Net Zero Tiny House Trailer Team 1

Overview
The PSU Community Garden and Permaculture Learning Garden Club expressed a need for a meeting location in close proximity to their garden, located by the Morningstar Home. This home was specified to fit in with the aesthetics of the Center for Sustainability while highlighting sustainable use of space and use of reclaimed materials.

Objectives
The set goal for completion was to have a design for the tiny home, calculate the load, provide electrical drawings for an off-grid system, develop a rain catchment system, and to have reclaimed materials chosen to incorporate into the design. Not only were we able to complete these goals, but we designed a framing plan and began construction of the tiny home, surpassing the objectives fit inside the scope of the project.

Approach
- Met with Dr. Riley to discuss scope of project and customer needs
- Began research on the concepts mentioned for the needs to ensure proper execution
- Conducted research on existing energy efficient or net-zero tiny homes and initiated SketchUp Designs
- Visited Dr. Riley for design concept meetings to condense designs
- Generated a framing plan and floor plan of the final design
- Assembled a small, balsa wood prototype before constructing the full scale tiny home
- Designed variations of a one-line electrical schematic to model the solar power connections
- Did an electrical load and resource analysis to ensure that the tiny house will be Net Zero.
- The results were confirmed using System Advisor Model (SAM), a modeling software

Outcomes
- The sponsor gained insight on how to efficiently conduct the process of student designed tiny homes
- The project initiated a partnership with the Habitat for Humanity and ReStore so that the sponsor can continue building these tiny homes while utilizing reclaimed materials
- The project will serve as a meeting place for the PSU Community Garden and Permaculture Learning Garden this fall
- The project will serve as a learning device to promote sustainable living and the use of reclaimed materials