University of Pittsburgh – Panther Innovations

Strategic Approach:
- Type of Project: One Story Ranch
- Location/Climate: Pittsburgh, PA, CZ 5
- Design Strategy:
  We used Pulte’s Vernon Hill floor plan, showing that one of the most popular production home designs can be designed to be a zero net energy home.
- Technical Strategy
  - Enclosure: Staggered Stud Wall system, spray foam insulation, XPS sheathing, ceiling insulated vented attic, 4’ continuous insulated foundation wall, triple pane windows
  - HVAC: Air source heat pump, small-diameter ducts in conditioned space
  - IAQ: ERV, exhaust fans, passive radon system, air/water sealing, no VOCs, MERV 13 filter, plants
- Construction Cost Strategy: Used money saved on correct sizing for high-performance features, minimized duct system, eliminated basement

Technical Specifications:
Wall R-Value: R-40
Ceiling R-Value: R-60
Foundation R-Value: R-20
Window U-Value: .19
Window SHGC: .27
Heat Pump HSPF: 10
Heat Pump SEER: 22
Water Heater EF: .95

Key Statistics:
Location: Pittsburgh, Pennsylvania
2009 IECC Climate Zone: 5
Square Feet: 2200
Number of Stories: 1
Number of Bedrooms: 3
Number of Bathrooms: 2.5
Estimated Construction Cost: $193,716 ($237,852)
HERS Index Score: 45 (9 w/ PV)
Estimated Monthly Energy Cost: $140 ($-16.75 w/ PV)