



Helping Communities face the challenges and impacts of growth while maintaining their character and sense of place.

Green Building ~ an overview

What is Green Building?

When we think of “green building,” we often focus on the structure’s energy source and imagine a building that utilizes solar panels or perhaps wind turbines. But true green building goes much deeper than that. It utilizes processes that are resource efficient to create structures that are themselves environmentally responsible. Green building practices span the entire life cycle of a structure, from its siting, design, and construction, to maintenance, renovation, and demolition. Any type of building can be a green building, including homes, schools, offices, commercial space, and healthcare facilities.

iTRaC is the Nashua Regional Planning Commission’s new approach to community planning that focuses on integrating transportation, land use and environmental planning. The program was developed to assist communities in dealing with the challenges of growth in a coordinated way that sustains community character and a sense of place.

Green Building Checklist

- ✓ Site considerations (location, size, solar gain)
- ✓ Reuse & recycling of materials
- ✓ Exterior building materials (paint, decking, foundation, roofing, siding)
- ✓ Flooring
- ✓ Paint & wallpaper
- ✓ Heating and cooling
- ✓ Insulation
- ✓ Windows
- ✓ Lighting
- ✓ Appliances
- ✓ Plumbing
- ✓ Indoor air quality
- ✓ Landscaping
- ✓ Stormwater management
- ✓ Alternative energy (biodiesel, geothermal, fuel pellets, solar, wind)



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Why Build Green?

Green buildings benefit more than just the environment—they can also improve human health, save money, and positively influence the community. The potential benefits of green buildings are far reaching and include:

Environmental Benefits

- ▲ Enhanced and protected biodiversity and ecosystems
- ▲ Improved air and water quality
- ▲ Reduced waste streams
- ▲ Conservation and restoration of natural resources

Economic Benefits

- \$ Reduced operating & maintenance costs
- \$ Improved occupant productivity
- \$ Optimized life-cycle economic performance
- \$ Relatively similar up-front costs
- \$ Create, expand, and shape markets for green products & services

Consider this...

In the US, buildings account for:

- ✖ 39% of total energy use
- ✖ 12% of total water consumption
- ✖ 68% of total electricity consumption
- ✖ 38% of total carbon dioxide emissions

Source: US EPA

Social Benefits

- ◆ Enhanced occupant comfort and health
- ◆ Heightened aesthetic qualities
- ◆ Minimized strain on local infrastructure
- ◆ Improved overall quality of life

Green Building Certification

Green building certification provides a method to document and demonstrate energy and environmental initiatives taken in the design, construction, and operation of a facility. While green elements can be added to any building, certification provides a measure of quality and a process to ensure that results have been achieved. At the same time, the process of applying for certification can be costly and time consuming. As a result, some building owners choose instead to put registration fees and costs towards additional green measures rather than towards receiving certification. There are a number of green building certification programs, however, Energy Star and LEED are among the most widely recognized.

Energy Star labels appear on a variety of energy efficient products, including buildings. Energy Star labels are earned on a yearly basis for buildings that achieve a Portfolio Manager rating of 75% or higher and are validated by a Professional Engineer. Portfolio Manager is a free, online energy management tool and is administered along with Energy Star through the Environmental Protection Agency. Building types that can receive certification through Energy Star are limited to banks/financial institutes, courthouses, hospitals, hotels, houses of worship, K-12 schools, medical offices, municipal wastewater treatment plants, offices, residence halls/dormitories, retail stores, supermarkets, and warehouses. For more information visit www.energystar.gov.



LEED, which stands for Leadership in Energy and Environmental Design, is an internationally recognized third-party certification program for the design, construction, and operation of green buildings. LEED rating systems are available for new construction, operating and maintenance of existing buildings, commercial interiors, new core and shell construction, schools, retail, healthcare, homes, and neighborhood development (currently a pilot program). Points are earned in the categories of sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. Based on the number of points earned, a rating of “certified,” “silver,” “gold,” or “platinum” may be achieved. LEED is administered by the US Green Building Council. For more information, visit www.usgbc.org.



Green Buildings in NH

Green buildings come in a variety of shapes and sizes and serve many uses. There are a number of green buildings throughout NH covering a diverse range of interests. They are owned and operated by local government, private businesses, non-profits, universities, and even the military. There are currently 28 LEED certified buildings in NH; a complete list can be found at www.usgbc.org/LEED/Project/CertifiedProjectList.aspx. There are also 30 Energy Star labeled buildings, which can be searched at www.energystar.gov/index.cfm?fuseaction=labeled_buildings.locator.

Case Study ~ Portsmouth Public Library

When the new Portsmouth Public Library opened its doors in Dec. 2006, it became the first municipal building in NH to earn LEED certification. It was recognized for its construction and design in the areas of energy conservation, recycling, materials selection, and daylight utilization.

The library, which achieved a LEED Silver rating, was designed to operate at 32.8% lower energy consumption than comparable buildings constructed to code. Although the new library is 116% larger than the old building and is opened longer hours, it used 66.7% less natural gas for heating, resulting in a \$20,000 savings. The Library's "green" elements extend outside of its walls to its surrounding landscape, which features native trees and shrubs selected by the Portsmouth Garden Club.



The library is the centerpiece of the community and since its opening visitation, circulations, and program participation have dramatically increased. The Portsmouth Public Library was built by North Branch Construction and is located at 175 Parrott Ave. It is one of many energy efficiency and conservation efforts in Portsmouth, which include replacing lighting in the High-Hanover Parking Garage with compact fluorescent fixtures, a new drinking water treatment plant, and new fire substation. To learn more about sustainability initiatives in Portsmouth, visit www.cityofportsmouth.com/sustainability/index.htm.

LEED Gold Certified buildings in NH

- French Wing Addition, SPNHF Conservation Center ~ Concord
- McLane & Fahey Hall, McLaughlin Cluster Residence Hall, Dartmouth College ~ Hanover
- AVA Gallery & Art Center ~ Lebanon
- NH Audubon McLane Center ~ Concord
- Langdon Woods ~ Plymouth
- Liberty Mutual Office Building ~ Dover
- Morgan Stanley, 1000 Elm St ~ Manchester

LEED Certified buildings in NH

- St. Paul's School Athletic & Fitness Center ~ Concord
- Joint Force Headquarters, NH National Guard ~ Concord
- Concord Hospital ~ Concord
- Stop & Shop stores ~ Bedford, Hudson, Manchester, Milford

LEED Silver Certified buildings in NH

- Phillips Exeter Academy Center ~ Exeter
- Primex Addition ~ Concord
- Portsmouth Public Library ~ Portsmouth
- Kemeny Building & Halderman Center, Floren Varsity House, at Dartmouth College ~ Hanover
- Keene State Residence Hall ~ Keene
- The Children's Museum of NH ~ Dover
- North Branch Construction Corp. Headquarters ~ Concord
- Timberland ~ Salem

Energy Star Labeled Buildings in the Nashua Region

- Kohl's Department Store, Nashua
- Courtyard by Marriott, Nashua

Supporting Legislation

New Hampshire has several statutes that underline the State's support and commitment to energy conservation and efficiency.

- **RSA 674:17 I (j)** - encourages the use of solar, wind, or other renewable energy systems. When these zoning provisions are combined with enabling legislation for performance standards under RSA 674:21 I (h), communities can develop a comprehensive zoning article that provides incentives to developers in exchange for meeting a number of energy efficiency performance standards.
- **RSA 674:36 II (k)** - lays the groundwork for the protection of energy sources through the establishment of lot standards, street orientation, and other requirements.
- **RSA 674:44 II (i)** - when supported by the Master Plan, communities may also include energy efficiency language in their site plan review regulations as allowed as an innovative land use control.
- **RSA 72:61-72** - allows municipalities to adopt property tax exemptions for property owners that have installed solar, wind-powered, or central wood heating energy systems on their property.

To view the RSAs in their entirety, visit www.gencourt.state.nh.us/rsa/html/indexes/.

For more information about energy efficiency codes and ordinances in NH visit www.nhenergy.org/index.php?title=Energy_Efficiency_Ordinances_and_Codes:



Resources

A Guide to Residential Green Building in New England ~

<http://www.epa.gov/region1/greenbuildings/residential/pdfs/guide08.pdf>

EPA New England Green Building Resources ~ <http://www.epa.gov/region1/topics/envpractice/gbuildings.html>

US EPA Green Building ~ <http://epa.gov/greenbuilding/>

Energy Star ~ www.energystar.gov

US Green Building Council ~ <http://www.usgbc.org/>

Green Home Guide ~ <http://www.greenhomeguide.com/>

NH Sustainable Energy Association ~ <http://www.nhsea.org/resources.php>



For more details on this topic or an overview of the entire iTRaC program, visit www.nashuarpc.org/itrac or contact Jill Longval at jill@nashuarpc.org or 603-424-2240 x27.



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