

Heritage Homes: High performance Homes in Harmony with community

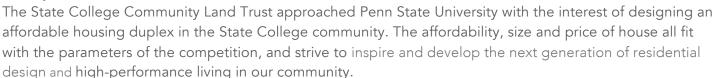


H4: Heritage Homes

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



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

- o Location: 1394 University Drive, State College, PA 16801
- o Climate Zone: 5
- o Square Footage: 1,440 ft2 per duplex (2,880 ft2 total)
- o Number of bedrooms: 3 per duplex
- o Number of bathrooms: 2 full bathrooms per duplex
- o Number of stories: 1 story with full basement per duplex
- o HERS score without PV: 39
- o 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
- o 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

