MAPLE RIDGE
British Columbia

Deep Roots
Greater Heights

Green Buildings

Promoting Green Buildings in the Local Government Context

FOUNDATION RESEARCH BULLETIN

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INTRODUCTION

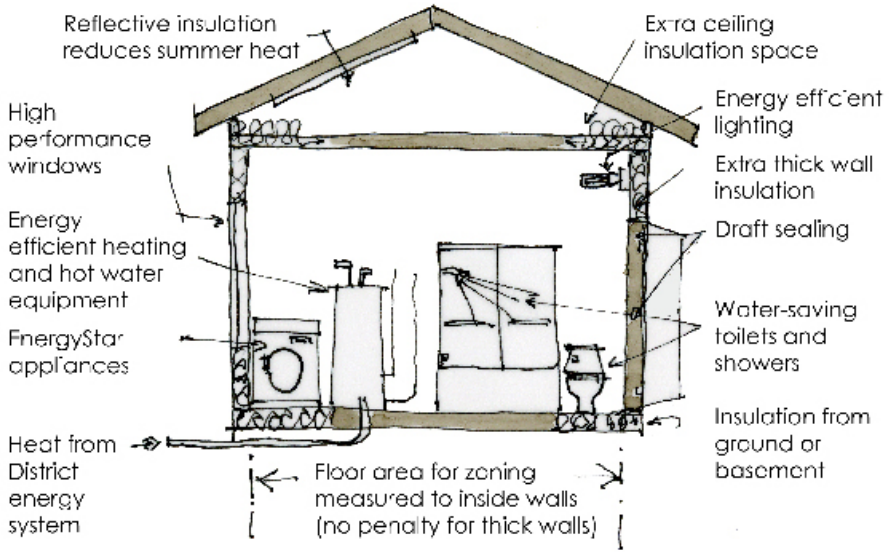
1.0 What are Green Buildings and why are they important?

People across the nation and throughout the world are becoming more and more concerned about efficient energy use and reduced green house gas emissions. Residential space heating and cooling, water heating and the operation of appliances, electronic equipment and lighting account for approximately 17 per cent of BC's secondary energy use. In 2005, space heating of buildings resulted in about 28 per cent green house gas emissions for the Lower Fraser Valley—the second highest contributor to the use of cars and light trucks (at 32 per cent). People across the province are recognizing the importance of energy efficiency as it relates to new site development and construction and renovation of all building types. Site development and building that incorporates improved energy efficiency and other measures to reduce environmental impacts is known as "green building."

By definition, green buildings are energy efficient, however the term encapsulates much more. Green buildings sit lightly on their site, use resources wisely, and boast healthy interiors. The design process typically involves an integrated team of architects, engineers, contractors, and other professions who consider the building as a system. There are numerous strategies that can be employed to create a green building, and these strategies can be divided under site, energy conservation, water conservation, material selection, and indoor air quality.

Green buildings consider the impact of the building throughout the building's lifecycle – during construction, operation, and eventual disassembly – starting with site selection. To promote efficient use of land, infill lots and brownfield sites are preferred over greenfield development. To mitigate impact from transportation, sites located close to cycling networks, transit routes, and within walking distance to basic services are favoured. Impacts on the local ecology are reduced through the protection and enhancement of on- and off-site green space, reducing building footprints, and minimizing the use of impervious hardscapes such as surface parking and wide travel lanes. "Heavy" municipal infrastructure is replaced by green infrastructure (bioswales, detention ponds, pervious paving materials, green roofs) to promote the natural infiltration of rainwater.

Green buildings are energy efficient. Basic strategies involve siting buildings to benefit from passive solar gain, constructing a thermally tight envelope, and capturing waste heat for reuse – such as heat recover ventilators and drain heat recovery systems. Efficient lighting systems, occupant-controlled zoned space conditioning, and EnergyStar appliances are often incorporated. Renewable energy sources – such as solar hot water heating, ground source heat pumps and photovoltaics can be employed to reduce a building's reliance on non-renewable sources. Green buildings use less water. Since the second largest energy use within buildings is to heat water, by saving water green buildings reduce energy consumption. Outdoor water use can be curtailed using native, drought tolerant plants for landscaping and collecting rainwater for irrigation. Water efficient plumbing fixtures and appliances can be used indoors to reduce water use. To achieve higher levels of water conservation, rainwater and greywater (i.e. waste water from washing machines, showers, and sinks) can be collected for reuse within the building and the site for non-potable water needs. To further reduce the impact on municipal infrastructure, some green buildings treat their own sewage and wastewater on-site.



Green buildings are constructed with socially and environmentally accountable materials. Materials are selected by considering the product's embedded energy (energy required to harvest and manufacture the product), durability, end of life disposal options, and whether the product came from a sustainability harvested resource. Choosing locally harvested and manufactured products reduce energy required for transportation and help strengthen the local economy. Green buildings adapt to the changing needs of their users. Through flexibility in design, a residential building can add a floor, a suit, a commercial unit, or can be modified for universal access to enable aging in place. Flexible floor plates allow commercial buildings to undergo an internal reconfiguration with the least amount of waste manageable. Finally, green buildings are healthy buildings. In recognition that the average North American spends 80% to 90% of their time indoors, green buildings achieve and maintain superior air quality through high ventilation rates and by selecting materials that do not off-gas toxic chemicals.

Municipalities are wise to promote green buildings. As they consume less water, produce less sewage, use less energy, and rely less on engineered stormwater techniques, they place less strain on municipal infrastructure. In addition, green buildings favour development on brownfields and infill lots, taking advantage of excess capacity in existing built-out areas and reducing the need to service new tracts of land. Green buildings cost less to operate – a benefit that appeals to homeowners and building owners alike.

2.0 What is the Federal Government Doing to Promote Green Building?

The Federal Government is promoting green buildings through leadership, education, and funding initiatives.

In 1995 the Auditor General Act was amended to create the Commission of the Environment and Sustainable Development and to legislate that each federal department and agency must complete a Sustainable Development Strategy (SDS) every three years. Departmental SDS outlines the goals, objectives, and specific commitments that each department or agency is working on with respect to sustainability. For the forth round of reporting (2007-2009), six government-wide sustainable development goals will be used to assess progress – clean air, clean water, reducing greenhouse gas emissions, sustainable communities, sustainable development and use of natural resources, and governance for sustainable development. SDS documents set out the workplan of action items for the coming reporting round, and contain tools by which the department and agencies can measure their progress

toward completing their goals. This framework has catalyzed the development of a federal green building policy stipulating that all new federally owned buildings must achieve LEED Gold certification. The Office of Greening Government Operations (OGGO), situated within Public Works and Government Services Canada (PWGSC), is another legacy of the SDS process. The OGGO's mandate is to accelerate the adoption of sustainability within the operations of the federal government by working closely with other federal departments to provide leadership on green procurement, greenhouse gas reduction, fleet management, contaminated sites remediation, and energy management.

The Federal Building Initiative (FBI) was created to assist federal organizations reduce energy consumption, water use, and greenhouse gas emissions of existing facilities using an innovative financing arrangement. Administered by NRCan, organizations work with an energy service company to identify energy efficient retrofits. Once the upgrade has been completed, the energy service company is paid through the difference in the lower energy bills until the project costs are recovered. This program addresses the challenge of upgrading existing building stock, matching expertise with need, and overcomes small operating budgets with a finance model that transfers the up-front expenses to the energy service company.

The Office of Energy Efficiency in Natural Resources Canada provides information for homeowners and building owners on choosing energy efficient equipment and appliances, and water conservation products. Incentive programs are administered through OEE under the ecoEnergy label. The ecoEnergy Retrofit – Homes offers eligible homeowners up to $5,000 who install energy efficient upgrades. For small and medium-sized buildings in the commercial and institutional sectors, OEE offers the EcoEnergy Retrofit Incentive for Buildings. Eligible projects can receive $10 per gigajoule of estimated energy savings or 25% of eligible project costs. Under the ecoEnergy Retrofit Incentive for Industry, NRCan will provide up to 25% of the project costs to a maximum of $50,000 per application to assist small- and medium-sized industrial facilities implement energy-saving projects.

Natural Resources Canada offers two incentive programs to accelerate the adoption of renewable energy technologies. The ecoEnergy for Renewable Heat program is available to the industrial, commercial and institutional sector, offering a 25% rebate on the cost of purchase and installation of qualifying active solar air and/or water heating systems. The ecoEnergy for Renewable Power program provides one cent per kilowatt-hour for up to 10 years for eligible, low-impact, renewable electricity projects. This incentive is open to businesses, municipalities, institutions and organizations that produce clean electricity from renewable sources such as wind, biomass, low-impact hydro, geothermal, solar photovoltaic and ocean energy.

Regrettably, the current federal government eliminated funding for the Commercial Building Incentive Program (CBIP). This highly successful funding initiatives sparked uptake of green buildings through a grant totally up to $25,000 for commercial buildings that met an energy performance of 25% better than a comparable building built in compliance to the National Energy Code for Buildings. This incentive catalyzed the uptake of green buildings by reducing the risk associated with alternative construction techniques and by financing energy simulation studies.

Canada Mortgage and Housing Corporation (CMHC) is a federally-owned corporation that provides literature to homeowners on housing research, as well as a 10% refund on the Mortgage Loan Insurance premium for energy-efficient homes.

3.0 What is the Provincial Government Doing to Promote Green Building?

The Province has committed to reducing greenhouse gas emissions by 33 per cent by the year 2020, and has set an energy conservation target equivalent to 50 per cent of BC Hydro's electricity demand growth by 2020. All sectors of the economy are expected to help achieve this reduction, including construction. In 2005, the Ministry of Energy, Mines and Petroleum

Resources published Energy Efficient Buildings – A Plan for BC. The Plan identifies specific targets to improve overall building energy efficiency for BC:

- achieve an EnerGuide rating of 80 by 2010 by reducing average energy consumption in new detached single family and row houses by 32%
- achieve energy performance of 25% better than the Model national Energy Code for Buildings by 2010 by reducing average energy consumption by 37% for new multi-unit residential and commercial buildings.

Implementation of this Plan has resulted in many local governments incorporating green building measures into policy objectives to achieve specific energy efficient targets. However, although the Local Government Act enables municipalities to address energy efficiency, the Community Charter sets limitations on use of tools such as rezoning, taxation and policy regulation thereby limiting a local government's ability to regulate green building practice. LG cannot regulate higher standards than outlined in the BC Building Code.

New building standards are needed to enable the Province to meets its energy conservation and greenhouse gas reduction targets, and to enable local governments to direct green building practice through regulatory policy. These new standards will require changes to the BC Building Code. In February 2007 Throne Speech announced development of a new, unified BC Green Building Code by early 2008. To deliver on this promise, the Building and Safety Policy Branch (BSPB) is 'greening' the BC Building Code. New objectives for energy and water efficiency will be added to the Code. New green Code requirements will support sustainability in these areas and support innovation and design processes to enable green building solutions. The BSPB proposes changes to the Building Code to improve sustainability through:

- Energy efficiency - reducing energy consumption and its impacts on the environment, particularly greenhouse gas emissions; and,
- Water efficiency - reducing water use through low-consumption fixtures.

Code change proposals have been developed for:

- Energy efficiency requirements for single family houses and smaller multi-family residential, commercial and industrial buildings;
- Energy efficiency requirements for high-rise multi-family buildings and larger industrial, commercial and institutional buildings; and,
- Water efficiency requirements

The proposed new requirements are expected to reduce greenhouse gas emissions by an amount equivalent to those produced by 22,000 minivans driving 55 kilometres a day for one year. The new requirements are expected to reduce the annual energy consumption of buildings by an amount equivalent to the energy that would be produced by a 32 megawatt power plant and by more than 2 billion cubic feet of natural gas, combined. It is proposed that the flow rate and flush cycle requirements that are currently in the Water Conservation Plumbing Regulation be incorporated into the B.C. Building Code to apply province-wide. These new water efficiency requirements will apply to all buildings to which the B.C. Building Code applies.

4.0 What Can Municipalities Do to Promote Green Building?

There is a growing a number of green building programs municipalities are working with to provide information, training, guidelines and accreditation for new and retrofit construction of commercial, institutional and industrial buildings, as well as intensive residential developments and even the individual home. They include LEED, EnerGuide, Green Star, Green Globes, BREAM, Built Green and others. Table One provides a summary of green

building programs, including descriptions of standards or rating systems and how local governments in BC are incorporating them into policy to promote green building practice. Although comprehensive initiatives can be broadly applied, municipalities are finding that the success of green building programs depends upon builders capacity, public awareness, building types, economic drivers, resources available and the desired energy targets.

Furthermore, a comprehensive energy plan….

discuss challenges facing local government…

There are a range of strategies that we recommend Maple Ridge put into place to catalyze the uptake of green buildings.

Establish a Green Building Policy for Civic Buildings

Local governments rarely have the jurisdiction to require the private sector to building green, however they can show leadership by building green themselves. Buildings that are energy efficient cost less to operate. Since municipalities own and operate their own facilities, constructing energy efficient buildings makes financial sense.

Many communities are showing leadership in this area by issuing a policy stipulating that all new civic buildings must be built to a certain green standard. For example:

- *The City of Richmond*'s Sustainable High Performance Building Policy – City owned buildings over 2,000 m^2 must meet LEED Gold, and major renovations to existing facilities and new City Buildings smaller than 2,000 m^2 will seek to meet a minimum performance standards of LEED Silver certification but may not necessarily seek formal accreditation.
- *The City of Ottawa's* Green Building Policy for the Construction of Corporate Buildings – stipulates that all municipal buildings over 500m^2 must be designed, delivered and certified by the Canada Green Building Council as being LEED™ - Canada "Certified" at the minimum. This policy also states that newly constructed buildings will incorporate energy efficient features to meet the standards required by the Commercial Building Incentive Program (CBIP) which is 25% more efficient than a building designed according to the Model National Energy Code for Buildings.
- *The City of Calgary's* Sustainable Building Policy – outlines that new facilities and major renovations of occupied facilities in excess of 500m^2 must meet or exceed the Silver Level Rating of the LEED™ Rating System.

The flexible structure of LEED and its range of coverage of issue areas enable municipalities to adopt LEED and emphasis certain credits that are of most concern in their jurisdiction. For example, the aggressive Green Building Policy of the City of Portland requires that all new City-owned facilities meet LEED Gold certification with at least "75% waste recycling; 30% stormwater management beyond Portland baseline code requirements; 30% water savings beyond Portland baseline code requirement; 30% energy savings beyond Portland baseline code requirement, additional commissioning as defined by LEED."


PORT COQUITLAM
SUSTAINABILITY CHECKLIST
FOR REZONING & DEVELOPMENT PERMIT APPLICATIONS
OUR VISION
USING TRIPLE BOTTOM LINE ASSESSMENT TO ACHIEVE SUSTAINABILITY GOALS

Support Green Buildings in Official Community Plans

Official Community Plans provide the broad policy direction for the municipality. These documents set the planning direction for a community's growth and development and act as the barometer towards future growth patterns. Although local governments cannot require private developers to meet a specific green design standard, OCPs can encourage green design by explicitly stating that green buildings are in alignment with the vision for the municipality's growth. OCP policies can support brownfield redevelopment, the re-use and adaptation of existing and heritage building stock, strategies for water conservation, identification of sensitive areas, and indicating desired areas for densification. Another way to look at this is to avoid disincentives in municipal policies and bylaws.

Become a Member of Green Building Organizations

Publicly show support by becoming a member organization of the Canadian Green Building Council, and the Cascadia Region Green Building Council. Benefits of membership include discounts on trainings and conferences, access to resources, voting privileges, and newsletters subscriptions.

Develop a Sustainability Checklist for Development Approval Process

Several BC communities are going the route of creating Sustainability Checklists that must be completed by a developer and included when applying for a construction permit. Checklists can guide development into a particular direction by encouraging green roofs, energy efficient design, rainwater capture systems, indoor air quality, and the like. Even if local governments do not have the jurisdiction to enforce developers to include these items, checklists can communicate the direction the municipality would like to go and they can serve as an educational tool for developers.

Port Coquitlam has instituted a Sustainability Checklist for rezoning and development permit applications. Applicants are asked a variety of questions based on goals set out in Port Coquitlam's OCP. The checklist provides municipal staff with an indication of how well a proposed application performs relative to sustainability and the community goals stated with the OCP.

Bowen Island and the Resort Municipality of Whistler both have green building checklists, while the City of New Westminister and the Town of Gibsons have checklists based on smart growth principles.

Establish In-House Green Building Expertise

Developing a green building point person or team on staff who is tasked with educating staff and the public about the District's Green Building goals can help to ensure the program will be a success.

Approval process and building inspection permit delays with green buildings can result from a gap in understanding of alternative building techniques or strategies. Having green building expertise in-house can help train municipal staff and building inspectors on green building design and technologies to avoid approval delays.

The City of Vancouver and the City of Richmond are training inspectors and officials on green building practices, and several communities such as Saanich, Whistler, and the City of Vancouver have green building experts on staff.

Create a Website

A website should be created to help promote the green building initiative and to provide an avenue for the public to get more information on the state of green building within the District of Maple Ridge. This site would help private sector developers understand that the District is

This site should have an overview of the municipality's green building policy as well as a definition of green buildings, the benefits of building green, commonly asked questions, advice on how to get started, and links to green building resources. The website should also profile exceptional projects within the District.
Examples include the GVRD's BuildSmart website www.buildsmart.ca, the City of Vancouver's Green Building website http://www.city.vancouver.bc.ca/commsvcs/southeast/greenbuildings/ , the Resort Municipality of Whistler's Green http://www.whistler.ca/content/view/219/226/

Fast-Track Green Building Approval

In the development world time equals money. Expediting the development permit approval process for projects embracing green design is an incentive that several communities have initiated to encourage the private sector to build green. For example, the City of Scottsdale offers fast-track plan review for qualified green building projects. Depending on the level of complexity, projects receive building permits in half the time of regular projects.

Under the Green Permit Program at the Chicago Department of Construction projects that incorporate innovate green building strategies can receive development permits in less than 30 business days. The more green building elements the project includes the short the timeline to obtain a permit. Projects that demonstrate an extraordinary level of green strategies may even have consultant code review fees waived.

Density Bonuses

The Local Government Act allows local governments to establish zoning bylaw conditions which if met, entitle the applicant to higher density than what is generally available for the zone. Density bonuses are usually awarded to increase affordable housing, special needs housing, community amenities, to preserve heritage properties, and to create environmental amenities. This tool only works when developers desire more density.

Density bonuses are used by the City of North Vancouver to encourage "enhancement of the environment through high efficiency ("green") building design."

Lower Development Cost Charges

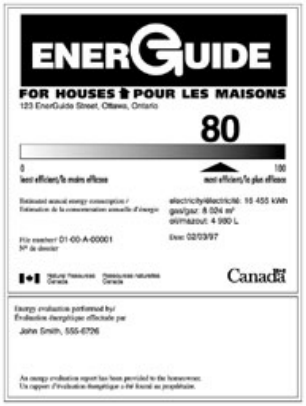
Green buildings consume less energy and less water and produce less sewage than a typical building. As such, they have a lower impact on municipal infrastructure.

Currently Maple Ridge DCCs are divided into three areas (Urban Area, Downtown Core Area, and Rural Area), with charges based on building type and density. Maple Ridge could introduce an additional green building tier that offers lower DCCs if the project achieves certain green building objectives.

This move would coincide with the GVRD's Green Building Task Force that recommended reducing GVRD sewer DCC charges for green buildings, and increasing charges for conventional building projects.

Financial Incentives for Green Design

Municipalities can encourage developers to build green by offering financial incentives to do so. For example, the City of Calgary offers rebates of 10%, 20%, or 30% on building permit values on homes built to bronze, silver and gold Built Green™ Standards. Rebates are returned to the builder to offset higher costs of building green homes or certifying homes. Similarly, Strathcona County in Edmonton offers a building permit fee rebate program for homebuilders who achieve R-2000 or Built Green™ certification.



Establish an Annual Green Design Awards Program

Encourage green design by publicly acknowledging projects that have achieved these goals. An annual awards program would create an incentive for developers to build green by offering publicity and a chance to differentiate their product in a competitive marketplace. This initiative would be a positive way to showcase developers and buildings that are in alignment with the future growth vision for Maple Ridge.

5.0 Summary of Green Building Initiatives and Related Local Government Activity for Low Rise Residential Buildings

EnerGuide
Built Green
R-2000
Energy Star

EnerGuide Rating System

Eligibility:	Home Owners and Builders
Type of Support:	Information Guidelines Assessment
Contact:	Natural Resource Canada: Office of Energy Efficiency www.oee.nrcan.gc.ca/energuide

Description
The EnerGuide Rating Service program is a science-based system for rating the energy efficiency and emissions footprint of a house. The program is coordinated by the Office of Energy Efficiency within Natural Resources Canada.

EnerGuide labels communicate the relative energy efficiency of an appliance. They are typically used by consumers to compare the energy consumption of various appliances to determine operation cost of the product over time. Similar to how these labels are used in the marketplace, the EnerGuide label can be applied to houses. This rating is determined through a blower door test that measures the air tightness (and therefore the energy efficiency) of the house.

The EnerGuide Rating System provides independent expert advice on energy-efficient home renovations. Builders working with EnerGuide rating service have their house plans evaluated by an EnerGuide Rating System advisor. They work with the advisor to develop energy upgrade packages on the heating and ventilation equipment, the building envelope, and insulation levels. The EnerGuide program considers the building as a system. The rating program considers the interactions between the building envelope performance and the heating, cooling and ventilation systems within it.

Builders will be able to obtain an EnerGuide rating label by following four steps:

- Step One - An Energy Advisor, certified by NRCan, performs an energy assessment of the new house plans. Home builders and their staff will be able to become certified Energy Advisors through a three-day course offered by CHBA-BC, in order to complete this energy assessment.
- Step Two - The Energy Advisor recommends energy-saving upgrades and suggests cost-effective options.
- Step Three - Once construction is completed, an independent Energy Advisor (i.e., not employed by the builder) verifies that the energy upgrades were performed and conducts a blower door test. The cost of this verification step is approximately $300 per house.
- Step Four - After the data are collected, the house receives an EnerGuide rating along with an official label to display on the home's furnace or electrical box.

The EnerGuide label is the standard way to measure the energy efficiency of a home, and EnerGuide ratings are referenced in Built Green, R-2000, Energy Star, and various municipal programs and policies. A house that achieves an EnerGuide rating of 80 is considered to be very energy efficient, and this value is the required rating to qualify as either an R-2000 or Energy Star home.

Local Government Activity

> *Municipality of Bowen Island* requires proponents of single family detached and townhouse dwellings attain Built Green® "Gold" and EnerGuide rating of 80.

> *District of Saanich* is providing incentives for building labelling for new single family dwellings by reducing building permit fees for projects reaching an EnerGuide rating of 80, or other, benchmark performance measures. (They are collaborating with Canadian Home Builders Association - Built GreenTM BC)

> *Town of Merritt* is researching ways to encourage EnerGuide labelling for private development. They are also exploring the development of non-mandatory energy efficiency guidelines.

> *BC Building Code* Starting in April 2008, new houses and smaller multi-family buildings will need to meet new insulation requirements that will increase the energy efficiency of these buildings. Alternately, builders can choose to meet an increased EnerGuide rating as a substitute for meeting the insulation requirements. New insulation requirements will also be applied to smaller commercial and industrial buildings.

A new Part 10 Building Efficiency and Resource Conservation will be added to the 2006 BC Building Code. The new Part 10 will include prescriptive insulation standards for houses and smaller multi-family residential, commercial and industrial buildings.

The increase to building costs will be minimal and will be more than matched by savings in energy costs. It is expected that building costs will increase by between 0.33 per cent and 1.3 per cent. In many cases, homeowners will save enough during the first year alone to cover the cost of building a more energy-efficient home. A life-cycle costing report demonstrates the long-term financial savings that will result from the adoption of the EnerGuide standard for low-rise residential buildings.

Built Green® BC

Eligibility:	Residential homes in BC and Alberta
Type of Support:	Information Guidelines Accreditation
Contact:	www.chbabc.org/content.php?id=504 http://www.builtgreencanada.ca/

Description

Membership in Built Green™ is open to Home Builders' Associations (HBA's) builders, renovators, product suppliers or manufacturers, service providers, community developers and municipalities.

Builders and Renovators can demonstrate to consumers the environmental stewardship of the building industry by building more energy efficient homes that have a reduced impact on the environment. For product suppliers/manufacturers or service providers, it opens up a new marketplace.

The program concentrates on four separate and distinct target areas:

- Energy efficiency
- Indoor air quality
- Resource use (including waste management)

- Overall environmental impact

Builders and consumers can choose from three "built green" achievement levels that correspond to EnerGuide ratings; Bronze represents the minimum level (EnerGuide rating of 72-74), Silver the intermediate level (EnerGuide rating of 75-76) and Gold is the maximum achievement level of the three "green" target areas with an EnerGuide rating level of 77 or higher. Builders and consumers have the flexibility to choose which package and point level works for them. Because of the range and number of options available under the Built Green™ Checklist, each builder can choose to "build green" somewhat differently.

The Built Green™ program started in Alberta and is now available in BC. As of January 22, 2008, 7,450 homes have been enrolled in the program.

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  - Limitations to energy-related guidelines in the Local Government Act
  - Lack of resources to engage technical specialists
  - Lack of technical knowledge on energy efficiency design guidelines

> *City of Calgary* offers rebates of 10%, 20%, or 30% on building permit values on homes built to bronze, silver and gold Built Green™ Standards. Rebates are returned to the builder to offset higher costs of building green homes or certifying homes.

> *Strathcona County* offers a building permit fee rebate for homebuilders who achieve R-2000 or Built Green™ certification.

Initiative
Built Green TM BC Eligibility: Residential homes in BC and Alberta Type of Support: Information Guidelines Accreditation Contact: www.chbabc.org/content.php?id=504 http://www.builtgreencanada.ca/
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Initiative

Leadership in Energy and Environmental Design (LEED)
Eligibility: New commercial and institutional buildings
Type of Support:
Information
Guidelines
Accreditation
Contact: Canadian Green Building Council (604) 681-7002 | www.cagbc.org/

Description

LEED® Canada for New Construction and Major Renovations version 1.0 is an adaptation of the US Green Building Council's (USGBC) Leadership in Energy and Environmental Design Green Building Rating System (LEED®), tailored specifically for Canadian climates, construction practices and regulations. It was adapted from the USGBC's LEED-NC® 2.1 and influenced by anticipated changes planned for version 2.2. LEED rates the environmental performance of buildings with a significant emphasis on energy efficiency.

Prerequisites and Credits are organized in the five principal LEED® categories:
- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality

An additional category, Innovation & Design Process, addresses sustainable building expertise as well as design measures not covered under these five environmental categories.

Project ratings are certified by the CaGBC based on the total point score, following an independent review and audits of selected Credits of documentation submitted by a design and construction team. With four possible levels of certification (certified, silver, gold and platinum), LEED® is flexible enough to accommodate a wide range of green building strategies that best fit the constraints and goals of particular projects.

Local Government Activity

City of Victoria is developing Green Building Policy to apply to public and private sector. The policy is not intended to be mandatory. For example, the Dockside Green Develop Permit Area Guidelines indicate LEED standards as "should," while other standards remain regulatory. However, a master development agreement between the City and the Dockside developer commits the developer to LEED Silver standards.

City of Vancouver has a Corporate policy is to achieve LEED Gold on all new civic buildings over 500 sq m. The buildings must also show 30% improvement in energy consumption over the City's current energy bylaw. Vancouver's model sustainable community, South East False Creek, will "have a minimum design standard of LEED Silver, with a target of LEED Gold.

City of Richmond has a Sustainable High Performance Building Policy for all new and renovated civic buildings greater than 2000 sq m. The policy includes energy efficiency, water use, air quality, etc. Facilities staff, engineers and planners collectively prepared a report to council recommending adoption of the High Performance Standard. All new civic buildings are required to strive for LEED Gold accreditation with a minimum LEED Silver option. Buildings less than 2000 sq m are encouraged to meet LEED Silver rating, though they are not required to meet accreditation standards.

The Office of Energy Efficiency of Natural Resources Canada's (NRCan) EnerGuide Rating System provides independent expert advise on energy-efficient home renovations. Builders working with EnerGuide rating service have their house plans evaluated by an EnerGuide Rating System advisor. They work with the advisor to develop energy upgrade packages.

Focus on ways to improve the energy efficiency of:
- Heating and ventilation equipment, such as the furnace,
- The building envelope, such as windows and doors,
- Insulation levels, such as in the attic.

The EnerGuide rating service program is a science-based system for rating the energy efficiency and emissions footprint of a house. The program is coordinated by Natural Resources Canada (NRCan). The EGNH program considers the building as a system. The rating program considers the interactions between the building envelope performance and the heating, cooling and ventilation systems within it. The EGNH rating of a house is determined through a blower door test that measures the air tightness (and therefore the energy efficiency) of the house.

Builders will be able to obtain an EGNH rating label by following four steps:

- Step One - An Energy Advisor, certified by NRCan, performs an energy assessment of the new house plans. Home builders and their staff will be able to become certified Energy Advisors through a three-day course offered by CHBA-BC, in order to complete this energy assessment.
- Step Two - The Energy Advisor recommends energy-saving upgrades and suggests cost-effective options.
- Step Three - Once construction is completed, an independent Energy Advisor (i.e., not employed by the builder) verifies that the energy upgrades were performed and conducts a blower door test. The cost of this verification step is approximately $300 per house.
- Step Four - After the data are collected, the house receives an EnerGuide for New Houses rating along with a label to fix to the furnace or electrical box.

Local Government Activity

Municipality of Bowen Island requires proponents of single family detached and townhouse dwellings attain Built GreenTM "Gold" and EnerGuide for New Houses (EGNH) rating of 80.

District of Saanich is providing incentives for building labelling (EGNH) for new single family dwellings by reducing building permit fees for reaching EGNH 80, or other, benchmark performance measures. (They are collaborating with Canadian Home Builders Association - Built GreenTM BC)

Town of Merritt is researching ways to encourage EGNH building labelling for private development. They are also exploring the development of non-mandatory energy efficiency guidelines.

BC Building Code. Starting in April 2008, new houses and smaller multi-family buildings will need to meet new insulation requirements that will increase the energy efficiency of these buildings. Alternately, builders can choose to meet an increased EnerGuide for New Houses (EGNH) rating, a performance-based standard for energy efficiency, as a substitute for meeting the insulation requirements. New insulation requirements will also be applied to smaller commercial and industrial buildings.

A new Part 10 Building Efficiency and Resource Conservation will be added to the 2006 BC Building Code. The new Part 10 will include prescriptive insulation standards for houses and smaller multi-family residential, commercial and industrial buildings.

The increase to building costs will be minimal and will be more than matched by savings in energy costs. It is expected that building costs will increase by between 0.33 per cent and 1.3 per cent. In many cases, homeowners will save enough during the first year alone to cover the cost of building a more energy-efficient home. A life-cycle costing report demonstrates the long-term financial savings that will result from the adoption of the EnerGuide standard for low-rise residential buildings.

Initiative

Energy Star

Eligibility: Residential homes in Ontario and Saskatchewan
Type of Support: Information
Contact: Natural Resource Canada: Office of Energy Efficiency
www.energystarhomes.ca

Description

This international rating system identifies efficient (10% to 50% more efficient than conventional) appliances, consumer electronics, heating and cooling equipment, windows and doors and other equipment. Since 2005, Energy Star for New Homes is an initiative pilot project—new Energy Star homes are expected to be 40% more energy efficient than those built to minimum Ontario building code standards.

Local Government Activity

City of Dawson Creek is developing an energy efficiency and solar ready standard for single family homes related to Energy Star windows, doors and solar hot water requirements. Dawson Creek recognizes the bylaw cannot supersede the BC Building Code—is working to develop a possible Model Bylaw that could apply province wide for energy efficiency and solar readiness. The City of North Vancouver is exploring a companion piece to the proposed Model Bylaw.

http://www.eastgwillimbury.ca/Environment/Thinking_Green_Initiatives/Energy_Star_.htm

Initiative

American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) – 90.1 – 2004

Eligibility: All
Type of Support: Information
Accreditation
Contact: www.realread.com/prst/pageview/browse.cgi?book=1931862664

Description

ASHRAE Standard 90.1 has been the benchmark for commercial building energy codes in the United States and a key basis for standards in over 15 countries around the world. The 90.1-2004 version has significant changes from the previous versions, such as reducing the number of climate zones from 26 to 8, refining a number of HVAC provisions, improving stringency of lighting power requirements, and adding an appendix with new, more flexible rules when using 90.1 for LEED certification.
The 2004 Energy Standard for Buildings Except Low-Rise Residential Buildings (ASHRAE 90.1 2004) is a science-based standard that was arrived at through theoretical modeling and through the analysis of empirical data on the energy performance of different building designs, components and equipment.
ASHRAE standards vary for different climate zones. Climate zones are based on climatic regions and climate types. Regions are identified in the standard by the numbers 1 through 8, and climate types are identified by the letters A, B and C, for humid, dry and coastal climates, respectively. For example, southwest coastal communities correspond to ASHRAE Zone 5C, and Okanagan communities to Zone 5B.

Local Government Activity

City of Vancouver carried out a review of the ASHREA 90.1-2004 building standard for possible adoption into the Vancouver Building Bylaw.
BC Building Code. Starting in April 2008, most Part 3 buildings will be required to meet the requirements of ASHRAE 90.1 2004, which includes standards for building envelope; heating, ventilating and air conditioning (HVAC) systems; service water heating; and power, lighting, and other equipment. A new Part 10 "Building Efficiency and Resource Conservation" will be added to the 2006 BC Building Code. The new Part 10 will require conformance with ASHRAE 90.1 2004 standards by all buildings, except for single family houses, small multi-family residential buildings four stories or less in height and commercial and industrial buildings that are built under Part 9.

Initiative

Community Action on Energy and Emissions Initiative
Eligibility: Local government
Type of Support: Information
Contact: Fraser Basin Council www.bcclimateexchange.ca/index.php?p=caee

Description

The Community Action on Energy and Emissions initiative (CAEE) provides financial and research support to BC local governments to advance energy efficiency through local government policy and planning tools. This initiative was previously called "Community Action on Energy Efficiency", but has broadened to deal with renewable energy and sustainable transportation. The CAEE is a key element of the Province's new Energy Plan 2007 and a cornerstone of the Ministry of Energy, Mines and Petroleum Resources' strategy document "Energy Efficiency in Buildings: A Plan for BC", which outlines targets for new and existing residential, commercial, institutional and industrial buildings, to be reached by 2010. Over 28 local governments continue to research possible policies and incentives to promote energy efficiency, an additional 20 communities will be supported through CAEE over the next three years, with 7 to join this year. The Fraser Basin Council provides overall program administration for this initiative, with funding support from BC Ministry of Energy and Mines, BC Ministry of Environment, Natural Resources Canada, Vancity, Real Estate Foundation, BC Hydro and Terasen Gas.

Local Government Activity

City of Port Moody Council has endorsed the CAEE energy efficiency targets. It is anticipated the City will adopt the targets (with the exception of the implications to existing residential buildings) into their OCP.

Initiative

Partners for Climate Protection
Eligibility: Local government
Type of Support: Information
Accreditation
Contact: Federation of Canadian Municipalities: FCM Sustainable Communities
www.sustainablecommunities.ca/Capacity%5FBuilding/Energy/PCP/

Description