La Central, Building C

Aiming for Future Electrification: BEEx presentation 5/12/2020

Since 1972, Steven Winter Associates, Inc. has been providing research, consulting, and advisory services to improve the built environment for private and public sector clients.

Our services include:

- Energy Conservation and Management
- Sustainability Consulting
- Green Building Certification
- Accessibility Consulting

We have over 125 staff across four office locations:
New York, NY | Washington, DC | Norwalk, CT | Boston, MA

For more information, visit
www.swinter.com

We Make Buildings Perform Better

By providing a whole-building approach to design and construction

Project Team

Owner/Developer: The Hudson Companies, Inc.

Engineer: Dagher Engineering

Architect: MHG Architects | FX Fowle

Passive House: Steven Winter Associates

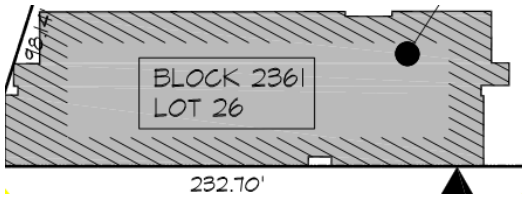
Hudson: The House at Cornell Tech

- Founded over 30 years ago
- General Contracting & Property Management
- New Construction, Rennovation, & Conversions
- Affordable & Market Rate Housing
- Committed to Environmental Sustainability: baseline scope for new projects, feasibilities for rehabs
  - PH
  - LEED Gold
  - NYSERDA NCP

About the Project

Located on Brook Avenue in Bronx, NY

- Pursuing:
  - Passive House certification (PHI)
  - LEED GOLD
  - Buildings of Excellence Award
  - NYSERDA Tier 2
- ~ 172,480 sqft.
- 166 units
- 100% Affordable Housing Development



About the Project

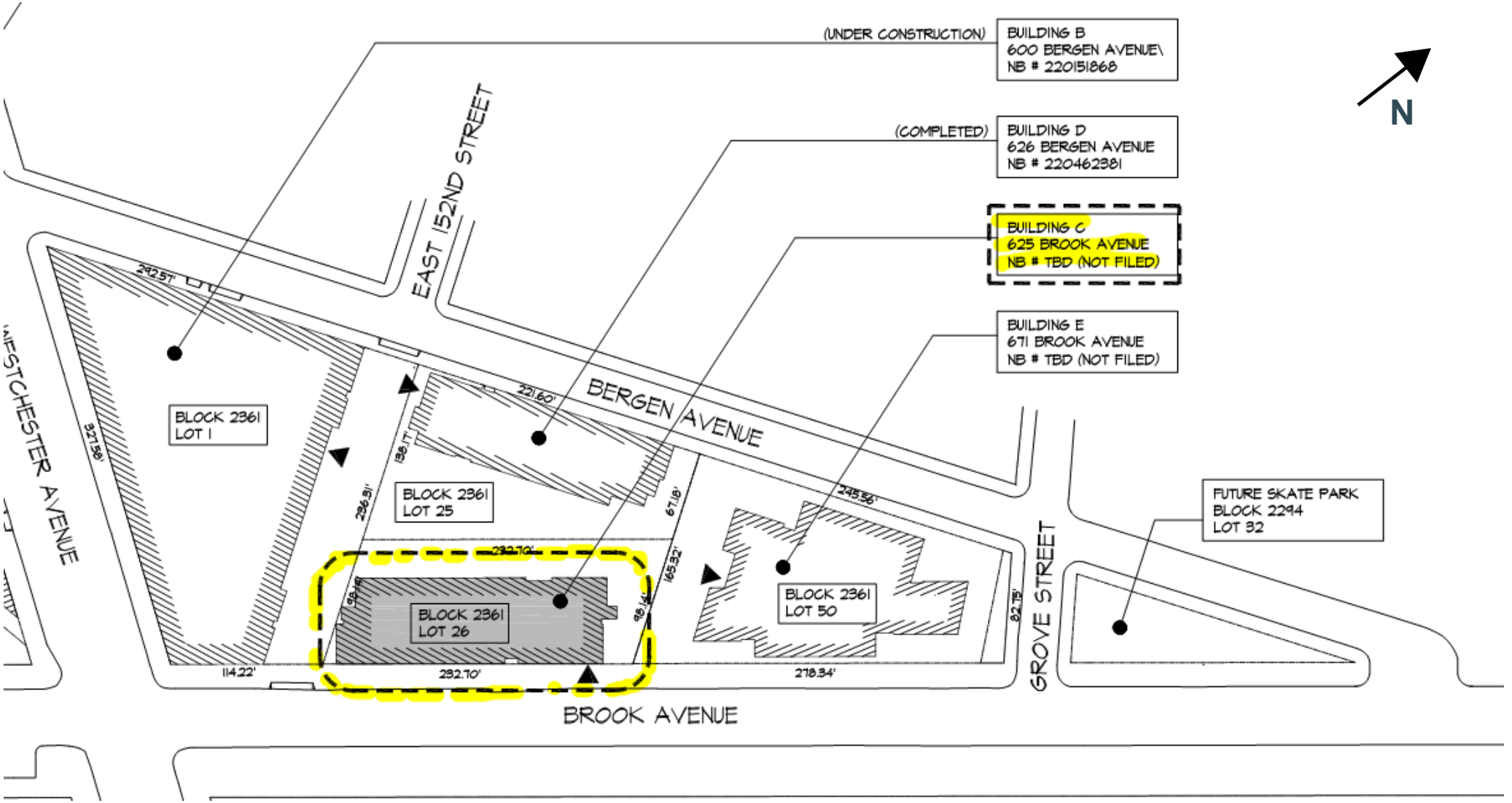
Bronx Community District 1

- only 3% of its land designated as park space
- 30% of the population lives below the poverty line (compared to 20% citywide)

La Central Development

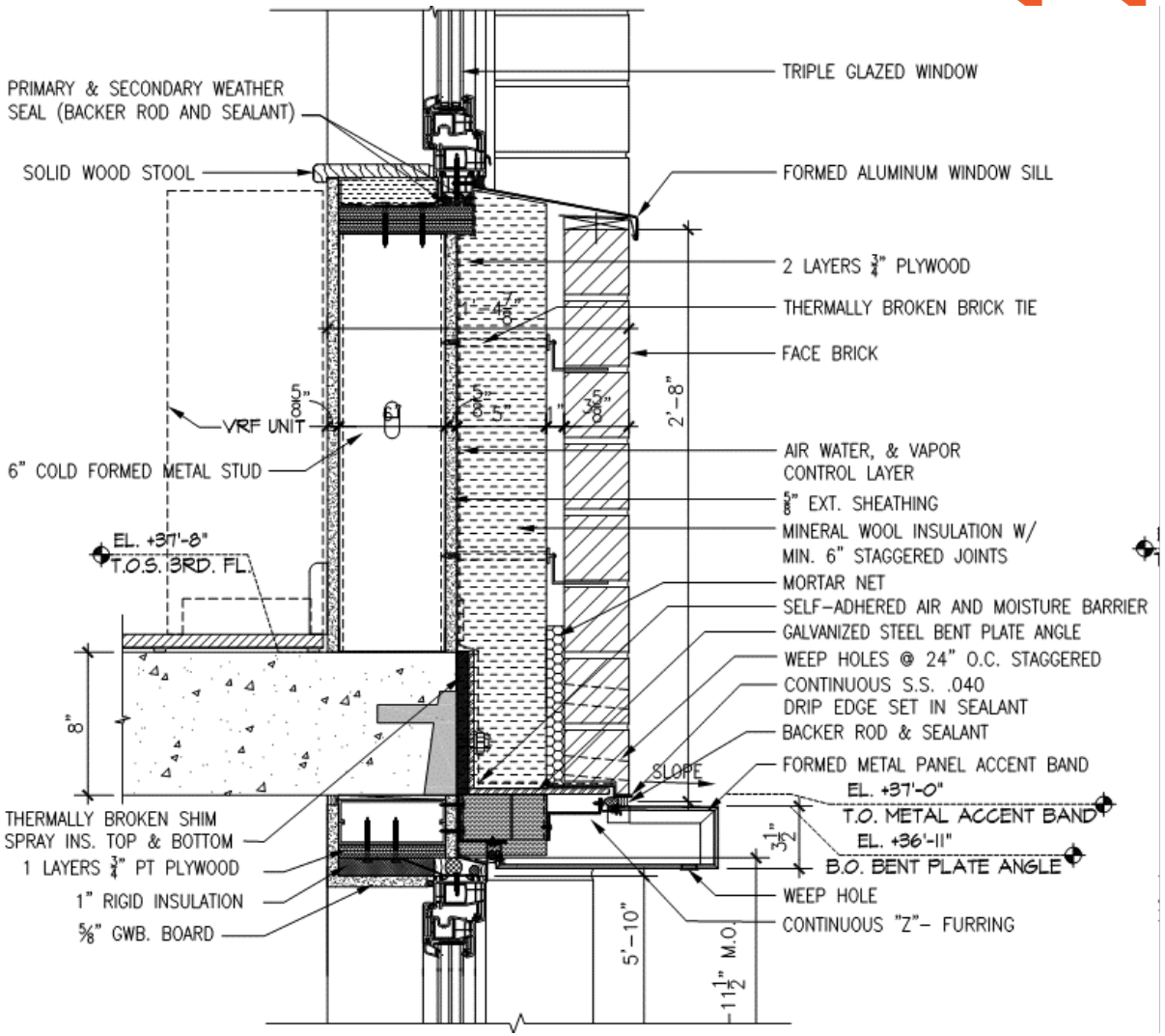
- 5-building development that will result in two acres of public and private open space
- adjacent to the 2 and 5 MTA subway lines as well as numerous bus lines providing quick and easy access to Manhattan
- PH envelope will drastically reduce noise pollution for inhabitants

Site Plan


(UNDER CONSTRUCTION)
BUILDING B
600 BERGEN AVENUE\
NB # 220151868
(COMPLETED)
BUILDING D
626 BERGEN AVENUE
NB # 220462381
BUILDING C
625 BROOK AVENUE
NB # TBD (NOT FILED)
BUILDING E
671 BROOK AVENUE
NB # TBD (NOT FILED)
N
EAST 152ND STREET
BERGEN AVENUE
WESTCHESTER AVENUE
GROVE STREET
BROOK AVENUE
BLOCK 2361
LOT 1
BLOCK 2361
LOT 25
BLOCK 2361
LOT 26
BLOCK 2361
LOT 50
FUTURE SKATE PARK
BLOCK 2294
LOT 32
242.51'
221.60'
245.56'
232.70'
114.22'
278.34'
82.75'

Envelope Description

- Above Grade Walls: R-22 hr·ft^2·F/BTU
- Below Grade Walls: R-12 hr·ft^2·F/BTU
- Windows: U-0.14 BTU/hr·ft^2·F
- Roof: R-32 hr·ft^2·F/BTU
- Foundation Walls: R-10 hr·ft^2·F/BTU



Mechanical

REPLICABLE SOLUTIONS

Mechanical Ventilation : Energy Recovery Ventilators

- 80% heat recovery from exhaust
- MERV 13 filters to filter air pollution (Critical in the Bronx)

Heating and Cooling: Variable Refrigerant Flow (VRF)

- Moderate refrigerant flows to each unit—accommodates low heating loads

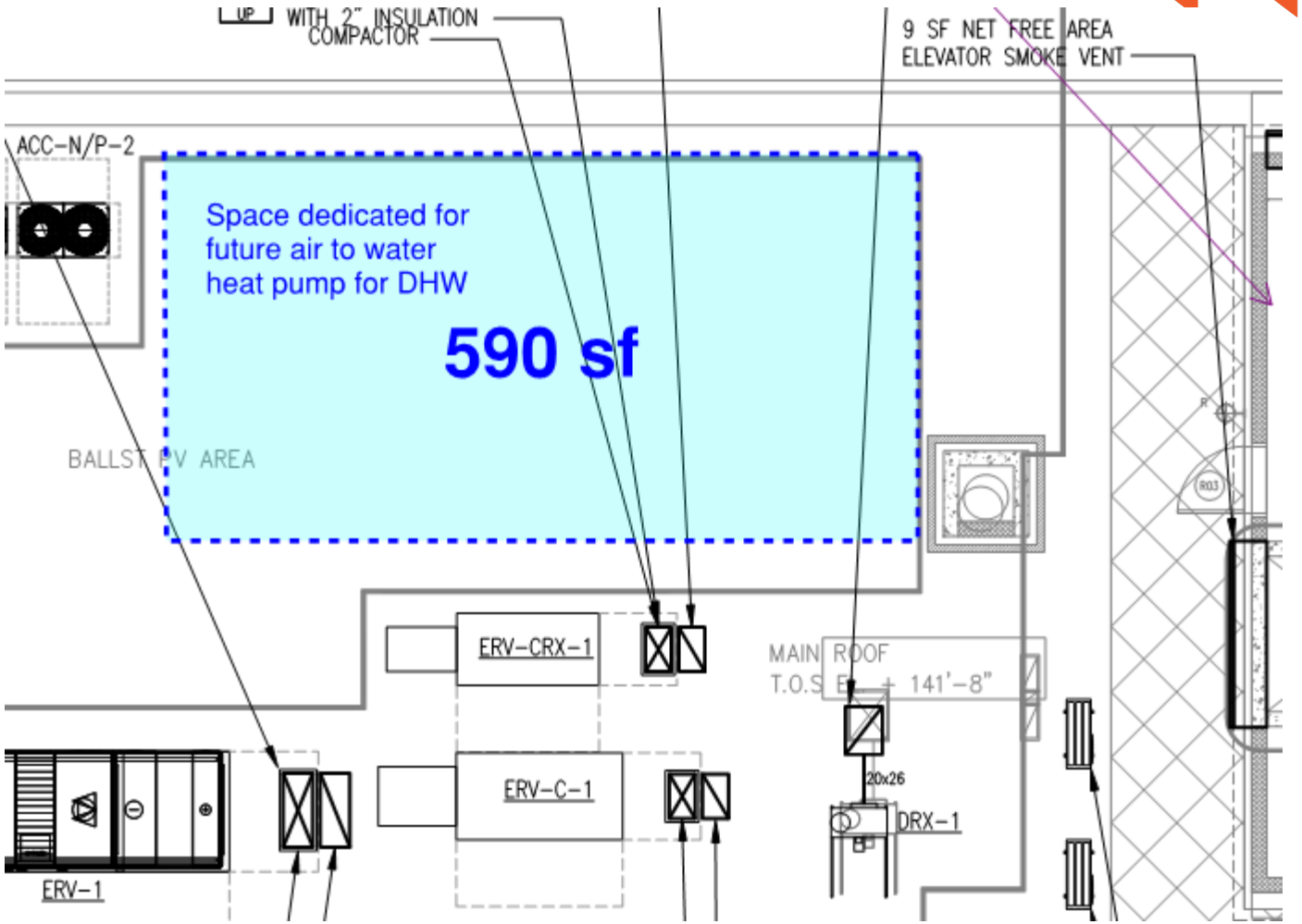
INNOVATIVE SOLUTION

Domestic Hot Water:

- Evaluating the feasibility and cost-effectiveness of implementing a fully electrified solution
- Committed to future proofing at a minimum
- Efficient recirculation layout (lower copper cost, less heat loss to space)

Future Proofing for DHW Electrification

- Anticipate the same amount of roof area for the VRF outdoor units would be needed for a future HPWh.
- Locate this area close to boiler room to limit pipe runs.
- Ensure adequate space and structural support for additional storage tanks either in or near the boiler room.



Future Proofing for DHW Electrification

1. Ensure there is adequate electrical capacity for heat pumps. This includes:
   - added capacity in the house service,
   - a large enough feeder serving the area the heat pumps will be located, and
   - a large enough switch and/or blank panel in place.
2. Balanced low flow recirculation is best for air to water heat pumps.
3. Added breakers in the boiler room for additional pumps and controls for the heat pump system.
4. Leave valved off and capped futures for easier heat pump connections to the existing piping.

TIP: Consider installing a small air to water heat pump plant to offset some DHW load now so ownership and building operators become familiar with the technology while still having a conventional fuel-fired plant to rely on.

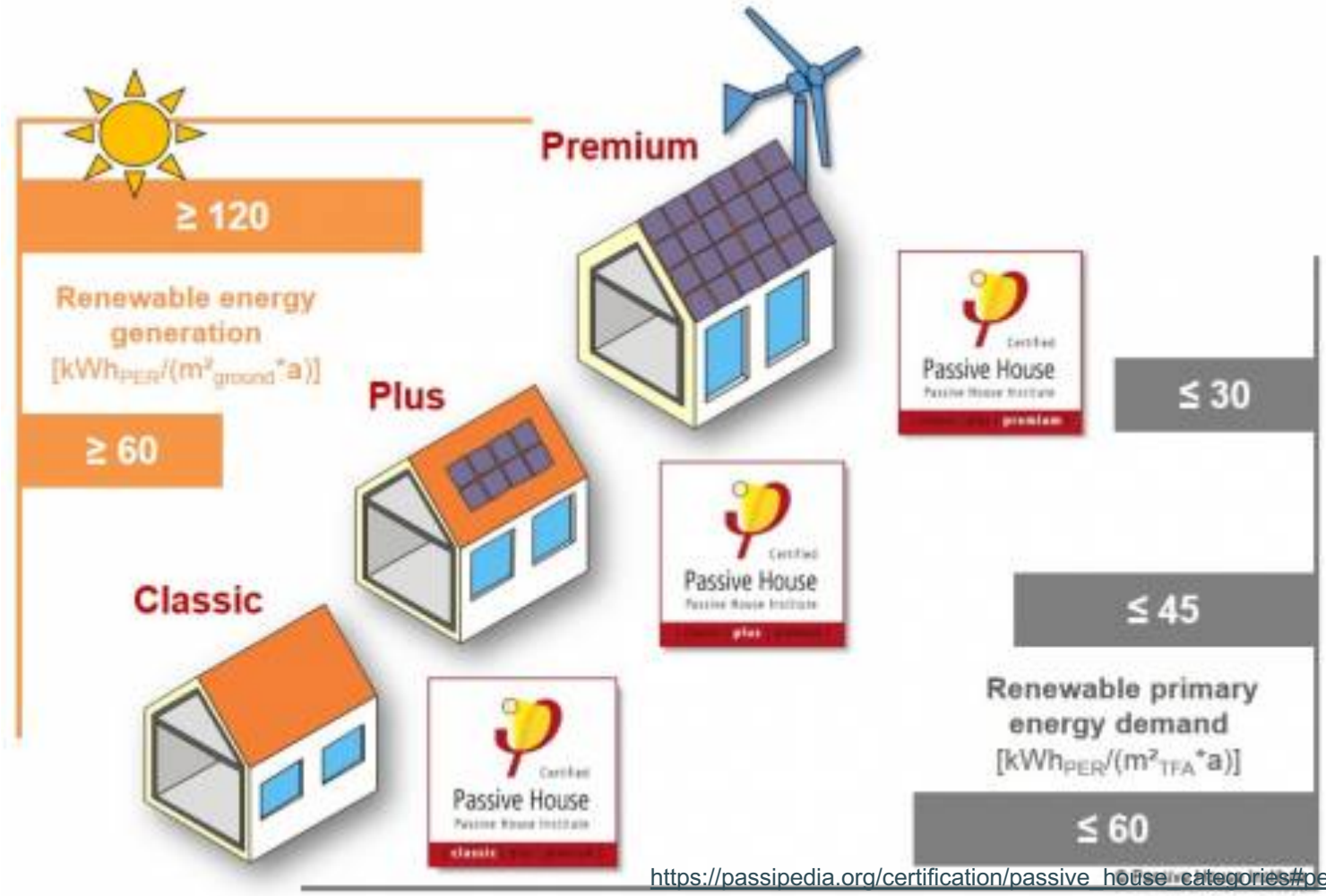
Future Electrification : Benefits

- Buildings of Excellence Competition
- Compliance with upcoming LL97 building requirements
  - Fines will surpass cost premium to design PH
- Resiliency with a changing grid

- Passive House Plus certification: 1st in US if accomplished

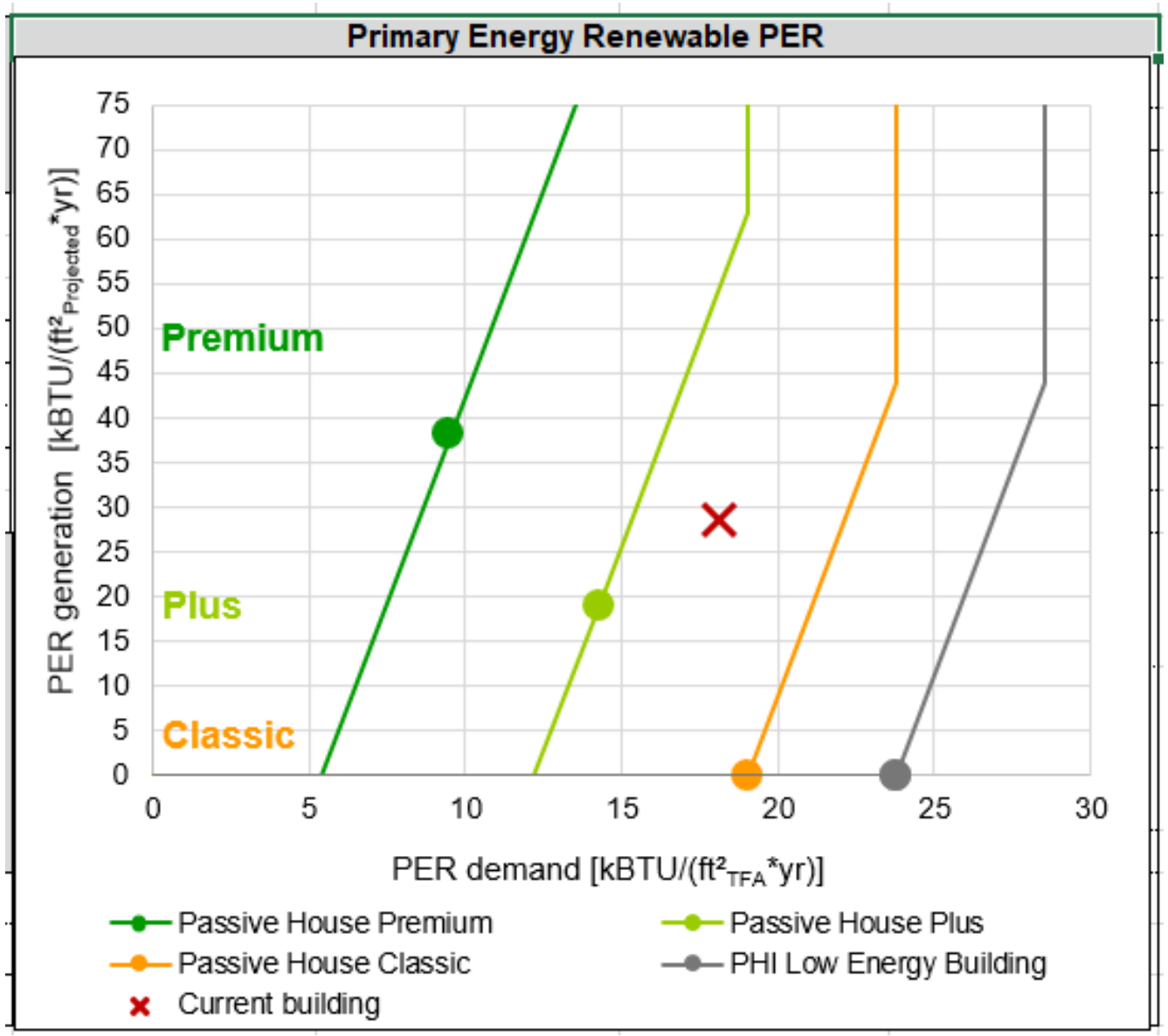
Levels of PH

- Classic
- **Plus**
- Premium



https://passipedia.org/certification/passive_house_categories#per_factors

Preliminary Modeling Results



Contact Us

Steven Winter Associates, Inc.
61 Washington Street, Norwalk, CT 06854

Lois Arena, Director, Passive House Services

larena@swinter.com

203.857.0200 x 2140

www.swinter.com