Passive House Case Study

The Passive House Network

The Catskill Project

Livingston Manor, NY

Single Family

New Build

PHI Database ID#: 7910

Certification Goal**:**

PHI Low Energy Building

Status: **Certified**

Size (TFA): 1713 sqft

Description: The Catskill Project is a 25-home residential development in Livingston Manor, New York — the first of its kind in the region. Six homes have been built, with 19 more planned.

DOE Climate Zone: 6A

Team:

Owners:
Greg Hale, Co-founder & Peter Malik, Co-Founder
www.thecatskillproject.com

Architect/Designer & PH Consultants:
Buck Moorhead, AIA, CPHD, Laura Carter, RA, CPHD, LEED AP, and Remy Moorhead, AIA, CPHD
Buck Moorhead Architect
www.buckmoorheadarchitect.com
Ed May, BldgTyp LLC
www.bldgtyp.com

MEP Engineer:
Cramer Silkwork, Baukraft Engineering
www.baukraft.com

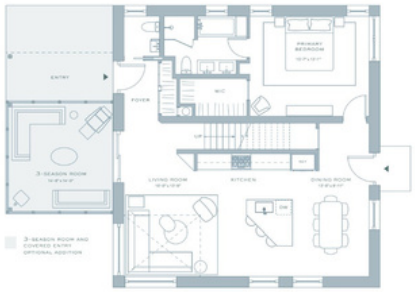
Framing:
Bensonwood
https://bensonwood.com/

Structural Engineer:
Gene Ruzanski, P.E., LEED AP,
Construct Engineering LLC
www.construct-eng.com

Builder:
Terrace Fink, Teb Fink Building
www.tebfinkbuilding.com

Certifier:
Elena Reyes Bernal, Passivhaus Institut

The Catskill Project was initially conceived in 2018 by a team of passionate experts who shared the same goal: to bring high-quality, high-performance, carbon-neutral homes to the market for healthier living. Greg Hale and Peter Malik, colleagues at Natural Resources Defense Council, forged a unique bond over their shared commitment to environmental stewardship. Hale, a former real estate lawyer & business owner turned energy efficiency advocate, and Malik, transitioning from investment banking to environmentalism, united in their vision for a sustainable future. Together, they acquired 90 acres near Livingston Manor, where Malik had long held property, with a shared goal: to honor the land while pioneering eco-friendly living.



In their quest to redefine carbon-neutral living in a rural setting, they enlisted architect Buck Moorhead, a certified PH designer since 2011, and his team at Buck Moorhead Architect. Moorhead's vision extends beyond typical Passive House standards, emphasizing meticulous carbon tracking, renewable energy sources, and master craftsmanship. Together, they aim to set a new benchmark for efficiency and comfort in sustainable homesteads, encapsulating their collective aspiration to pioneer eco-friendly living in Sullivan County.

The first home was built in 2021. Today, six homes have been built. The construction process takes 12-18 months from contract closing. Prices at The Catskill Project start around $1.2M for a base Red Hill Model, and will vary based upon the model selected, lot size, views, and other attributes, and upgrades chosen by the buyer. Phase 1 includes 11 homes, with Phase 2 and 3 on the horizon, eventually offering 25 homes in the community on 155 acres, all with varying topography.

Thermal Envelope

Ground:
WarmForm frost-protected shallow slab-on-grade foundation with continuous insulation

Walls:
R-44.8
Prefabricated wall panels from Bensonwood Tektoniks - WFB10 wall with continuous insulation and insulated service chase (R-53)

Roof:
R-80.6
Prefabricated roof panels from Bensonwood Tektoniks with 16'' cellulose and insulated service cavity (R-79)

Windows & Doors:
U-0.15
Unilux ModernLine triple-pane aluminum-clad wood windows and exterior doors (U-0.16) with 8 ft solid core slab interior doors

Shading Strategies:
Solar shades installed on South facing windows, shading for large South and West facing windows through architect's tapered building form

Mechanical Systems:

Ventilation:
Zehnder - ComfoAir Q350 ERV, Comfort Ventilation

Heating:
Fujitsu 1.5-ton air-source heat pump with supplemental Mitsubishi 0.5-ton ductless mini-split system

Cooling & Dehumidification
Fujitsu 1.5-ton air-source heat pump with supplemental Mitsubishi 0.5-ton ductless mini-split system

Domestic Hot Water:
Rheem Professional Classic Series 40-gallon Lowboy electric resistance water heater

Onsite Renewable Energy
Rooftop Solar - 9.200kW capacity with 20 REC460AA PURE-RX panels and a Tesla Powerwall 3 for battery

PHPP Values

Climate:
Cold

Airtightness:
n50 = 1/h

Annual Heating Demand:
29 kWh/(m2a)

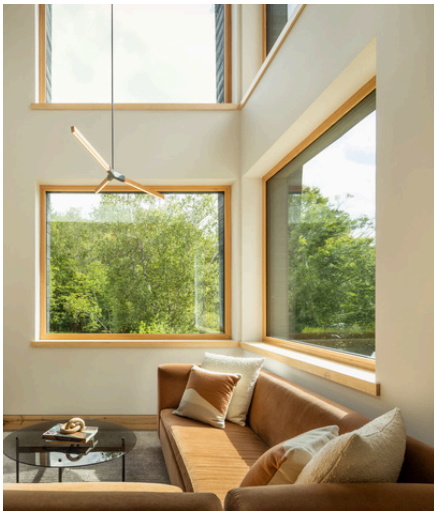
Heating Load:
16 W/m2

Cooling & Dehumidification Demand:
15 kWh/(m2a)

Cooling Load:
15 W/m2

PE Demand:
132 kWh/(m2a)

PER Demand:
65 kWh/(m2a)



The average monthly utility bill for the first house during the first two years of operation was $69, while indoor temperatures have stayed consistently comfortable. A test was also conducted in the winter to switch the heat off for one week in January when temperatures dipped below zero. The indoor temperature never dropped below 50 degrees during the entire test period.

In 2023, the Canadian Wildfires prompted air quality alerts throughout the state of New York. During this time, the air quality in the model home was uncompromised and remained particle-free unless a door or window was opened.

The Catskill Project has prioritized minimizing the community's embodied carbon from the outset. Starting in 2019, the team analyzed and tracked the embodied carbon in the construction of the model home utilizing the EC3 tool. Materials were selected to minimize carbon emissions, such as using carbon sequestering dense pack cellulose insulation instead of high GWP spray foam, and minimizing the use of concrete and steel. Preserved vegetation in The Catskill Project's 40+ acre conservation area will offset the embodied carbon from all construction materials for the first 11 houses over approximately 7 years. The team plans to initiate further analysis utilizing the BEAM carbon tracking tool and explore the use of lower GWP materials for future builds.