

## **SE CERT Meeting Summary**

### **Melva Lind Interpretive Center @ Gustavus Adolphus College in St. Peter**

### **October 21, 2008**

**Attendees:** Bob Schabert, Nick Landherr, Jim Dontje, Bob Johnson, Roger Wacek, Susan Waughtal, Anne Morse, Katy Wortel, Lissa Pawlisch, Patrick Santelli and Pam Bishop.

The group met at Gustavus Adolphus College's lovely Melva Lind Interpretive Center (part of Arboretum: <http://gustavus.edu/arboretum/map.php>). The Melva Lind Interpretive Center houses the Johnson Center for Environmental Innovation – where James (Jim) Dontje, our host, serves as Director. Read more about the Center here:

<http://gustavus.edu/epep/learnMore/index.cfm?story=106>.

Jim gave the group an in-depth tour of a solar thermal system he's currently working on near campus. He had installed his own solar thermal system at his home in Kentucky, and has also installed one on his home in St. Peter. He's interested in collective financing structures for solar that would sell the solar energy as opposed to the solar system itself – like at Laundromats or other community institutions.

#### **The Solar Thermal Installation Visit**

See pictures here:

<http://picasaweb.google.com/LissaPawlisch/SoutheastCERTSolarthermalTourAtGustavus#>

Jim is installing a solar thermal system to help the homeowners supplant a portion of their hot water heating load (for both water heating and space heating). They're currently doing all their heating with propane and the energy costs are adding up. This installation will serve as a "pre-heat" device and will actually do most of their water heating (a typical system might only do 50-75% of the required water heating) because it has a large thermal storage system and may get higher efficiencies. It will do will heat the home via a heat exchanger (and base board heaters) that kicks on before the standard heating system. The standard heating system will only come on if the solar thermal system needs help maintaining the indoor temperature.

#### *The system:*

The solar system is utilizing evaluate tubes (double-walled glass tubes) from <http://www.apricus.com/> that are mounted on the south-facing side of the barn. The system itself consists of 4 collectors with 32 pipes each and 2 collectors with 20 pipes each. Since the tubes are mounted on the barn instead of the house itself, the hot water is then piped back to the house via an insulated underground piping system that enters the house in the basement. In the basement Jim has built a thermal storage box that consists of two – 60-foot coils, and provides a total of 400 gallons of thermal mass. The collectors themselves are governed by a differential controller that turns the collectors on once they are 14 degrees warmer than the tank.

Typically flat-plate collectors are used for water heating and evaluated tubes only for space heating. In this application they will be using evaluated tubes for both – although on another project he plans to do an on-site comparison of the two.

*The costs:*

- Retail for 32 collectors is \$17,000
- Wholesale is approximately \$12,000 – and that was about the cost for this system (between \$12,000 - \$15,000) because Jim is donating his labor. The labor might be ½ as much and depends on the experience level.
- Singular flat plate is approximately \$8-9,000 retail

After the collectors, the thermal storage is the most expensive.

The Minnesota Solar Hot Water Rebate is one way to buy down the costs of a system ([http://www.state.mn.us/mn/externalDocs/Commerce/MN\\_Solar\\_Hot\\_Water\\_Rebate\\_Appl\\_070308072953\\_Solar%20Hot%20Water%20Rebate%20Appl%207-08.pdf](http://www.state.mn.us/mn/externalDocs/Commerce/MN_Solar_Hot_Water_Rebate_Appl_070308072953_Solar%20Hot%20Water%20Rebate%20Appl%207-08.pdf)). It does require that projects have insurance, have a certified HVAC contractor, etc. The state is also considering requiring NABSEP certified installers (plumbers) for solar thermal projects.

Two solar thermal resources that might be of interest to others – and that Jim has used as reference guides – include:

- Solar Water Heating by Bob Ramlow with Benjamin Nusz (<http://www.arthaonline.com/bookpage.html>)
- Lessons Learned, a solar hot water manual from Tom Lane ([http://www.ecs-solar.com/tom\\_lane.htm](http://www.ecs-solar.com/tom_lane.htm))

### **Region 9 Energy Task Force**

The Region 9 Renewable Energy Task Force seeks to promote the usage of renewable energy in the region. They are currently working on a concept paper for the group to sketch out their initiatives (and to be a tool for future grant writing). As a group they are pursuing wind energy opportunities – both community wind and small-scale farm/business-scale wind.

The community wind project ideas include: two turbines @ the Gustavus campus (where they have already done wind monitoring); wind development in Wantonwan County; joint wind project among the Tri-Cities, including Courtland, who all share an administrator ... and perhaps in the future a wind turbine?

Farm/business scale ideas are geared toward 40 kW machine for high electric consumers – like welders, dairies – who might see faster paybacks given their high electric usage.

The interest in wind development has Region 9 thinking about how best to pursue technical assistance to help these projects move forward. The group realizes that wind projects are complex and hard to negotiate. Hands-on technical assistance is often what's needed to turn project ideas into project realities; they'd like to leverage technical resources to assist multiple communities at once. Meeting participants discussed several options for potential technical assistance funding, including the Rural Energy Development Initiative (<http://www.swifoundation.org/renewableenergydevelopmentinitiative.html>) and the Southern Minnesota Initiative Foundation (<http://www.smifoundation.org/>).

Another idea the group hit upon was the need for not just a technical person, but really a project guidance person – someone who can help walk communities through the “what should and/or shouldn’t we do. Folks discussed a role for “pre-development” people – like an energy ombudsman who could get communities to the point of needing a developer. Maybe the resource people could even be loosely associated with developers but help a project get from the concept stage to the “we need to hire a developer” stage. The Winona wind project utilized a model like this and has now started working with a project developer.

Lastly, we talked about the work that James is trying to do @ the Johnson Center for Environmental Innovation to really provide a knowledge base for sustainability. We talked about creating an Energy Grant University – sort of like the Land Grant University effort that could span wind, solar and more to help communities take these innovations and run with them.

Note: The Region 9 Renewable Energy Task Force meets every month @ the [Region 9 Development Commission](#), Nichols Office Location, 410 E Jackson St., Suite 400, Mankato. Phone: (507) 387-5643 or toll free (800) 450-5643. Contact [Katy Wortel](#) (507-345-4494) for information.