



320 Queen Anne

Occupancy Fall 2020

Description:

320 Queen Anne apartments is a PHIUS+ project in Seattle that incorporates efficient Chilltrix heat pumps. The combination of a solar photovoltaic array and heat pumps provides a good way to achieve low annual net energy performance in an urban residential project.

As a project that uses a passive house design strategy of for energy conservation, the lived experience will be uniquely comfortable with a healthy indoor environment – all at an affordable cost.

Ultra-Efficient Air Conditioning & Heating & Hot Water Small Air-To-Water Ductless Heat Pump Chillers



CX34 Supports up to 8 indoor units per system.

Special Feature:

Chilltrix employs a suite of high-efficiency small heat pumps in which all the refrigeration elements are self-contained. In this way the refrigerant remains localized in the exterior unit and does not circulate through the building. The Chilltrix units provide tempering of ventilation air as well as resident controlled heating and cooling. The solar PV array adds renewable energy and lowers site energy use by another 15%.

Project Information:

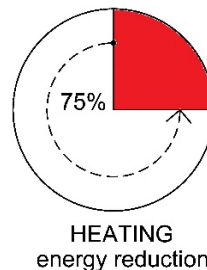
Location	320 Queen Anne Ave N, Seattle	
Number of dwelling units	66	
Total residential SF enclosed	30,889	
Average SF size of each unit	468	
Parking	Autos: 4 EV ready stalls	Bicycles: 21

Construction Features:

- 2x8 Exterior Walls of which 30% have exterior insulation
- Triple-pane Argon filled UPVC windows
- Balanced central ventilation with Heat Recovery
- Supplementary Cooling & Heating thru ventilation air
- Shading devices for south and west building exposures
- Solar photovoltaic array at the roof
- Targeting PHIUS+2015 Certification

Modeled Energy Performance:

EUI Energy Use Index 21 kBTU/sf/year
(with 3.5 kBTU/sf/year of PV production)
note that small unit sizes generate a higher EUI number





320 Queen Anne

west entry

Project Team:



Developer – SW Queen Anne LLC

Architects in collaboration

NK Architects - design and documents

Peggy Heim, AIA, CPHC

Balance Architects – permit and construction

Nick Baxter, AIA, CPHC

PHIUS+ Energy Modeler – Balance Architects

Nick Baxter, AIA, CPHC

PHIUS+ Verifier – Cybil Tribie, Evergreen Certified



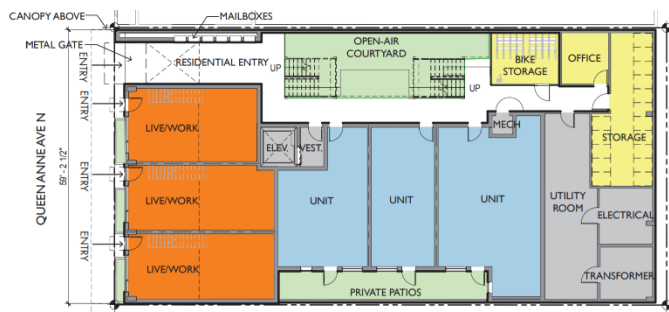
General Contractor – Cascade Built

Structural Engineer – Grant Buckingham, DCI Engineers



Mechanical Engineer

Galen Staengl, PE



Ground Floor Plan

Building System Information:

Wall system 2x8 – average R-Value R - 26

Windows – EUROtek UPVC triple-pane R - 0.17

Heat Recovery Ventilation efficiency 85%
with Chilltrix tempered supply air

Domestic Hot Water High Efficiency Gas Boiler

Weather Resistive Barrier Soprema Sopraseal LM 204



Cost Premium:

As the general contractor, Cascade Built estimates the additional construction cost premium of the project's Passive House elements to be 5%-7% higher than a 2015 WSEC energy code compliant building added cost.

The result is better energy performance plus better health and comfort. The project will comply with the projected 2031 energy code and, with the addition of Renewable Energy Credits (RECS), will be a Net Zero site.



Roof Deck Plan with Solar PV array