

Wilkinsburg Passive House

Pittsburgh, PA

Single Family Retrofit

PHI Database ID#: 8069

Certification Goal:



Status: **Certified**

Size (TFA): 882 sqft

Description: The Wilkinsburg Passive House is the first single-family residence in Pennsylvania to earn a Passive House EnerPHit certification.

DOE Climate Zone: 5A

Team:

Architect/Designer & PH Consultants:

Studio St. Germain
<https://www.studiostgermain.com/>

PH Consultant:

Peel Passive House Consulting
<https://www.peelpassivehouse.ca/>

MEP Engineer:

Electrical Engineer - Carlins Consulting
Mechanical Engineer - Univesco

Structural Engineer:

Keystone Structural Solutions

Builder:

Adaptive Construction
<https://adaptiveconstruct.com/>

Certifier:

Certiphiers Cooperative
<https://www.certiphiers.com/>



Photography: © Ed Massery

An alluring example of the transformative power of architecture, the Wilkinsburg Passive House in Pittsburgh recently became the first single-family residence in Pennsylvania to earn an Passive House EnerPHit certification. In earning that milestone distinction, the Wilkinsburg Residence went from an antiquated one-story structure to a high-performance home that combines sustainability with comfort and aesthetics.



Photography: © Ed Massery



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The client collaborated closely with Studio St.Germain in planning a home that would provide a therapeutic environment as well as an opportunity for personal fulfillment. The pearl gray cladding and the warm interior, designed for small gatherings, radiate serenity and are complemented by an enchanting garden behind the house, featuring a bluestone patio, crushed limestone walks, and fieldstone boulders, along with an array of flowers and plants.

Thermal Envelope

Ground:

Lightweight concrete
Type 4 XPS
U-value = 0.217 W/(m2K)

Walls:

Double Wythe Brick Walls	Wood Frame Walls
Interior 5/8" Drywall	Interior 5/8" Drywall
Air Cavity Service Channel	Horizontal 2x3 Furring
Rockwool ComfortBatt	2x6 Wood Stud at 16" OC
Rockwool ComfortBoard 80	Rockwool ComfortBatt
Birch Wythe	1/2" Plywood Sheathing
Air Cavity	Rockwool Comfortboard 80
Brick Wythe	
U-value = 0.23 W/(m2K)	

Roof:

Rockwool ComfortBatt
Wood I Joist
3/4" Plywood Sheathing
Polyiso
U-Value = 0.081 W/(m2K)

Windows & Doors:

Frame
Smartwin, Smartwin
HPL variant
U w-value = 0.86 W/(m2K)

Glazing

Saint Gobain
U g-value = 0.53 W/(m2K)
g-value = 54%

Entrance door

Smartwin Solid Panel
Saint Gobain Glass
U d-value = 0.76 W/(m2K)

Shading Strategies:

Cantilevered canopies over windows and doors

Mechanical Systems:

Ventilation:

Zehnder - ComfoAir Q450 ERV

Heating:

Daikin heat pump - ducted split unit

Cooling & Dehumidification

Daikin heat pump - ducted split unit

Domestic Hot Water:

Electric tank

PHPP Values

Climate:

Cool, temperate

Airtightness:

1.0

Annual Heating Demand:

63 kWh/(m2a)

Heating Load:

32 W/m2

Cooling & Dehumidification Demand:

4 kWh/(m2a)

Cooling Load:

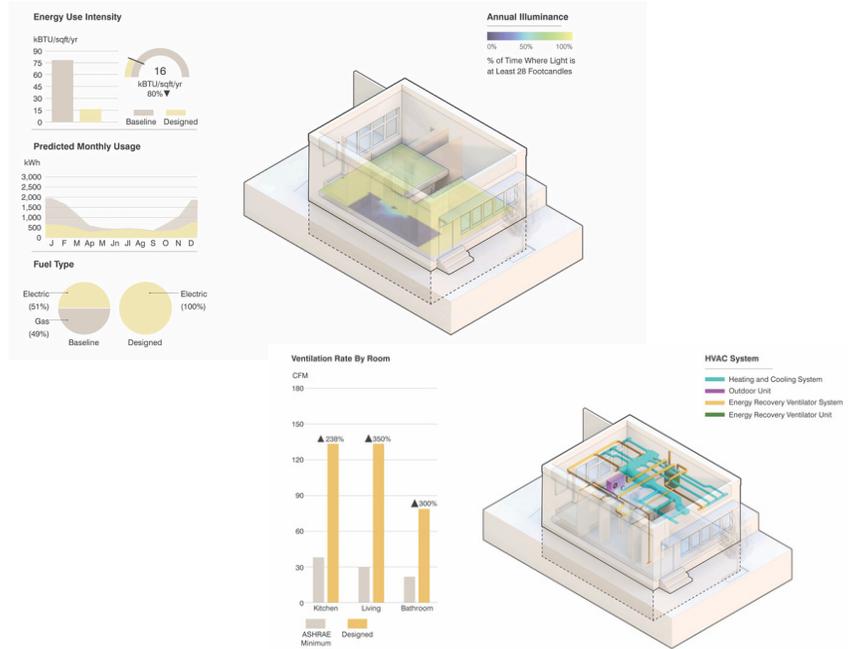
14 W/m2

PE Demand:

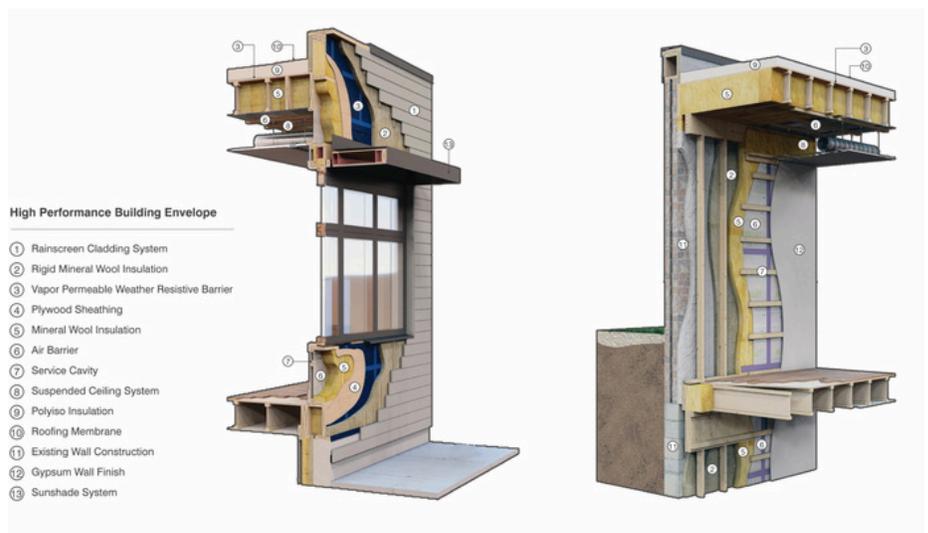
206 kWh/(m2a)

PER Demand:

105 kWh/(m2a)



Part of Studio St. Germain's High Performance Program, the Wilkinsburg Passive House incorporates a variety of elements essential for wellness and sustainability. Among the key high-performance features are an advanced HVAC system for regulating indoor air quality, including an Energy Recovery Ventilator that ensures the circulation of fresh outdoor air and a whole house water filtration and conditioning system.



With its focus on health, airtight construction, thermal insulation, and indoor air quality, the Wilkinsburg Residence solidifies the idea that homes can care for us and reflect our philosophy of improving lives through design.