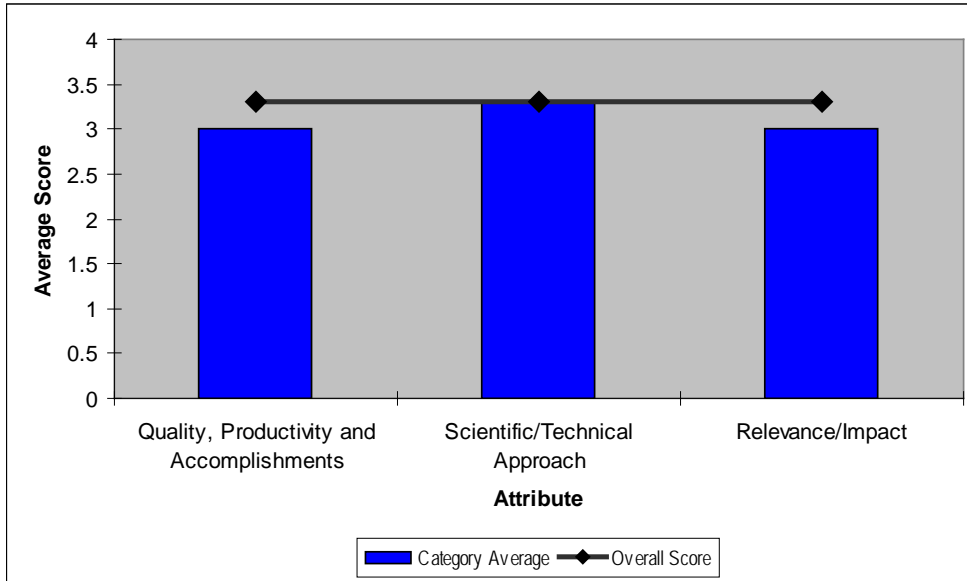


Wisdom Way Solar Village

Principal Investigator: *Anne Perkins, Rural Development, Inc. // Robb Aldrich, Steven Winter Associates, Inc.*



This project supports non-profit Rural Development, Inc. in developing Wisdom Way Solar Village. The Village is a community of ten duplexes incorporating solar energy and efficiency measures such as Heat Mirror™ windows, R40+ insulation, specially-designed heating and lighting, and ENERGY STAR™ appliances. Steven Winter Associates is providing design, energy modeling and monitoring, research, and systems integration.

Quality, Productivity and Accomplishments (Average Rating 3.0)

Rating Comments

- 2.0 The Wisdom Way Solar Village project demonstrated a fair accomplishment with respect to the resources expended, but did not demonstrate innovation.
- 3.0 As a general comment on all the projects in the demonstration program, there are no breakdowns of effort or budget by task. This makes it very difficult to assess the productivity and value of the results. This project at least has well defined goals and accomplishments. The quality of the work seems high and well regarded. The project had well defined goals and seems to have accomplished most of them.
- 4.0 Quality - This project took the time to collaborate with various teams and learn from past models (including its own prototype) to build an easy to replicate low energy home. It was impressive to see the number of people involved in making this model home a reality. This seems particularly important to a demonstration project, where the goal is to defuse knowledge to the broader building industry and public.

Productivity - It was difficult to measure the accomplishments compared to costs because the way the project was summarized. According to the materials, the 2008-2009 budget was \$787,000. With that they built two homes and roughed-out two more homes. However, did that budget also include planning and architectural labor? What is the requested budget for 09-10? Will that result in the remaining 18 homes being completed? What was the cost match? A budget table with this information would greatly improve my ability to assess productivity in this, and all, projects.

Scientific/Technical Approach (Average Rating 3.3)

Rating	Comments
3.0	<p>The technical approach was moderately rigorous. Further work should be considered in the area of site planning for solar access. Although not part of this project, a tool should be developed for helping planners to maximize the number of houses that a parcel of land could accommodate which still assuring that each house has little or no shading of its rooftop solar array.</p>
3.0	<p>This project was conducted very much in keeping with the stated goals of the Building America program. For example, they have gone to great lengths to adopt a team approach to design and implementation of the building projects. Evaluations have been conducted in a systematic way using established procedures and resources. Some of the choices seem inconsistent with the program goals. For example, one of the stated goals is to develop simple, easily built envelopes, but the double wall construction used here is expensive and demanding although quite effective. Were trade-off such as increased direct solar gain weighed against high R walls and small heaters?</p> <p>The emphasis on extremely low loss window at the expense of solar gain was also not explained or justified with simulations. Were such studies done?</p> <p>I have never been a big fan of zero energy homes and I guess I am not crazy about zero net energy homes either. The strategy seems to lead, as this one did, to vacuum bottles with PV on the top. This seems especially inappropriate in low solar resource regions like Massachusetts. What was DOE's purpose in funding the hardwood floors? Do they reduce the carbon footprint? The answer was that it was a deal between funding agencies. The floors have nothing to do with the solar program.</p>
4.0	<p>This project did an outstanding job of backing up all of the decisions and claims that went in to each home's performance. It was clear that the experience of many people went in to each of the cost-saving measures. The true proof of this was the fact that the home was heated by a single sealed combustion heater and the heat was circulated by only exhaust ventilation between the floors of the home. It was particularly useful that the project could produce an approximate incremental cost per home for the advanced energy features compared to typical code construction. While the cost was high (\$38,000 more than a typical home), at least the case could be made that (1) the brunt of that cost was from PV and could come down and (2) the home owner's \$300 per year average utility cost was a huge selling point.</p>

Relevance/Impact (Average Rating 3.0)

Rating	Comments
3.0	<p>This project does contribute to the broad DOE goal of demonstrating extremely low-energy consuming buildings affordable to people with below-average incomes.</p>
2.0	<p>I am doubtful of the impact of the project. A simple payback of 15 years does not sound compelling and the design of the homes is not appealing. I am also doubtful that PV panels are likely to appear on many New England roofs. Why not concentrate on energy efficiency in the cold climates and on building PV in sunny climates?</p>
4.0	<p>This project was very relevant to mission goals, strategy and society, at least in terms of new home construction. This project has the potential for lowering market barriers, if they can get the construction industry to listen. The tools in this project are all off the shelf and easy to replicate. There is little reason that they can't share this knowledge more broadly. The project left me wishing that they would use the down-turn in the housing market to focus on existing homes. They could bring the same quality team of actors together and, for possibly less price per home, retrofit just as many existing homes. The outcome of which would be to improve our ability to reduce energy demand on homes that are already here and have been contributing to</p>

our carbon output for years.

Overall (Average Rating 3.3)

Rating	Comments
3.0	The Wisdom Way Solar Village project does accomplish its objective of demonstrating building construction features that significantly reduce heating (by 90%) and electricity costs for homeowners of very modest homes. I consider it a good project.
3.0	Overall, this is probably the best planned and implemented demonstration project of the group reviewed here.
4.0	This project did the best of others in the March 2009 Peer Review demonstration track of truly demonstrating. Yet, even with the great reach it had in bringing people together to lend expertise, I came away wishing that they could do more to reach those in the building trades who are skeptical of high energy efficiency construction. They have a great tool to make the case that home buyers want this type of construction. They can show that the incremental cost increase will result in lower energy bills. Sales agents for these types of homes can easily demonstrate that any small increase in a mortgage payment will be more than off-set by lower energy costs. In order to make that case, however, there needs to be a comprehensive outreach and education plan. Mortgage lenders need to know that a buyer can afford these higher costs if they spend less every year on energy. Home builders need to see the market research that shows that people want these homes.