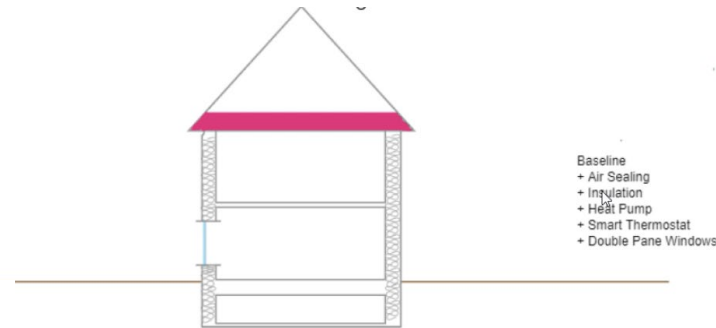
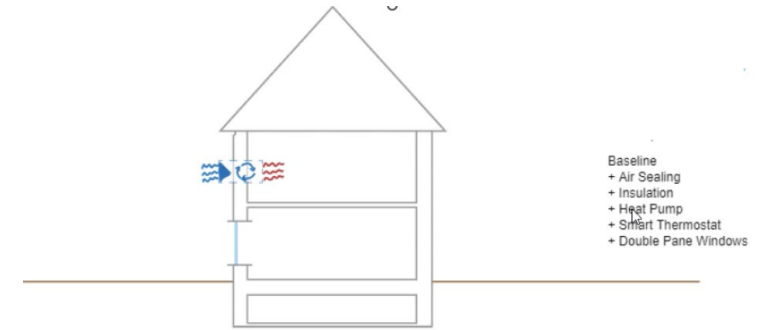
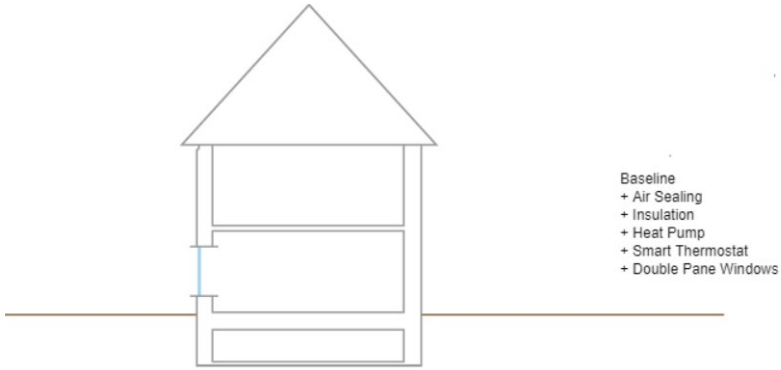
story → Is there a common denominator among our favorite foods? balance of sweet/spicy? colorful?

audience → foodies/cooks → mainly my own curiosity.

source → self-generated flat file → very subjective.
↳ other sources?

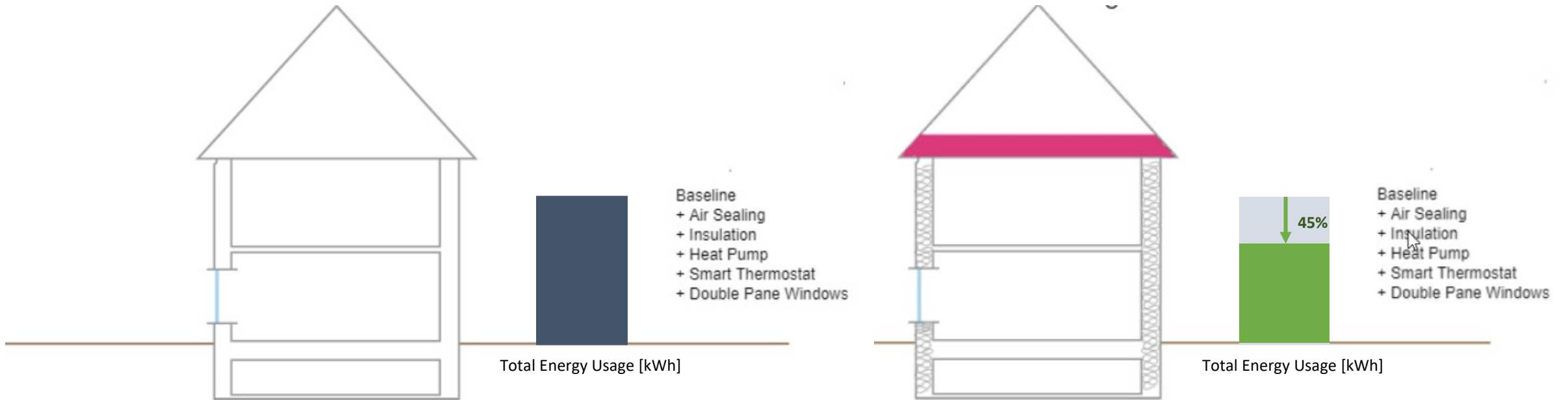
Iteration 1 | Simple version to get code up and running with simple interaction

- Goals: want user to be able to scroll over different upgrades and see them appear in the building diagram.



Iteration 2 | Include energy data

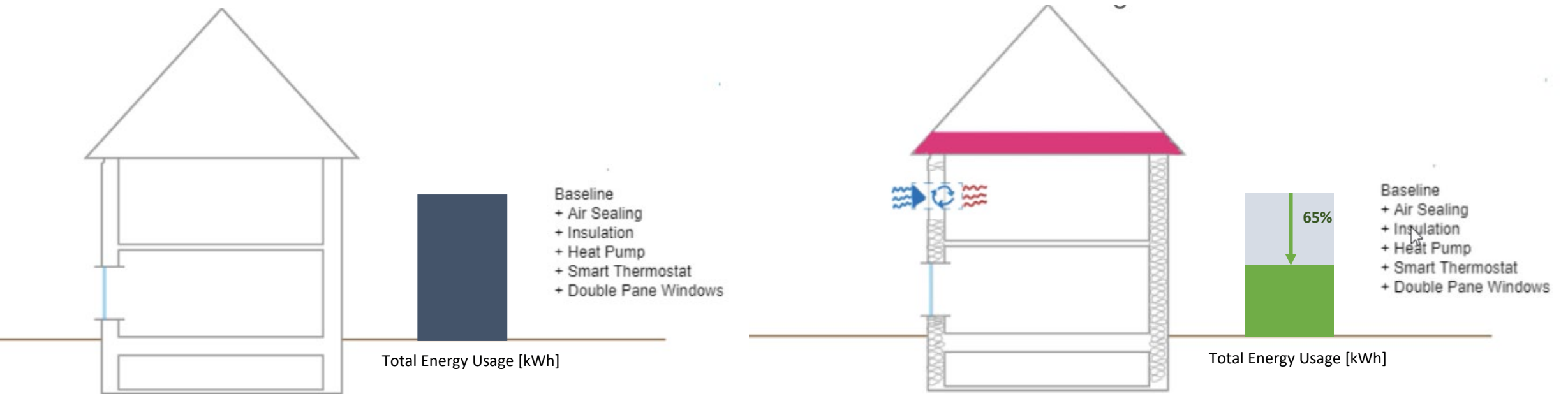
- Goals: User scrolls over different upgrades, sees them appear in the building diagram and the total energy use also appears.



Iteration 3 | Energy game - Include energy data and display interactions between

Goals:

- User checks the boxes for different upgrades and sees them appear in the building diagram
- Total energy use appears.



insulation

Upgrading attic insulation and wall blowing cellulose.

Heat Pump

Replace furnace with a high efficiency heat pump.

Double Pane Windows

Replace existing windows with double pane.

air sealing

Seal air leakage prone areas, such as around windows, doors and outlets.

smart thermostat

install a smart thermostat system.

Savings Calculator



Total Energy (kWh)



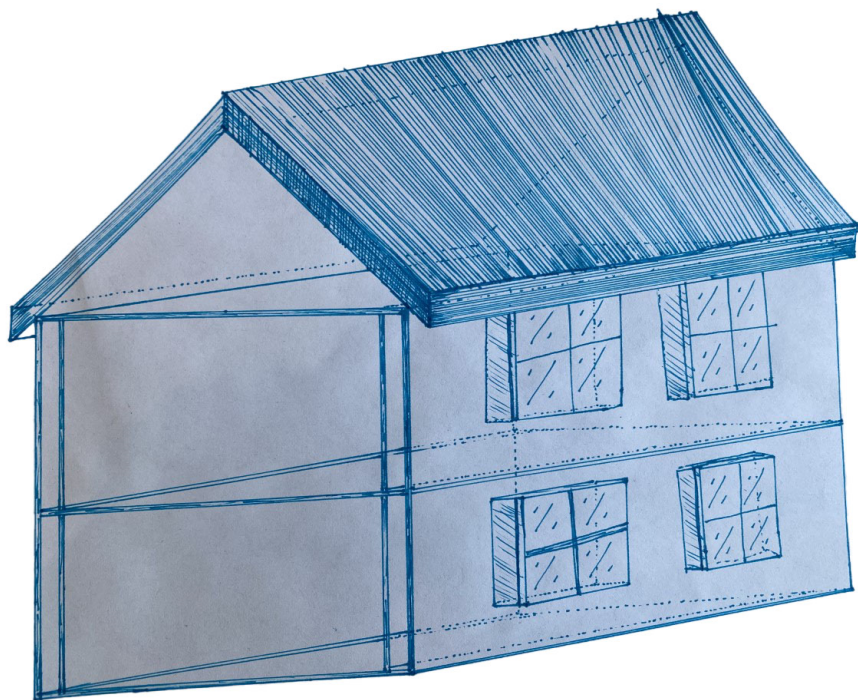
Carbon



Cost

Typical New England Home | 1970 ft²
(3 bed 2 bath)

zone border



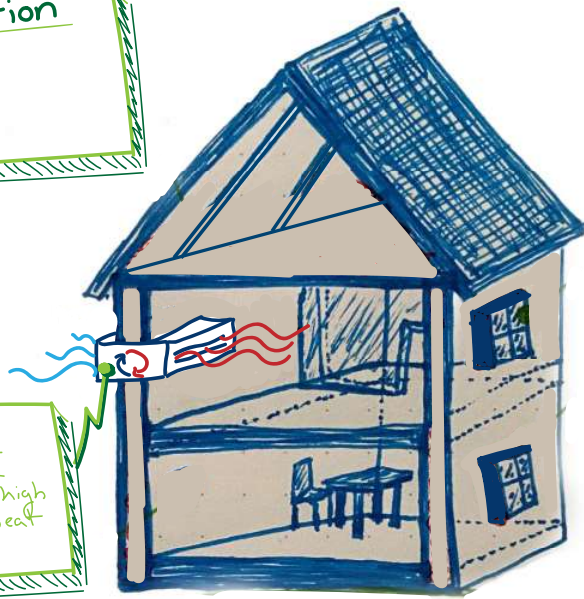
Insulation

Airsealing

Upgrade Windows

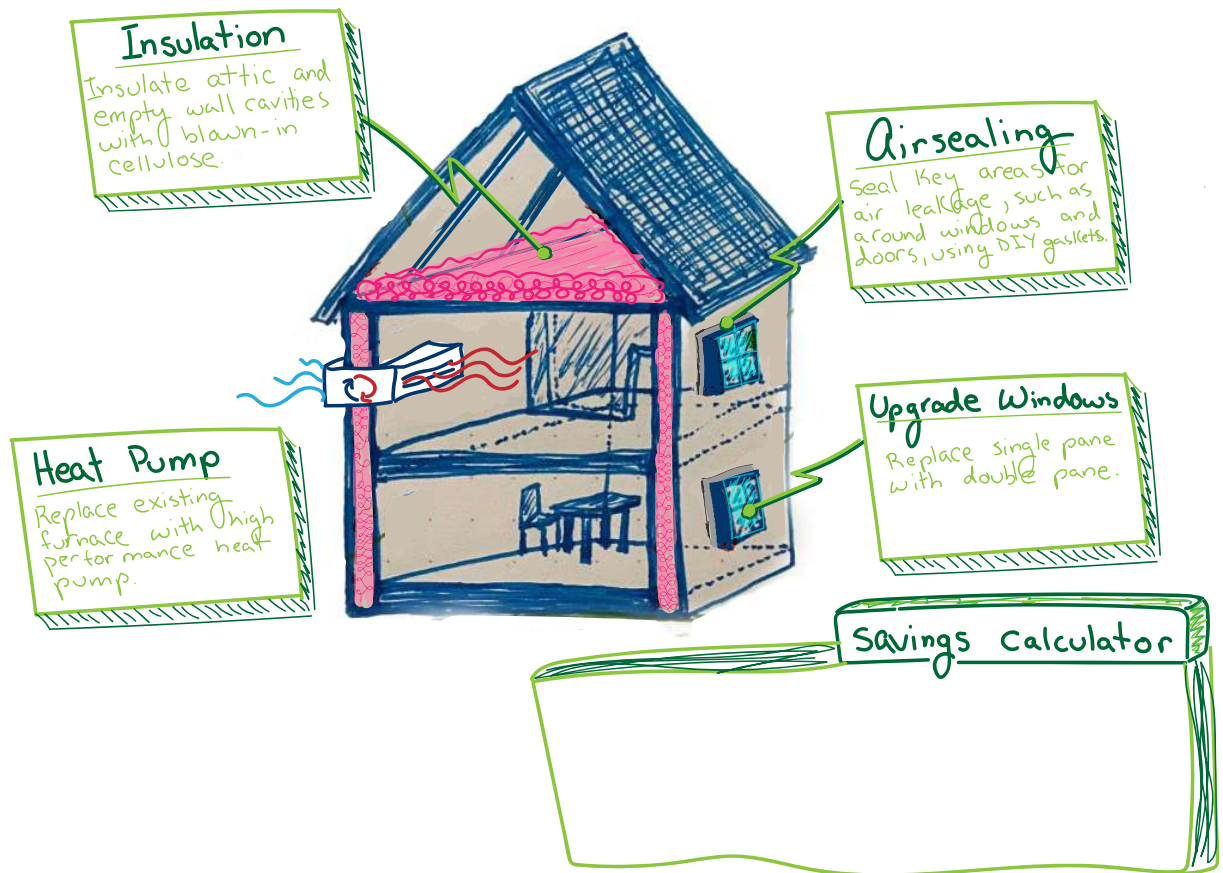
Heat Pump

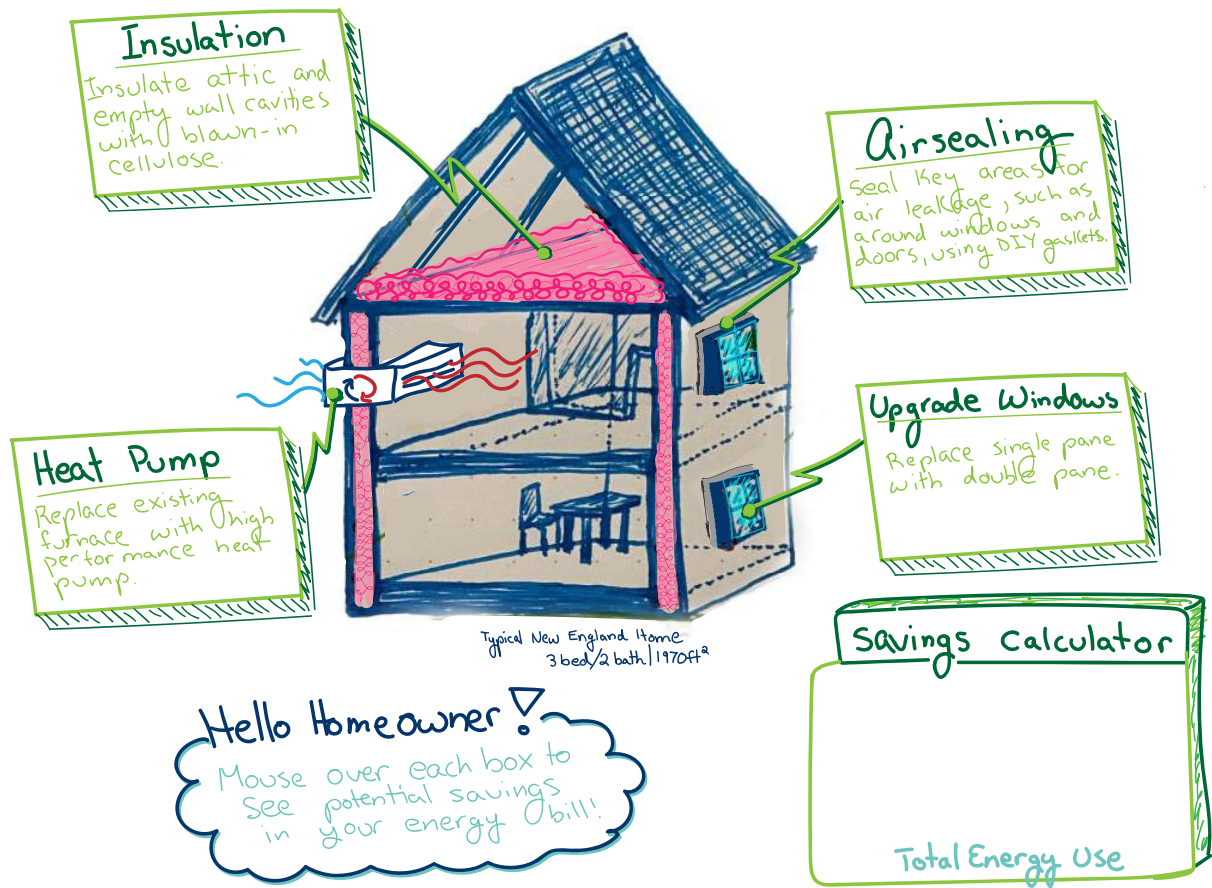
Replace existing furnace with high performance heat pump.

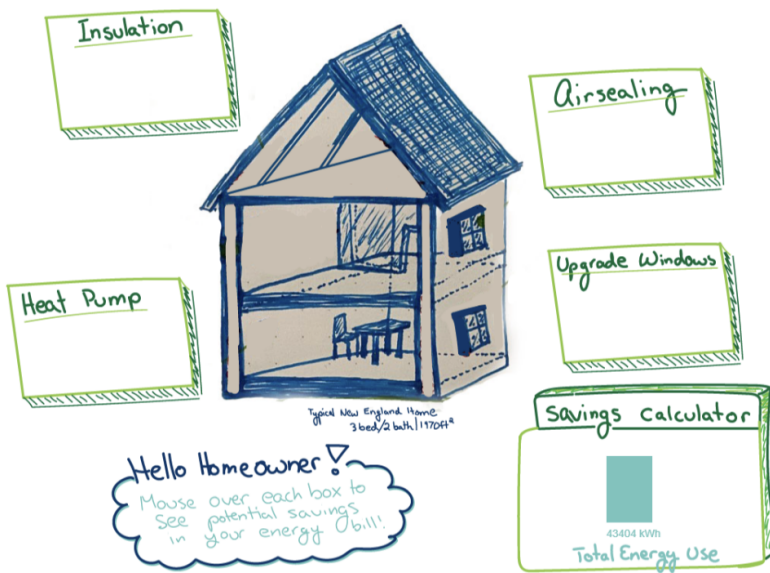
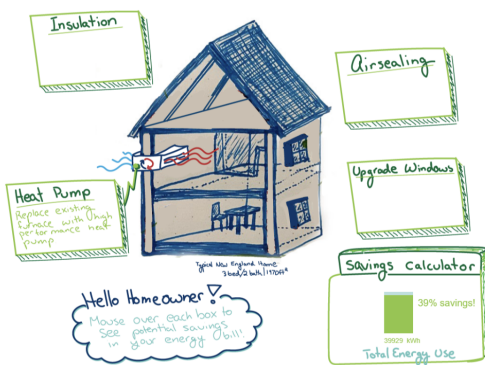
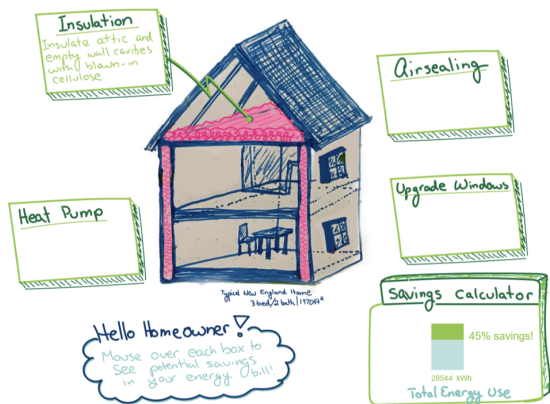
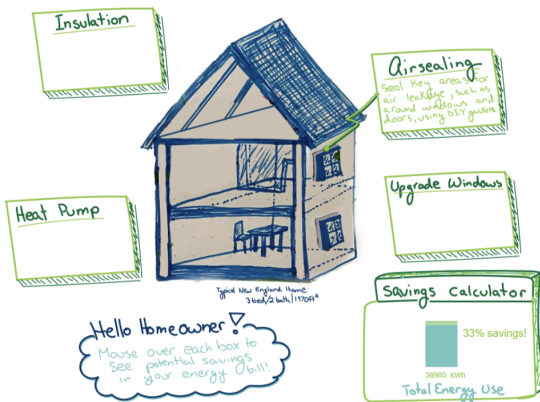
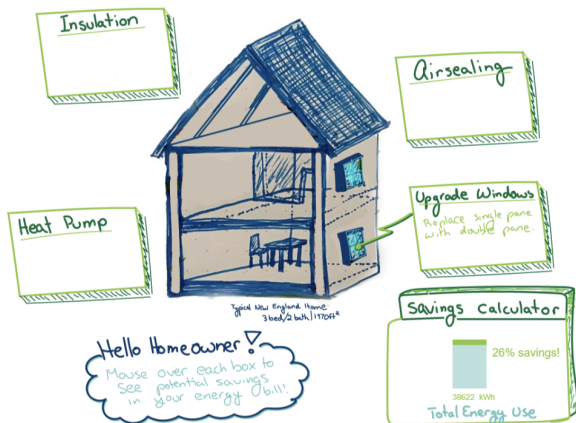


Savings Calculator

Total Energy Use







Hello Homeowner

Click on each upgrade to see potential savings on your energy bill.

Insulation

Insulate attic, wall cavities, and crawlspaces with blown-in cellulose, foam board, or fiberglass batting.

Airsealing

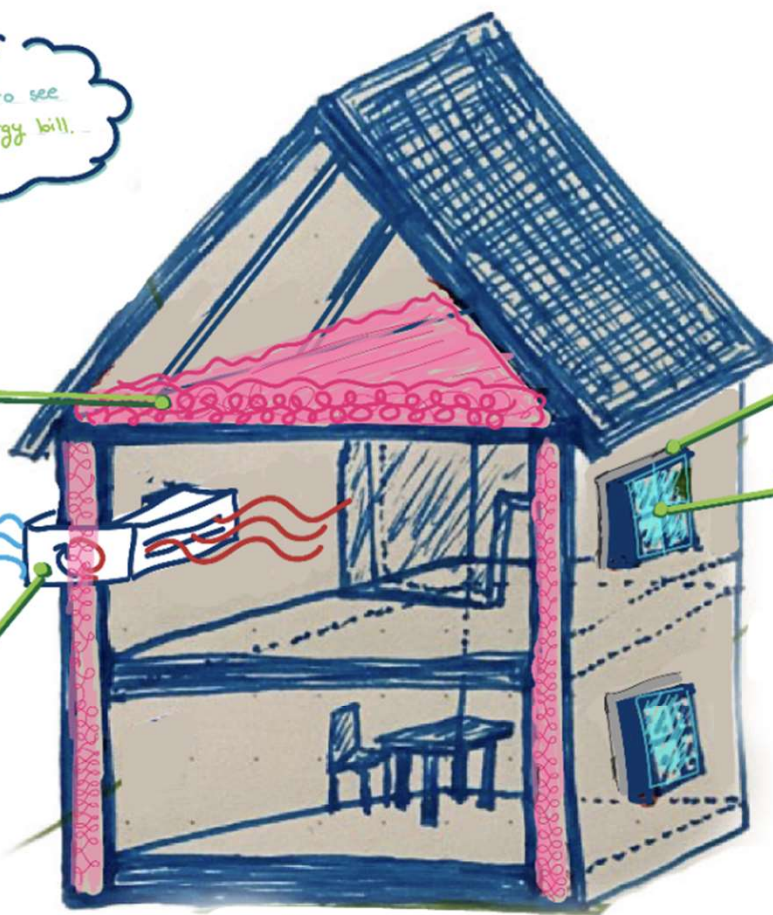
Reduce heat loss by sealing leakage-prone areas, such as around doors and windows (air gasket install).

Windows

Replace single-pane windows with high-performance double or triple-pane.

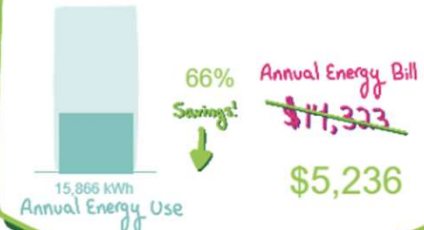
Heat Pump

Replace furnace with a high-efficiency heat pump.



Typical New England Home 3bed/2bath/1170ft²

Savings Calculator



Hello Homeowner

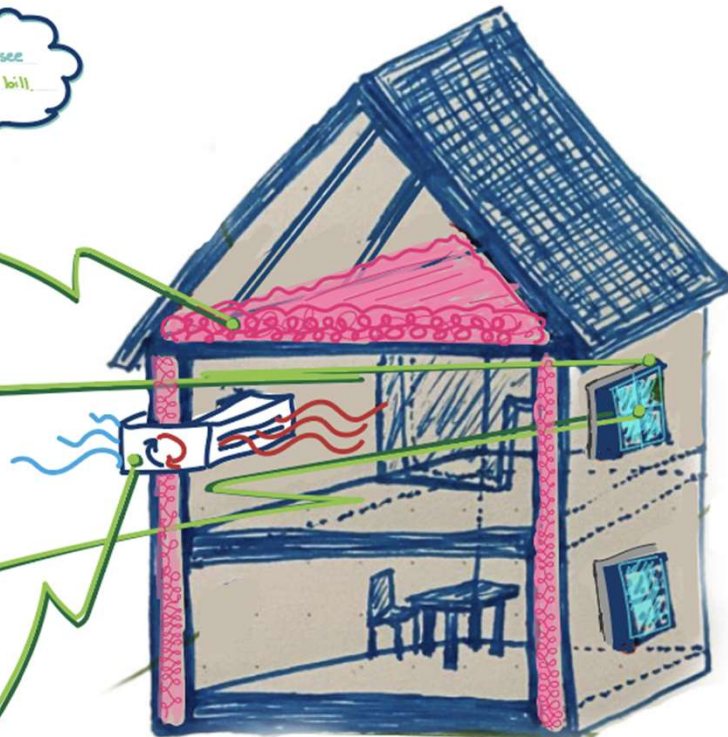
Click on each upgrade to see potential savings on your energy bill.

☒ **Insulation**
Insulate attic, wall cavities, and crawlspaces with blown-in cellulose, foam board, or fiberglass batting.

☒ **Airsealing**
Reduce heat loss by sealing leakage-prone areas, such as around doors and windows. (aTV gasket install)

☒ **Windows**
Replace single-pane windows with high-performance double or triple-pane.

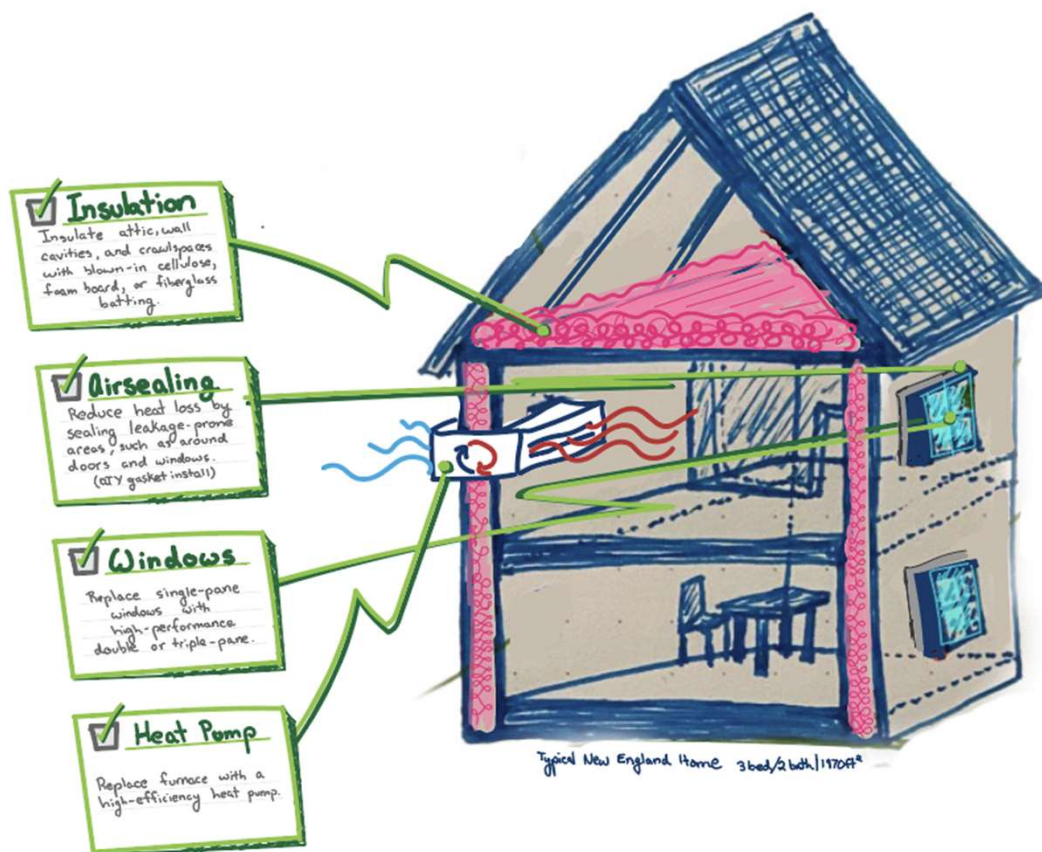
☒ **Heat Pump**
Replace furnace with a high-efficiency heat pump.



Typical New England Home 3bed/2bath/1170ft²

Savings Calculator





Hello Homeowner

Click on each upgrade to see potential savings on your energy bill.



Hello Homeowner

Click on each upgrade to see potential savings on your energy bill.

☒ Insulation

Insulate attic, wall cavities, and crawlspaces with blown-in cellulose, foam board, or fiberglass batting.

☒ Airsealing

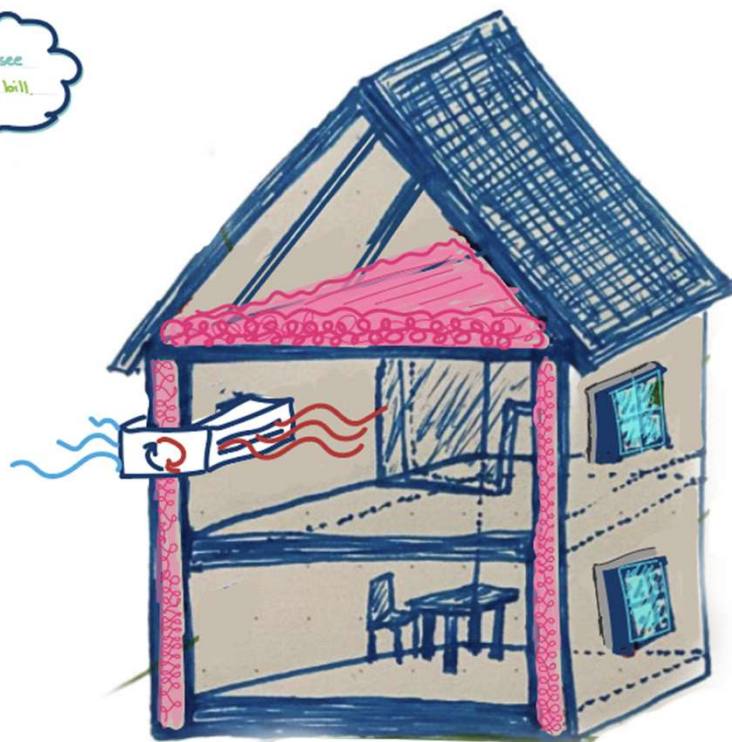
Reduce heat loss by sealing leakage-prone areas, such as around doors and windows. (Try gasket install!)

☒ Windows

Replace single-pane windows with high-performance double or triple-pane.

☒ Heat Pump

Replace furnace with a high-efficiency heat pump.



Typical New England Home 3bed/2bath/1700ft²

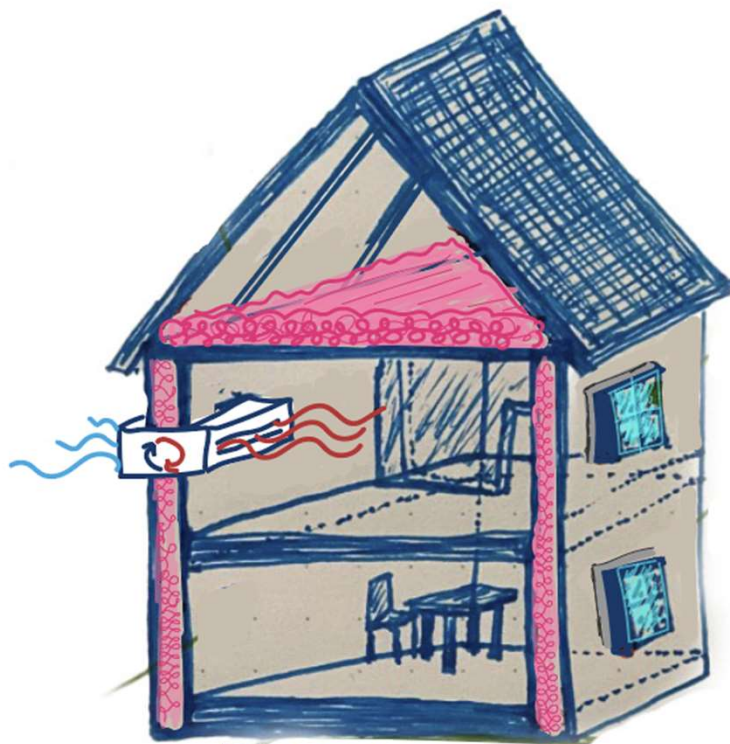
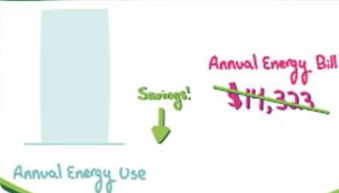
Savings Calculator



Hello Homeowner

Click on each upgrade to see potential savings on your energy bill.

Savings Calculator



Typical New England Home 3bed/2bath/1700ft²

☒ **Airsealing**
Reduce heat loss by sealing leakage-prone areas, such as around doors and windows. (DIY gasket install)

☒ **Insulation**
Insulate attic, wall cavities, and crawlspaces with blown-in cellulose, foam board, or fiberglass batting.

☒ **Windows**
Replace single-pane windows with high-performance double or triple-pane.

☒ **Heat Pump**
Replace furnace with a high-efficiency heat pump.

Hello Homeowner

Click on each upgrade to see
potential savings on your energy bill.

☒ Airsealing

Reduce heat loss by
sealing leakage-prone
areas, such as around
doors and windows.
(airtight install)

☒ Insulation

Insulate attic, wall
cavities, and crawlspaces
with blown-in cellulose,
foam board, or fiberglass
batting.

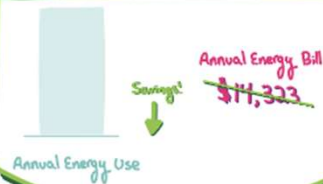
☒ Windows

Replace single-pane
windows with
high-performance
double or triple-pane.

☒ Heat Pump

Replace furnace with a
high-efficiency heat pump.

Savings Calculator



Typical New England Home 3bed/2bth/1170ft²

Hello Homeowner

Click on each upgrade to see potential savings on your energy bill.

☐ Insulation

Insulate attic, wall cavities, and crawlspaces with blown-in cellulose, foam board, or fiberglass batting.

☐ Heat Pump

Replace furnace with a high-efficiency heat pump.



Typical New England Home 3bed/2bath/1575ft²

☐ Airsealing

Reduce heat loss by sealing leakage-prone areas, such as around doors and windows. (ATV gasket install)

☐ Windows

Replace single-pane windows with high-performance double or triple-pane.

Savings Calculator



Annual Energy Use

Annual Energy Bill
\$14,323

Hello Homeowner

Click on each upgrade to see potential savings on your energy bill.

☐ Insulation

Insulate attic, wall cavities, and crawlspaces with blown-in cellulose, foam board, or fiberglass batting.

☐ Heat Pump

Replace furnace with a high-efficiency heat pump.



Typical New England Home 3bed/2bth/1170ft²

☐ Airsealing

Reduce heat loss by sealing leakage-prone areas, such as around doors and windows. (DIY gasket install)

☐ Windows

Replace single-pane windows with high-performance double or triple-pane.

Savings Calculator



43404 kWh
Annual Energy Use

Annual Energy Bill
\$14,323

Hello Homeowner

Click on each upgrade to see potential savings on your energy bill.

Insulation

Insulate attic, wall cavities, and crawlspaces with blown-in cellulose, foam board, or fiberglass batting.

Heat Pump

Replace furnace with a high-efficiency heat pump.

Airsealing

Reduce heat loss by sealing leakage-prone areas, such as around doors and windows. (DIY gasket install)

Windows

Replace single-pane windows with high-performance double or triple-pane.

Typical New England Home 3bed/2bth/1170ft²

Savings Calculator

