Building AMERICA
U.S. Department of Energy
Research Toward Zero Energy Homes

Research that Works
www.buildingamerica.gov

Tommy Williams Zero Energy Home

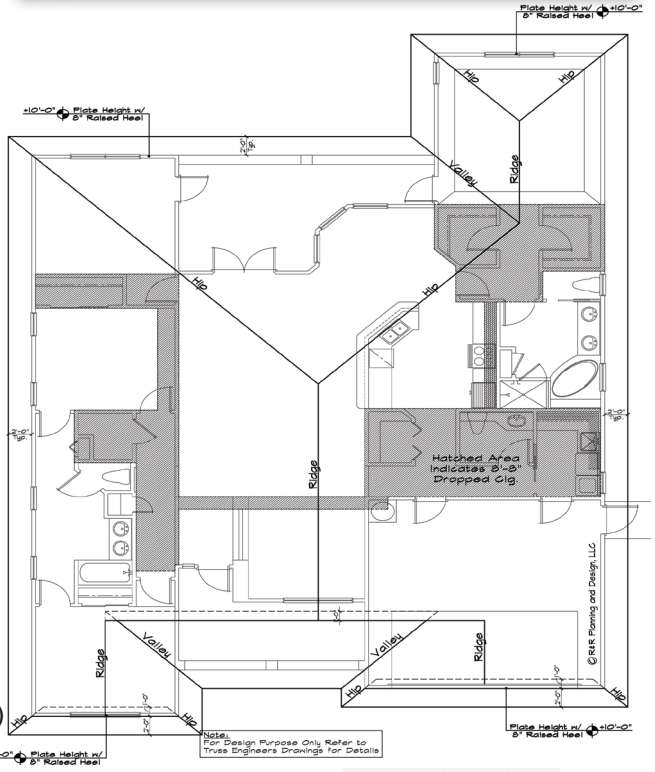
Gainesville, FL

ZEH Statistics

- 2,250 square feet – 3 bedrooms, 2.5 bathrooms, to be completed spring 2010

Energy Efficiency & Renewable Energy Features

- Builders Challenge Qualified– HERS/E-Scale ≤ 0 (expected)
- R-38 Ceiling Insulation (R-19 knee wall Insulation), Vented attic
- 10” Heel trusses for improved insulation coverage
- R-15 Fiberglass “Spider” Wall Insulation
- Double Pane, Low-e Vinyl Frame Windows (U=0.35, SHGC=0.25)
- ENERGY STAR® Certified Including Thermal Bypass Checklist Compliance
- ACCA Manual D Sized Duct System, Sealed With Mastic At Joints
- Ducts and air handler inside conditioned space
- ACCA Manual J Sized Heating/Cooling Equipment
- High Efficiency Heat Pump (HSPF 9.2, SEER 16)
- 100% Compact Fluorescent Bulbs
- 6.75kWp Sunpower 225 PV System (inverter avg. eff. = 0.97)
- Solar domestic hot water system (64 sq. ft. collector)



Indoor Air Quality & Noise Reduction Features

- Outside Air “Run-time” Ventilation System
  - When furnace or air conditioner compressor is running, creating beneficial positive pressure in the house to minimize intrusion of outside humidity and dust
  - Filtered outside air is mixed with house air in return plenum
  - Passive System - no moving parts to maintain
  - Can be disabled if necessary (such as when there’s a fire in the area)
- Ducted exhaust fans in kitchen and bath rooms to remove humid air
- Duct System Air Tightness Tested
- Air Handler and Ducts in Conditioned Space (hatched area of floor plan indicates dropped ceiling for ducts)
- Air Sealing to Reduce Infiltration (outside air, pollen, dust, soil gases, etc)
- FGBC (Florida Green Building Coalition) Certified Home (expected)

Systems Engineering by BAIHP

- Simulation analysis to identify cost effective net zero (annual) energy package
- Scope of work developed for the mechanical and solar contractors

Florida H.E.R.O.

Building America U.S. Department of Energy Research Toward Zero Energy Homes
Builders Challenge
Recognizing Energy Leadership in Homebuilding

Florida Solar Energy Center
Florida Solar Energy Center leads the Building America Industrialized Housing Partnership Consortium

Tommy Williams Homes Built for the Future

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Building Technologies Program

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

Research and Development of Buildings

Our nation's buildings consume more energy than any other sector of the U.S. economy, including transportation and industry. Fortunately, the opportunities to reduce building energy use—and the associated environmental impacts—are significant.

DOE's Building Technologies Program works to improve the energy efficiency of our nation's buildings through innovative new technologies and better building practices. The program focuses on two key areas:

- **Emerging Technologies**
  Research and development of the next generation of energy-efficient components, materials, and equipment
- **Technology Integration**
  Integration of new technologies with innovative building methods to optimize building performance and savings

For more information contact
EERE Information Center
1-877-EERE-INF (1-877-337-3463)
www.eere.energy.gov

U.S. Department of Energy
Energy Efficiency and Renewable Energy

Visit our Web sites at:

www.buildingamerica.gov | **www.pathnet.org** | **www.energystar.gov**

Building America U.S. Department of Energy

PATH Partnership for Advancing Technology in Housing

ENERGY STAR

Building America Program
George S. James • New Construction • 202-586-9472 • fax: 202-586-8134 • e-mail: George.James@ee.doe.gov
Terry Logee • Existing Homes • 202-586-1689 • fax: 202-586-4617 • e-mail: terry.logee@ee.doe.gov
Lew Pratsch • Integrated Onsite Power • 202-586-1512 • fax: 202-586-8185 • e-mail: Lew.Pratsch@hq.doe.gov
Building America Program • Office of Building Technologies, EE-2J • U.S. Department of Energy • 1000 Independence Avenue, S.W. • Washington, D.C. 20585-0121 • www.buildingamerica.gov

Building Industry Research Alliance (BIRA)
Robert Hammon • ConSol • 7407 Tam O'Shanter Drive #200 • Stockton, CA 95210-3370 • 209-473-5000 • fax: 209-474-0817 • e-mail: Rob@consol.ws • www.bira.ws

Building Science Consortium (BSC)
Betsy Pettit • Building Science Consortium (BSC) • 70 Main Street • Westford, MA 01886 • 978-589-5100 • fax: 978-589-5103 • e-mail: Betsy@buildingscience.com • www.buildingscience.com

Consortium for Advanced Residential Buildings (CARB)
Steven Winter • Steven Winter Associates, Inc. • 50 Washington Street • Norwalk, CT 06854 • 203-857-0200 • fax: 203-852-0741 • e-mail: swinter@swinter.com • www.carb-swa.com

Davis Energy Group
David Springer • Davis Energy Group • 123 C Street • Davis, CA 95616 • 530-753-1100 • fax: 530-753-4125 • e-mail: springer@davisenergy.com • deg@davisenergy.com • www.davisenergy.com/index.html

IBACOS Consortium
Brad Oberg • IBACOS Consortium • 2214 Liberty Avenue • Pittsburgh, PA 15222 • 412-765-3664 • fax: 412-765-3738 • e-mail: boberg@ibacos.com • www.ibacos.com • IBACOS provided technical support for TNAH '08

Industrialized Housing Partnership (IHP)
Subrato Chandra • Florida Solar Energy Center • 1679 Clearlake Road • Cocoa, FL 32922 • 321-638-1412 • fax: 321-638-1439 • e-mail: subrato@fsec.ucf.edu • www.baihp.org • IHP provided technical and on-site support for PHH and TNAH '08

National Renewable Energy Laboratory
Ren Anderson • 1617 Cole Boulevard, MS-2722 • Golden, CO 80401 • 303-384-7433 • fax: 303-384-7540 • e-mail: ren_anderson@nrel.gov • www.nrel.gov

Tim Merrigan • 1617 Cole Boulevard, MS-2722 • Golden, CO 80401 • 303-384-7349 • fax: 303-384-7540 • e-mail: tim_merrigan@nrel.gov • www.nrel.gov

Oak Ridge National Laboratory
Pat M. Love • P.O. Box 2008 • One Bethel Valley Road • Oak Ridge, TN 37831 • 865-574-4346 • fax: 865-574-9331 • e-mail: lovepm@ornl.gov • www.ornl.gov

Pacific Northwest National Laboratory
Michael C. Baechler • 620 Southwest 5th, Suite 810 • Portland, OR 97204 • 503-417-7553 • fax: 503-417-2175 • e-mail: michael.baechler@pnl.gov • www.pnl.gov

Tommy Williams Homes
Todd Louis • 2563 SW 87th Drive, Suite 10 • Gainesville, Florida 32608 • (352) 331-8180 • (352) 331-8179 fax • e-mail: todd@tommywilliamshomes.com • www.tommywilliamshomes.com

Produced for the U.S. Department of Energy (DOE) by Florida Solar Energy Center and the National Renewable Energy Laboratory.
FSEC-BAIHP-18 October 2009

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable