

## BUILDING IT GREEN

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The term “building green” has become a buzz word in the residential construction industry. Developers, contractors, and manufacturers are selling it and home owners are beginning to expect green alternatives. But just what *is* building green?

Amongst the various programs established to help home buyers design or purchase green homes, a certification program called LEED (Leadership in Energy and Environmental Design) has emerged in the last few years. Under this, log home builders have a role to play in helping their clients certify their homes.



LEED for Homes is a national third-party certification system measuring the green performance of a home in 8 different categories including: innovation and design, location and linkages, sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental control, and education and awareness.

Home owners can build or purchase homes that meet 4 different standards: Certified (45-59 points), Silver (60-74 points), Gold (75-89 points), Platinum (90-136 points). The Certified standard is the easiest and the Platinum is the most difficult to obtain.

According to Alyssa Nunes at the Canada Building Green Council, the LEED for Homes program is rolling out across Canada next year (Spring 2009). Currently, however, LEED for Homes projects can be registered through the U.S. Green Building Council. Right now there are 50 pilot projects under review in Canada and many professionals are being accredited to allow them to review future projects.

It is important for log home builders to align themselves with team members with accreditation in the program. Designers and general contractors tend to take the leadership role in helping homeowners decide which points they want to obtain under the system. Some of the issues log home builders will need to track during the design phase may include the following:

**Innovation and Design.** A log home builder’s participation is not limited to the log work. It’s important to participate in design think sessions and contribute alternative ideas. For example, you can add up to 17 points to a LEED project by constructing a green roof for your client.

**Material Selection.** In some homes, clients will push for many LEED points with good material selection. As a log builder, you may be asked to procure Forest Stewardship Council (FSC)-certified wood and document the percentage of recycled content in all building materials you use. Requested or not, make sure to buy your stains, adhesives and sealants from suppliers whose products have low VOCs (volatile organic compounds) content.

**Heating, Cooling and Energy Demand.** The LEED for Homes program promotes the use of a variety of energy sources such as geothermal, heat pumps, solar panels, wind turbines, and water turbines; efficiencies such as Energy Star appliances and furnaces, timers and electronic controls, and on-demand hot water tanks; architectural and engineering features such as vegetation for shade and windbreaks, living walls and roofs, day lighting, extra insulation, and passive solar gain.

A log home builder should think about how any venting or mechanical systems related to green technologies influence their log work. Also, consult the structural engineer early on to see if larger diameter ridge poles and purlins are needed to support the additional dead load of roof mechanical systems, solar panels or green roofs. In the interest of further energy conservation, and as a log home builder, you may also recommend larger logs for greater R-values in the walls, along with sheep’s wool and log-specific gasketing in the laterals.

Dennis Anderson of Anderson Custom Homes in Evergreen, Colorado, encourages his clients to find the right mix of energy sources and conservation techniques which meet their budget and the site's characteristics. Dennis says that "it's important to first find the low hanging fruit". The latest renewable energy technology may not be best for the site. For example, solar panels are well-suited for housing on South facing slopes, but not necessarily those facing south. It's best to look first at using trees for shade, as well as facing the house to take advantage of passive solar energy, and utilizing walk out basements for creating natural cooling.

**Indoor Air Quality.** The intent here is to improve the overall quality of a home's indoor environment by reducing the creation of, and exposure to, pollutants. You can do this by prohibiting urea-formaldehyde resins and protecting all materials from moisture.

**Sustainable Sites.** Under the LEED for Homes system the contractor must limit disturbances to the site to avoid long-term environmental damage. So before the log work arrives, make a plan with the contractor or client. While on site, limit your work area to a maximum of 40' from building face and 5' from roadways. When you leave a building site, be sure to clean up and remediate all your materials and equipment.

**Waste Management.** Another goal of the LEED for Homes program is to divert construction waste from landfills. You may be asked to document costs and to separate and dispose of construction waste and build with reused or salvaged materials. To minimize societal waste overall, source salvaged and refurbished products, tools and machinery. You will need to establish a strategy, enforcement program, sorting area, identify qualified handlers and haulers and collect monthly way slips for what you dispose.

In addition to supporting the overall LEED certification, log home builders can directly contribute points through their own efforts. Some of these may include:

- Obtain a FSC chain-of-custody (CoC) certification (2 points).
- Certify yourself as a LEED Accredited Professional (1 point).
- Be apart of the integrated project team by being involved in the various project phases (1 point).
- Help the project team ensure the building is oriented for solar design (1 point).
- Provide the project team with a durability plan for your logs and timbers. This should include an inspection list, address moisture control issues and contain strategies for maintenance, such as re-staining, recommending an approved, low VOC stain (contributes to 2 points).
- Discuss with the project team strategies for innovative or regional design. This may include increased roof overhangs for greater log protection. (Each approved ruling for innovation is worth 1 point with up to 4 points available.)
- Minimize disturbance area of the building site. This may include a strategy for re-erection of the log or timber package to minimize the crew's and crane's disruption to the site and surroundings, and may include "no-disturbance" zones (1 point).
- Use non-toxic pest control methods (Each worth ½ point):
  1. Keep all wood 12" above soil.
  2. Seal external cracks and joints with caulking and install pest-proof screening.
  3. Include no wood-to-concrete connections, or separate connections with dividers.
  4. Ensure mature plants are 24" away from home and logs or timbers.
  5. Treat wood-based material with borate product to 3' above foundation.
  6. Provide a detailed cut list of log or timber package order (1 point).
- Reduce your construction waste and cuttings using one of the following formulas (Up to 3 points):
  1. Pounds waste per square foot.
  2. Cubic yards waste per 1,000 square feet.
  3. Percentage of waste diverted.

## "Greening" the BC Building Code

Changes to the BC Building Code,  
Effective September 5<sup>th</sup>, 2008

### 1. *Energy Efficiency Requirements for Single Family Houses and Smaller Multi-Family Residential, Commercial and Industrial Buildings*

Insulation standards for houses and multi-family residential buildings under five stories have changed. There are new insulation standards for small commercial and industrial buildings.

For housing, builders can choose to achieve an EnerGuide rating of 77 as an alternative to meeting the insulation requirements.

### 2. *Energy Efficiency Requirements for High-Rise Multi-Family Residential Buildings and Larger Industrial, Commercial and Institutional Buildings*

Larger buildings must meet the American Society of Heating, Refrigeration and Air-Conditioning Engineers 90.1(2004) standard. ASHRAE 90.1 is an internationally recognized standard for energy efficiency in buildings.

### 3. *Water Efficiency Requirements*

Ultra low-flow toilets (6 L) and other water-saving plumbing fixtures and fittings will become mandatory in new construction and renovations.

For details on the new requirements, please visit [www.housing.gov.bc.ca/building/green/index.htm](http://www.housing.gov.bc.ca/building/green/index.htm) ■



- Insure an adequate lateral groove in log walls adjacent to or dividing the garage from the home and seal all cracks. Also insulate and gasket ALL laterals. This is to provide adequate garage pollutant protection, increase insulation values and reduce envelope air leakage (potentially 5 points total).
- Enhance public awareness. This can be through your web site by providing a list of the features and benefits of LEED homes as well as access to your durability plan. You can also encourage the home owner to hold an open house and display LEED signage on the exterior of the home. You may also want to consider pursuing media outlets to publish an article on the project.

The LEED for Homes program does require in-depth documentation. If the project claims a point in any category, it must have the paperwork to prove it. Assembling the necessary documentation is an ongoing effort and cannot be postponed until the end. It may seem daunting at first, but it quickly becomes routine. As a log home builder, be sure to get involved directly, keep a trail of compiled evidence, and maintain photo records. It is important to be aware of how your actions fit within the overall strategy. Also be sure to record and document any staff time and cost associated with LEED efforts.

The LEED for Homes system is but one of a few emerging standards that building professionals will become accredited in. Some of the others include Built Green and Energy Star. Additionally, there are more than 70 highly regarded local or regional green building programs. If you want to take the next step toward LEED Certification we suggest you go to [www.usgbc.org/LEED/homes](http://www.usgbc.org/LEED/homes) and familiarize yourself with the rating system.

Builders who wish to register a project should connect with a LEED for Homes provider or LEED Accredited Professional (LEED AP). You will also need to sit down with the client, the architect or designer, general contractor and LEED AP to determine your green goals and which credits are aligned with your project. Your goals should include which level of certification you want to achieve and which points you will pursue in order to meet the credits necessary for the desired level of certification. A LEED for Homes Provider or LEED AP is an integral part of your team as they will be responsible for overseeing performance testing and compliance with the system. They will also oversee the project and ensure it is built according to the stated goal.

—This article is the result of a dedicated volunteer team effort. Aaron Moore (Brian Moore Log Homes), as LTBI joint Marketing Chair (with Richard Shatto, Calico Log Inc.) provided the impetus and the editorial oversight for this project, in heavy consultation with Kevin Simoes (Streamline Design Ltd.), who also did much of the writing. Kevin's knowledge and experience were invaluable in making LEED relevant to our industry. Colin Williams helped with the final edits.

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## Benefits of Green Building

### Environmental benefits:

1. Protect ecosystems and biodiversity
2. Improve air and water quality
3. Reduce solid waste
4. Conserve natural resources

### Economic benefits:

1. Reduce operating costs
2. Enhance asset value and profits
3. Improve employee productivity and satisfaction
4. Optimize life-cycle economic performance

### Health and community benefits:

1. Improve air, thermal, and acoustic environments
2. Enhance occupant comfort and health
3. Minimize strain on local infrastructure
4. Contribute to overall quality of life

Source: US Green Building Council  
[www.usgbc.org](http://www.usgbc.org) Home/ Resources/  
 Green Building Research ■

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