



Heritage Homes: High performance Homes in Harmony with community



H4: Heritage Homes

Project Summary

In late 2014 Penn State's Architecture and Engineering departments joined with the State College Community Land Trust to design an affordable, owner-occupied, high-performance duplex in the Borough of State College, the host municipality of Penn State.

Relevance of Project to the Goals of the Competition

The State College Community Land Trust approached Penn State University with the interest of designing an affordable housing duplex in the State College community. The affordability, size and price of house all fit with the parameters of the competition, and strive to inspire and develop the next generation of residential design and high-performance living in our community.

Design Strategy and Key Points

Throughout the design process, the Race to Zero team carefully balanced the needs of three stakeholders: 1) the Race to Zero competition requirements, 2) the State College Community Land Trust, and 3) the Race to Zero competition team in a whole systems building approach.

Project Data

- Location: 1394 University Drive, State College, PA 16801
- Climate Zone: 5
- Square Footage: 1,440 ft² per duplex (2,880 ft² total)
- Number of bedrooms: 3 per duplex
- Number of bathrooms: 2 full bathrooms per duplex
- Number of stories: 1 story with full basement per duplex
- HERS score without PV: 39
- HERS score with PV: -3
- Estimated annual energy cost without PV: \$78.96 @ \$0.12 per kWh
- Estimated annual energy cost with PV: - \$1.70 @ \$0.12 per kWh

Technical Specifications

- Wall Insulation = R-29
- Foundation Insulation = R-23 (walls)
- Slab Insulation = R-10
- Roof Insulation = R-60
- Window Performance
 - South & East Windows:
U=0.29, SHGC = 0.500
 - North & West Windows:
U=0.24, SHGC = 0.260
- HVAC specifications
 - Heating/Cooling/Ventilation:
 - Basement and First Floor Bedroom: (1) 1 ton, 24 SEER, 13 HSPF ducted Mini Split Heat Pump,
 - First Floor Main Space: (1) ¾ ton, 33 SEER, 14.2 HSPF wall mounted Mini Split Heat Pump
 - Water Heating: 50 gallon heat pump water heater
 - 3.1 EF

