ZERO
ENERGY READY HOME
U.S. DEPARTMENT OF ENERGY

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ZERO
ENERGY READY HOME
2024 WINNER
Housing Innovation Awards

Red Tree Builders

Farm Haven | Asheville, NC | RedTreeBuilders.com

Photos courtesy of Red Tree Builders

"[This home] is designed with strategically placed solar panels to maximize efficiency in harnessing solar energy." *Red Tree Builders*

PROJECT DATA

- **Layout:** 4 bdrm, 3.5 bath, 1 fl + bsmt, 2,603 ft²
- **Climate:** IECC 4A, mixed-humid
- **Completed:** May 2024
- **Category:** Custom

MODELED PERFORMANCE DATA

- **ERI:** without PV 44; with PV 2
- **Annual Energy Costs:** without PV $1,500; with PV $200
- **Annual Energy Cost Savings:** (versus typical new homes) without PV $2,400; with PV $3,700
- **Annual Energy Savings:** without PV 14,350 kWh; with PV 26,220 kWh
- **Savings in the First 30 Years:** without PV $99,900; with PV $153,900

CONTACT

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KEY FEATURES

- **Walls:** 2x6 16″ o.c., advanced framed, R-19 total: 7⁄16″ coated OSB sheathing with taped seams, R-19 open-cell spray foam, fiber cement siding.
- **Roof:** Gable truss roof, plywood, architectural shingles and metal shingles.
- **Attic:** Unvented, vaulted ceilings: 8″ R-26 open-cell spray foam under roof deck.
- **Foundation:** Insulated basement: poured concrete walls, 2x4 16″ o.c., open-cell spray foam, spray membrane waterproofing, dimple board. 2″ XPS under slab.
- **Windows:** Double-pane windows, U=0.33, SHGC=0.16. Interior motorized blinds.
- **Air Sealing:** 0.74 ACH50; liquid flashing around foundation perimeter and penetrations, sill seal foam gasket.
- **Ventilation:** ERV, integrated with HVAC system with a fully automated IAQ monitor.
- **HVAC:** Ground source heat pump with 4.2 COP; cooling 19.7 EER. Uses 4x less energy on cold days than an air source heat pump.
- **Hot Water:** Heat pump water heater, 80-gal, 4.07 UEF. Demand recirculation.
- **Lighting and Appliances:** ENERGY STAR appliances.
- **Solar:** 8.29 kW, no battery.
- **Energy Management System:** IAQ monitoring system controls exhaust fans.
- **Other:** Two electric vehicle chargers. Video for home owners showing essential features of the home, locations of emergency shut-offs, operational details, and more.