ZERO ENERGY READY HOME
U.S. DEPARTMENT OF ENERGY

Howard Building Science

Duke St. Cottage Two-Bedroom | Granite Falls, NC | HowardBuildingScience.com

U.S. DOE ZERO ENERGY READY HOME 2024 WINNER *Housing Innovation Awards*

Photos courtesy of Howard Building Science

"We thoroughly enjoy our home because of the consistent air quality and tremendous energy savings." *Homeowners*




PROJECT DATA

- **Layout:** 2 bdrm, 1 bath, 1 fl, 800 ft²
- **Climate:** IECC 4A, mixed-humid
- **Completed:** January 2023
- **Category:** Affordable

MODELED PERFORMANCE DATA

- **ERI:** without PV 44
- **Annual Energy Costs:** without PV $900
- **Annual Energy Cost Savings:** (versus typical new homes) without PV $600
- **Annual Energy Savings:** without PV 5,800 kWh
- **Savings in the First 30 Years:** without PV $25,650

CONTACT

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KEY FEATURES

- **Walls:** SIPs, R-26 total: closed-cell foam core. Exterior face of panel has an integrated coating for rain screen and water control.
- **Roof:** SIPs gable roof: exterior face of panel is coated OSB, taped at seams.
- **Attic:** Unvented, 5.5″ R-40 SIPs with closed-cell spray foam core. 400 ft² storage space.
- **Foundation:** Unvented crawlspace: concrete masonry unit, R-10 rigid insulation on interior of walls, 10-mil vapor barrier on ground.
- **Windows:** Double-pane windows, U=0.25, SHGC=0.19.
- **Air Sealing:** 2.76 ACH50; closed-cell foam sill gasket; flashing tape on panel seams; stretch tape and liquid flashing around windows and doors; all penetrations sealed with spray foam and liquid flash.
- **Ventilation:** ERV, distributed system. Sensors to monitor humidity, VOCs, smoke, carbon dioxide, and PM2.5 particulates.
- **HVAC:** Ductless mini-split heat pump, 11.1 HSPF, 26.3 SEER. Dehumidifier in enclosed crawlspace.
- **Hot Water:** Heat pump water heater, 50-gal, 3.75 UEF. Core plumbing design.
- **Lighting and Appliances:** ENERGY STAR appliances.
- **Solar:** None.
- **Energy Management System:** Ventilation system controlled by sensors that monitor indoor air quality.
- **Other:** Electric vehicle charging outlet. Part of a neighborhood of ZERH-certified affordable homes.

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

For more information on the DOE Zero Energy Ready Home program, go to https://www.energy.gov/eere/buildings/zero-energy-ready-home-program or scan the QR code.

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Sept. 2024, PNNL-SA-203988