

Moving towards energy efficient communities

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Energy Efficiency and Conservation in Communities

- Sometimes referred to as the cheapest and cleanest form of “energy source”
- Generally apply technology to increase efficiency, change behavior to improve conservation
- Some familiar targets: appliances may use 20% of a home’s power, HVAC 55%, lighting 12%, and 30% of HVAC energy losses are through windows
- Goal: lower individual and community power costs and use, decrease demand for new energy production processes

Energy-Efficient Shopping List

- Clean/renewable/storable in-situ energy production
- Superior Insulation
- Energy-Star rated appliances
- Energy-Efficient
 - ✓ HVAC
 - ✓ Lighting
 - ✓ Windows and Doors
- Performance Monitoring – “you can't manage what you don't measure” (and look at real costs, in the industrial ecology sense)

Energy-Efficient communities think outside of the box

- “Dream no small dream:” Your goal may be eliminating grid power
- Your energy “utility of the future” may be a financing company for your systems
- You may be sharing/coordinating energy systems as well as building orientations with your neighbors
- Energy efficient homes and communities don’t have to look like boxes or spaceships

One Approach:

- At Hampton University, create a living and learning demonstration lab on the campus for:
 - ground source heat pumps (replacing coal/steam based system)
 - grid technologies
 - other energy systems
- Think like architects and like engineers
= Team Tidewater



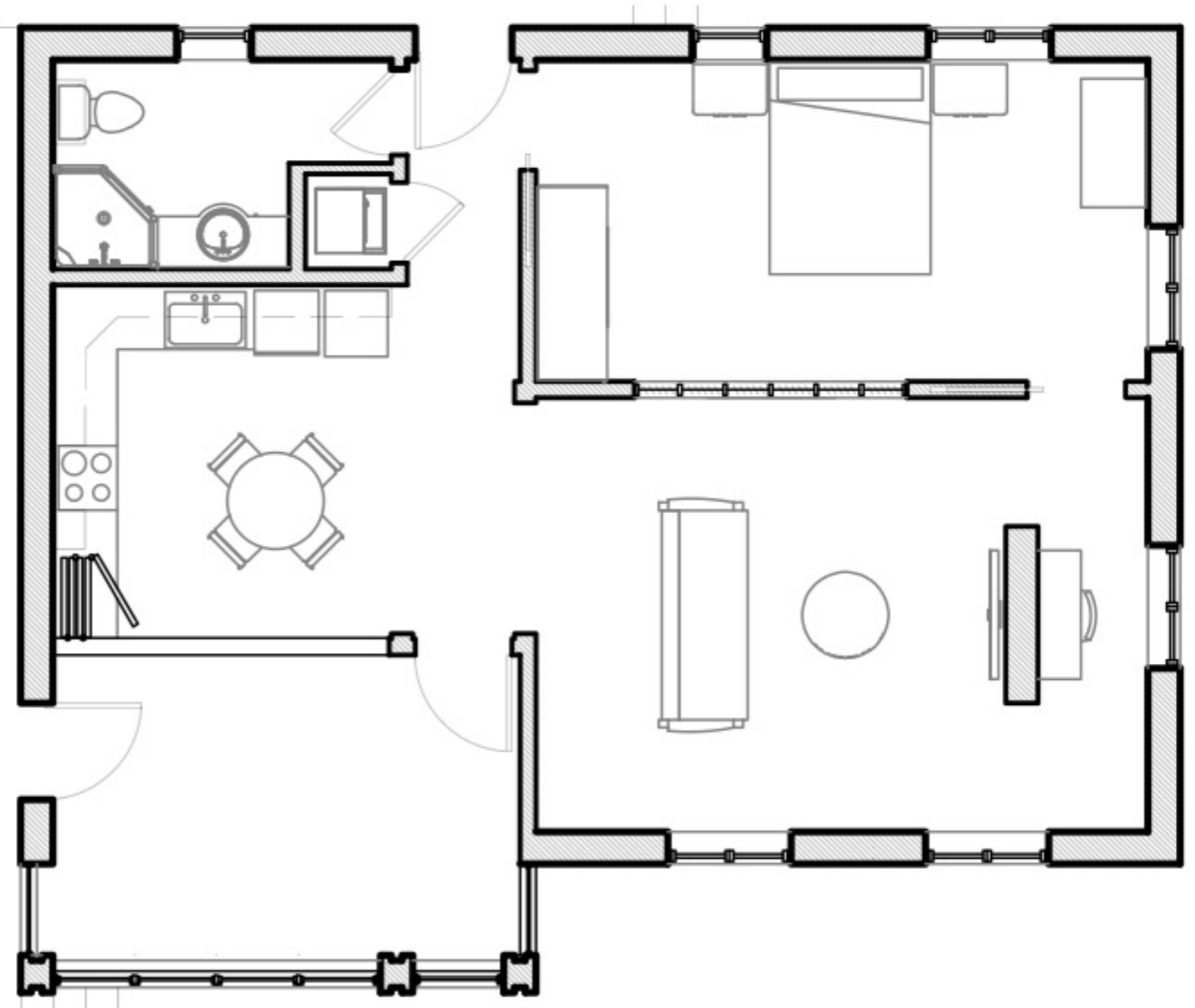
Team Tidewater

A bridge from the past to our sustainable future. A tale of two cities, two universities, two ethnic histories, two market communities and a determination to celebrate their confluence.

**Old Dominion University, Hampton University and
the Spirit of Hampton Roads**

DOE Solar Decathlon Competition Challenge:

- * 1000 sq. ft. house netting zero external energy use
- * Consider market impact and influence
- * 10 individual competitions including architecture, engineering performance, lighting and dining
- * Affordability - \$250,000 build out if replicated
- * To provide one of the 20 most promising proposals in a fiercely competitive international competition



Decathlon unit plan * Spring 2010 incarnation

Team Tidewater Has Challenged Itself To:

- * Demonstrate that true sustainability mandates nurturing livable, walkable center city ***communities***;
- * Demonstrate that net zero housing can be made affordable by ***sharing infrastructure costs in multi-family housing***;
- * Demonstrate that net zero housing can ***fit comfortably, supportively and seamlessly*** within an existing center city neighborhood;
- * Develop a single demonstration research house conceived as a single unit of a multi-family building; and
- * Pursue the development of a demonstration multi-family building in tandem with the Solar Decathlon unit.



Prototype Found

The Six Pack



6 pack Colonial at 28th and at 27th Streets

Other Community Efficiency and Conservation Planning Ideas

- Six-Pack cul-de-sac
- Community-wide free wi-fi
- Promote tele-commuting
- Urban mining (Jane Jacobs 1961)
- Municipal-industry-community collaborations



PROJECT

Solar Decathlon

U.S. Department of Energy

DATE

23 SEPT.-3 OCT. 2011

CLIENT

U.S. DEPT. OF ENERGY AND NREL