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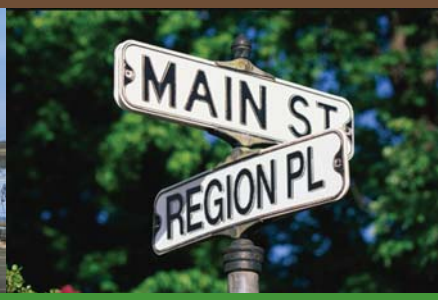


Green Light to Green Building: Regional Development Organizations are LEEDing the Way

Regional development organizations, recognizing the environmental challenges facing their region, are becoming more engaged in stewardship programs that incorporate green building practices.

When the modern green building movement first received public attention in the early 1990s, it was an unpopular venture for architects, builders and developers due to limited availability of "green" materials, which were expensive to manufacture and purchase. Today, manufacturing companies have innovative ways to reduce production costs for environmentally-friendly building materials.

"Green building will reach its tipping point by 2007 using conservative estimates… [meaning] the rest of the industry will be forced to follow, and the green homes of today will become the standard homes of tomorrow," says Harvey Bernstein, Vice President of McGraw Hill Construction. Factors such as rising energy costs, resource constraints, health concerns and environmental awareness contribute to the growing interest surrounding green building. At the global level, green building practices are intended to reduce energy demand and decrease the production of pollutants that cause global warming. At the regional level, green-built housing can potentially stimulate the local economy by using area resources for construction.

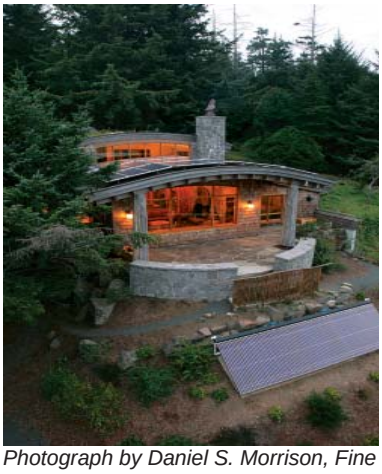

Photo courtesy of Solar Santa Monica

Green building can benefit rural areas faced with increasing demand for affordable and cost-efficient housing. Regional development organizations (RDOs),[1] recognizing the environmental challenges facing their regions, are becoming more engaged in stewardship programs that incorporate green building practices. In a growing number of regions, RDOs have created new practices and processes designed to reduce the size of their community's footprint on the environment by adopting new building concepts that create healthier, more efficient, and more environmentally-conscious industrial, commercial, municipal and residential construction methods.

Affordable green building represents a more focused endeavor from the general green building movement. Green-built homes provide struggling families with the opportunity to live in healthy structures where heating and cooling expenses cost a fraction of the price of traditional housing. According to the Housing Assistance Council (HAC), the sustainable housing trend stems from the overlap of three elements: affordability, concern about the natural environment and attention to developing marketable green building practices.

NADO Research Foundation

Green building represents a new mindset that addresses all of the components involved in developing a truly environmentally sustainable structure. The practice not only involves the materials used to build new construction or renovate current buildings, but the manner in which the buildings are completed, the design and location of the building, the landscaping surrounding the finished product, the water management involved in the construction and operation of the building, and the reuse or disposal of waste upon completion.



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How Green Saves Green

Developing a house or building is expensive enough as it is -- why would anyone want to incur higher costs to install environmentally-friendly fixtures and appliances? The common misconception is that building green always costs more. Certainly, it is possible to install components that increase green building costs, but there are also inexpensive alternatives.

During the design phase, there is a period when adjustments to the site orientation and window placement can provide greater energy efficiency at little or no cost to the owner. These are referred to as "no (or low) first cost" changes. Other sustainable systems that may cost more in the design phase, such as an insulated shell, can be offset by the reduced cost of a smaller mechanical system. This concept is known as "right sizing" of infrastructure and mechanical systems.

The "life-cycle cost method" is another way to realize green building savings. Energy and resource efficient appliances may seem to cost more initially, but they are far less expensive when compared to traditional methods of lighting, heating and cooling over long periods of time.

LEED-Certified Building

The United States Green Building Council (USGBC) promotes innovative and environmentally responsible building standards through its Leadership in Energy and Environmental Design (LEED) program. This rating system encourages high-performance, sustainable building development. LEED standards provide guidelines for developing and maintaining almost every type of structure at any point in its lifecycle, from idea inception to building completion. LEED provides guidelines that cover the full range of construction types: residential, commercial, industrial, retail, educational and municipal development, from single building design to entire neighborhood layouts.[2]

To meet LEED certification and receive a rating, candidates must complete the application process and register their projects with USGBC. Based on the number of prerequisites the project meets, it will receive points toward certification. Depending on the number of points received, a project may be awarded a Silver, Gold or Platinum certification. Anyone involved in the development and construction of a new building, complex or community can apply for LEED certification.

USGBC currently has approximately seventy-five local LEED chapters across the country, providing access to LEED personnel and information. Between 2000 and 2005, over 2,000 projects were registered with USGBC seeking LEED certification, and over 20,000 professional entities are now LEED accredited.[4] These accredited professionals

Metropolitan Initiatives Modified for Rural Needs

As part of a cross-county initiative to promote and develop environmentally responsible construction, the Master Builders Association (MBA) of King and Snohomish counties in Washington developed the Built Green program as a separate entity from the USGBC's LEED certification to better emphasize water protection, energy efficiency, health and air quality, materials efficiency and environmental sustainability. Seventeen percent of all new construction in King and Snohomish counties met the Built Green criteria.[3]

demonstrate the skills and expertise needed to participate in the green building design process. The continuous growth of membership and applications demonstrates the rising popularity of green building both in metropolitan and rural areas nationwide.

From Energy Crisis to Resource Depletion: One COG's Approach to Environmental Stewardship

SEDA-Council of Governments (COG) wants its Central Pennsylvania region to be recognized as a prosperous center for efficient and renewable energy technology and expertise.

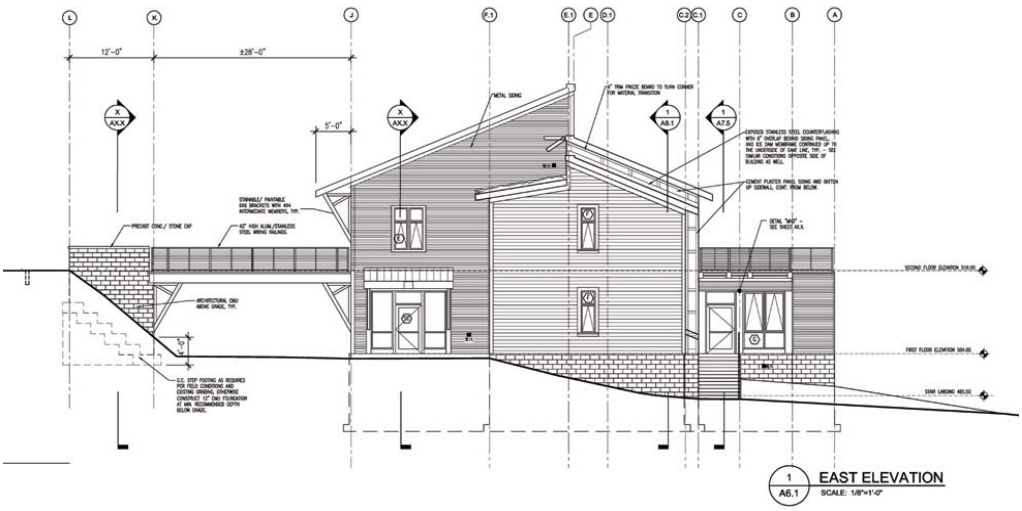
"SEDA-COG's involvement with green building and environmental stewardship stems from our reaction to the 1973 oil crisis, which left us with inflated gas prices and a new understanding of our natural resources," reports Dennis Robinson, SEDA-COG's Executive Director. "Back then, it was much more a matter of dollars and cents than it was about public health and safety." Today, SEDA-COG is constructing a 14,000 square foot green building at its office complex in Lewisburg, Pennsylvania. The high-performance office building will be the first of its kind in SEDA-COG's 11-county region. Robinson says the project will exemplify the economic and environmental value of green building practices.

The Built Green program includes guidelines for renovating current homes. MBA recommends the following:

- Improve health quality and remove harmful irritants by improving the ventilation throughout the home and replacing carpeting with hard surface flooring
- Purchase appliances with the Energy Star logo
- Replace aging windows with energy efficient and double-paned windows
- Reduce water bills by replacing older showerheads and faucet fixtures with ones that use fewer gallons of water per minute and do not drip when the water is shut off

(Source: Master Builders Association)

Since the crisis, energy conservation has remained a priority at SEDA-COG. Intent on helping residents accomplish more with less, SEDA-COG has proven that cost-saving can be synonymous with environmental reform. Begun as a home improvement program in 1976 designed to help low-income households increase energy efficiency and reduce utility costs, it has become a region-wide effort to encourage green building and promote environmental awareness that will lead to long-term financial benefits throughout the community.



SEDA-COG's green building has been designed to meet gold LEED rating for its integration of several environmentally sustainable technologies. The building has been strategically angled to take advantage of morning and evening solar exposure for light and heating purposes.

SEDA-COG's green building has been designed to meet gold LEED rating for its integration of several environmentally sustainable technologies. The building has been strategically angled to take advantage of morning and evening solar exposure for light and heating purposes. The complex will utilize photovoltaic electricity generation for artificial lighting and other electrical needs. Panels located on the roof of the building will collect sunlight and store the energy in batteries for electrical use in the evening. Solar-powered

heaters will provide hot water for the entire building. Geothermal heating and cooling will be utilized for air conditioning throughout the entire complex. Geothermal technology incorporates heat pumps that use earth energy sources to supply direct heat to buildings and is the most efficient technology currently available for heating and cooling. Geothermal heat pumps are actually net producers of energy, delivering three to four times more energy than they consume.[5]

Originally expected to be self-financed, SEDA-COG received a $442,000 grant from the Pennsylvania Department of Environmental Protection in October 2007 to help shoulder the $2.7 million price tag associated with the project. The building will accommodate meetings and staff expansion, but the primary feature is a 50-person training facility that will be used as a "living" classroom for SEDA-COG's Energy Resource Center (ERC). Tours and training will target architects, engineers, builders, code enforcement officers, developers and government officials. The purpose of the ERC is to provide education, outreach and technical assistance to its diverse clients in the areas of energy efficiency and renewable technologies.

Staff of the ERC partnered with colleges and universities in the region to research and develop initiatives for other environmentally sustainable processes and technology. This benefits students who desire opportunities to apply their academic knowledge to real situations. The community benefits because students and faculty provide the background research and implement the practices while enjoying new green building programs without suffering any financial burden. The ERC provides profitable examples for application in the areas of business, education, healthcare, government and residences. The anticipated success of the resource center will hopefully encourage the shift towards cost-saving, energy-conserving and pollution-reducing technologies and practices throughout the region.

Recycling Cardboard and Plastic Bottles to Build a COG's Office

With a $40,000 grant from the Mark Twain Solid Waste Management District, the Mark Twain Regional Council of Governments built an office building designed almost completely from recyclable materials. Headquartered in Perry, Missouri, the council uses the building as their administrative headquarters. It is approximately 2,400 square feet, includes a full kitchen, large open rooms, offices, bathrooms, and a furnished basement. The exterior walls are made of styrofoam blocks filled with fly ash, a by-product from the combustion of coal in electric-generating plants that is added to concrete to make it stronger, air-tight and ultimately more energy-efficient. To reduce window costs, area window manufacturers provided irregular or flawed glass. Inside, PET (polyethylene terephthalate) carpeting, made by DuPont, was used as flooring and is made predominately from plastic - particularly recycled soft drink and rigid containers.

Mark Twain Regional COGs recycled facility.

The interior doors, as well as the porch extending from the front of the office, resemble wood, but are a blend of recycled plastic and cardboard. Reused barn siding covers the interior walls of the main conference room. The sidewalk consists of individual tiles made from recycled tires and feels like the rubber used on high school race tracks. The driveway, made of millings (recycled pavement), was donated by the Missouri Department of Transportation. Even though the facility does not utilize any green-building techniques for lighting, heating and cooling, utilities still cost only eighty dollars a month. The insulation techniques used throughout the building maintain a constant temperature, requiring less dependence on air-conditioning units, which operate less often and with reduced demands on electricity.

Mark Twain Regional COG has made the research available to the public for anyone interested in replicating the process.

Robin Fitzgerald, Executive Director of the Mark Twain Regional COG, believes that the overall experience has been tremendously rewarding, but she also recognizes some of the challenges when implementing green building practices. She states, "The great thing about this building is that you would never think, just from looking at it, that it was built almost completely from recycled or reused materials, green materials. It looks exactly the same as any other building created for this use." She admits that Mark Twain Regional COG experienced some difficulty keeping costs down when attempting to locate materials locally. The building's total construction costs were $90,000. Fitzgerald believes that the frustrations from trying to find materials pale in comparison to the educational experience obtained from this endeavor.

At the global level, green building practices are intended to reduce energy demand and decrease the production of pollutants that cause global warming. At the regional level, green-built housing can stimulate the local economy by using area resources for construction.

Mark Twain Regional COG has made the research available to the public for anyone interested in replicating the process. Citizens also visit the COG's municipal building to see a fully functional green building. Fitzgerald offers this advice for anyone attempting a green housing project, "one must be patient when looking for materials. For us, the Internet served as an excellent source of information."

Challenges Facing Green Building

Challenges to adopting permanent green processes remain. Green building is a fairly new and abstract building strategy, and research regarding how green building actually benefits individuals, businesses and communities is somewhat speculative. There is a stigma among housing developers and financial supporters that building green costs more than conventional methods of construction. The desire to develop and implement long-term green building policies is plagued by stakeholders not convinced of the environmental urgency in reforming building practices or the benefits of sustainability and environmental responsibility. Many builders and developers also fear that the time and energy required to learn about these practices will extend deadlines. Green building initiatives severely lack funding from all levels of the government. However, current trends suggest that these initiatives for change begin at the regional and state level.

Important Residential Building and Remodeling Tips:[6]

- Choose (or request builders to select) materials such as siding, roofing and decking that have 30- to 50-year warranties and purchase those materials from locally-sourced businesses
- Select elevated sites to protect the finished structure from runoff and water damage
- Angle the home to maximize solar exposure to naturally heat and light the home
- Keep building materials elevated and covered to protect them from damage, reducing the release of toxins into the oil and groundwater due to storm-water runoff
- Consider which materials could be reused or recycled once project is completed

Regional development organizations throughout the country are expanding green building programs in their regions and are reaping the rewards from their practices. These RDOs realize that using green construction methods is an investment toward the savings realized in reduced energy consumption, savings realized from averting clean-up efforts to contaminated land, and savings from improving quality of life by reducing healthcare costs. Through the partnerships developed between regional organizations, local governments and area academic institutions, research and development in the area of green-building practices continue to grow and improve. As long as citizens are willing to support funding for these partnerships, green building can further compliment conventional means for public and private construction.

Green Building Resources

A large and growing library of information presents resources on affordable, successful and efficient sustainable development for rural communities throughout the country.

- The Environmental Protection Agency provides information to state, local and regional governments on how to secure funding for green building programs. www.epa.gov/greenbuilding/tools/funding.htm
- The U.S. Green Building Council provides practices and processes for transforming the way buildings and communities are designed, built and maintained, championing environmentally responsible methods. Members gain additional access to information, workshops and conferences, as well as discounts on LEED programs and publications. www.usgbc.org/
- The Sustainable Communities Network is focused on highlighting broader sustainable living practices, including green building, for both rural and urban communities. It offers case studies of successful practices implemented across the country. www.sustainable.org/index.html
- The Housing Assistance Council recently published a report (May 2007) in response to a roundtable discussion of various public and private policymakers and stakeholders from April 2006. This report highlights affordable green building practices and techniques for rural communities and regions. www.ruralhome.org/manager/uploads/GreenBuildingReport.pdf
- *Rural Voices*, a quarterly publication of the Housing Assistance Council, developed an entire issue on "Rural Housing Goes Green." www.ruralhome.org/manager/uploads/VoicesFall2005.pdf
- The Minnesota Pollution Control Agency represents a statewide initiative to promote green building practices. The agency focuses on building private and government partnerships to facilitate the adaptation of LEED programs across the state. www.pca.state.mn.us/oea/greenbuilding/index.cfm
- Austin Energy Green Building offers both private homeowners and business professionals information on design and construction for building new homes or renovating existing ones to create living conditions that are more healthy, energy-efficient and environmentally friendly. www.austinenergy.com/Energy%20Efficiency/Programs/Green%20Building/index.htm

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[1] The national network of 520 regional development organizations are known locally by various names: regional councils of government, regional planning commissions, economic development districts, local development districts and planning and development districts.

[2] U.S. Green Building Council, Leadership in Energy and Environmental Design, www.usgbc.org/DisplayPage.aspx?CategoryID=19, accessed June 24, 2007.

[3] Master Builders Association of King and Snohomish Counties, Built Green: Frequently Asked Questions, www.builtgreen.net/faqs.html, accessed June 27, 2007.

[4] Kudlowitz, Mark, Affordable Green Building in Rural Communities, Housing Assistance Council, May, 2007, www.ruralhome.org/manager/uploads/GreenBuildingReport.pdf, accessed June 24, 2007.

[5] King County, Washington, Rural Green Building Brochure, http://dnr.metrokc.gov/wlr/cao/pdf/RuralGreenBuilding.pdf, accessed June 27, 2007.

[6] www.climate.org/topics/green/geo.shtml

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