



Dept. Manager	Director	City Manager

The Corporation of **THE CITY OF NORTH VANCOUVER**
COMMUNITY DEVELOPMENT DEPARTMENT

REPORT

To: Mayor Darrell R. Mussatto and Members of Council

From: C. Miller, Planning Technician, Community Development

SUBJECT: DENSITY PROVISIONS FOR HIGHER ENERGY PERFORMANCE – RESIDENTIAL FOUR STOREYS AND UNDER

Date: October 27, 2010 File No: 4010.01

The following is a suggested recommendation only. Please refer to Council Minutes for adopted resolution.

RECOMMENDATION:

PURSUANT to the report of the Planning Technician dated October 27, 2010, entitled "Density Provisions for Higher Energy Performance – Residential Four Storeys and Under":

WHEREAS Council has unanimously adopted new density provisions for increased energy performance in all Institutional, Commercial, and Industrial buildings and all Residential buildings over four storeys;

THAT "Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2010, No. 8122" (Density Provisions for Higher Energy Performance – Residential Four Storeys and Under) be considered and referred to a Public Hearing.

ATTACHMENTS:

1. Zoning Amendment Bylaw No. 8122

PURPOSE:

This report introduces for Council's consideration an amendment to the Zoning Bylaw to reduce the energy use and related GHG emissions from buildings. It addresses new residential buildings four storeys and under, and would come into effect upon adoption. This bylaw would not result in any overall increase or decrease of the density achievable, but would make the current maximum density conditional on higher energy performance through a density bonus.

BACKGROUND:

Staff presented the report "Raising the Bar on Energy Standards for Buildings" in July 2009 that indicated that, despite current efforts, community-wide greenhouse gas (GHG) emissions continue to grow at an unacceptable rate. Council resolved:

THAT Community Development staff be directed to prepare options to significantly reduce both energy consumption and GHG emissions in buildings.

In response to this directive, staff convened the Energy Efficient Buildings Working Group in September 2009. The Working Group is made up of technical experts, inter-departmental staff, and community and industry representatives. It has focused on the exploration of regulatory and incentive options to achieve higher energy efficiency in both new and existing buildings.

In December 2009 staff presented the report "Energy Efficiency in Buildings" to Council. That report outlined for Council's consideration the immediate, intermediate and long-term strategies that the City might undertake to improve energy performance in new and existing buildings. Council resolved, among other directives:

THAT staff be directed to bring forward a Zoning Amendment bylaw to grant cellar exclusions in the RS-1, RS-2, RS-3 and RT-1 Zones as a density bonus for achieving EnerGuide 85 or achieving a rating of BuiltGreen Platinum.

On October 25, 2010, Council unanimously adopted Amendment Bylaw 8097 (Requirement for Higher Energy Performance in Buildings – All Institutional, Commercial, and Industrial, and All Residential over four storeys). As a result, higher energy performance provisions will come into effect on January 1, 2011 for these types of buildings.

More energy efficient buildings not only reduce the emissions associated with their heating and cooling, but many improvements result in energy cost savings that exceed the initial investment in a short timeframe. This is reflected in Natural Resources Canada's recent retrofit program. Other federal governments and non-profit organizations such as the Rocky Mountain Institute have also recommended building energy efficiency improvements as a primary strategy for reducing GHG emissions as these measures also reduce costs for owners. A recent international consultant report has further indicated that insulation, lighting system and water heating improvements have among the best economic return of GHG reduction strategies globally. Further, BC Hydro identifies energy conservation as the most efficient and significant means to provide for a growing community within the current infrastructure.

Increasingly, municipalities are recognizing that energy consumption has specific impacts on local communities. According to the *2007 Community Energy and Greenhouse Gas Emissions Inventory (CEEI)*, energy consumption of buildings is responsible for 48% of the City's community-wide measured GHG emissions and 69% of the energy consumed. Construction of more efficient buildings is a principal means for the City to comply with new Provincial policy directions and legislation, as well as a number of voluntary commitments that the City has made.

Adopted in 2008, *Bill 27 Local Government (Green Communities) Statutes Amendment Act* requires that local governments incorporate GHG targets, policies and actions in their Official Community Plans (OCPs). To inform the City's response to this directive, the Climate Action Task Force prepared the *Community Energy and Emissions Plan* (CEEP). Council endorsed the CEEP in principle in April 2010 and adopted the amendment to the OCP required by Bill 27 in May 2010. As noted in the CEEP, the City must realize a 36,200 tonne decrease in annual building energy emissions community-wide by 2050 to meet the adopted targets. This is a 34% reduction even as the amount of building space is projected to increase by over 50% by 2050.

DISCUSSION:

The energy standards in Part 10 of the *BC Building Code* (BCBC) group all Residential buildings four-storeys and under for purposes of energy efficiency requirements. These buildings are measured against the *EnerGuide Energy Standard*. EnerGuide was created and standardized by the Office of Energy Efficiency of Natural Resources Canada, and is the industry standard for smaller scale residential construction.

The size, shape and siting of buildings is organized by use in the Zoning Bylaw, and the Residential uses addressed by this report cannot exceed four storeys. Consequently, these buildings are considered against the EnerGuide standard (and not the ASHRAE 90.1 standard as some other uses) by the BCBC.

Currently the BCBC cites the target standard of EnerGuide 77. However, nearly all homes are built utilizing a prescriptive path that specifies certain building systems, but does not verify performance. BC Hydro estimates that, province-wide, these built-to-code homes would actually meet an EnerGuide 68 standard rather than EnerGuide 77 if they were tested. The BCBC is planning to adopt performance-verified EnerGuide 80 in the next code cycle (anticipated within two years).

The City of Vancouver's *Green Homes Program* adopted in 2008 prescribes standards that exceed the BCBC for all new one- and two-family homes. It is estimated that buildings built under this program will qualify for a rating of EnerGuide 80 or EnerGuide 82.

The staff recommendation is to establish a density bonusing provision for attaining EnerGuide 80, rather than the higher standard of EnerGuide 85 which staff and the EEBWG had recommended to Council in 2009. A moderate standard adopted at this time would serve as an interim step to allow the building industry time to adapt. The proposed bylaw would also require the submission of a blower door test completed by a Certified Energy Advisor with documentation that the building meets the EnerGuide 80 standard. In order to ensure compliance, staff recommends that the City require that applicants provide a performance bond or letter of credit in the amount of 1% of construction costs.

The proposed amendment to the Zoning Bylaw would not increase the total density that could be achieved on any lot. It would, however, make the additional floor area previously achievable through the cellar exclusion available only to owners and builders who are willing to achieve a higher energy performance than that required by the BCBC.

For those Residential uses that include cellars in floor area calculation, the maximum density currently possible would only be attainable through a density provision in the Zoning Bylaw (defined as a 'density bonus' in the Local Government Act).

The City's Zoning Bylaw currently includes provisions in a number of zones that allow for increased density. These types of zoning calculations, performed by Planning staff when reviewing Building Permit drawings, should not be confused with 'density bonusing' proposals which are brought to Council for their consideration during a rezoning process. Again, all proposed changes to the Zoning Bylaw will not result in higher densities than what is currently achievable with the zoning and OCP designation of each property.

The proposed changes (shaded) can be summarized as follows:

RESIDENTIAL USE		GROSS FLOOR AREA	CELLAR
One-Unit RS-1, RS-2, RS-3	Existing	lesser of 0.30 x lot + 1000 or 0.50 x lot	excluded
	Proposed	no change	bonused
Two-Unit RT-1	Existing	0.35 x lot + 1000	excluded
	Proposed	no change	bonused
Two-Unit RT-2	Existing	0.67 x lot	included
	Proposed	0.50 x lot + 0.17 x lot bonused	no change
Garden Apartment RG-1	Existing	0.49 x lot	included
	Proposed	0.40 x lot + 0.09 x lot bonused	no change
Medium-Density Apartment RM-1	Existing	1.0 x lot area + 0.6 x lot area bonus	included
	Proposed	no change*	no change

*Bonusing provisions shift from lot area, concealed parking and lot coverage to energy efficiency

A more detailed description follows:

One-Unit Residential Use and Two-Unit Residential Use (RT-1)

Regulations to control the size of one and two-unit developments have changed considerably since the first zoning controls were introduced in 1927. For example, the concept of floor space ratio (FSR) as a measure to calculate density was introduced in 1991.

In 2004, Council directed Staff to bring forward amendments to One- and Two-Unit Residential Zones that allowed for basements and cellars to be partially or fully exempt from Gross Floor Area (GFA) calculation. Council adopted an amendment to the Zoning Bylaw in 2005 that fully excluded cellars in the RT-1 Zone. A sliding scale was adopted for the RS-1 Zone. This scale exempted a greater amount of area the deeper and less visible the lower floor is in the ground. Typically, a cellar would have to be more than 7 feet beneath average grade to realize the full floor exclusion.

At the time, the Zoning Bylaw did not allow habitable rooms, such as bedrooms or kitchens, in cellars. However, the unintended result of this change was that fewer legal secondary suites were constructed as builders chose to provide the maximum floor area and leave the option of an unauthorized secondary suite to the property owner. In

response, Council directed staff in July, 2007 to prepare amendments to the Zoning Bylaw to allow for accessory secondary suites in cellars that met liveability and life safety standards. In 2008, Council adopted an amendment to the Zoning Bylaw to fully exempt cellars in the RS-1 Zone and to allow accessory secondary suites in cellars.

Although the exclusion from GFA calculation of cellar floor area has led to the increased capacity to build legal secondary suites in the RS-1 Zone and more useable space in the RT-1 Zone, it has also encouraged the construction of larger dwellings that require more energy to operate than a smaller dwelling built to the same construction standard.

The proposal would remove the cellar exclusion and replace it with a bonusing provision that would be applicable only if the building meets the EnerGuide 80 standard.

Garden Apartment Use and Two-Unit Residential Use (RT-2)

The cellar exclusion that applies to Two-Unit Residential Use in the RT-1 Zone is not applicable in the RT-2 Zone or for Garden Apartment Use in the RG-1 Zone. Since the proposed amendment is intended to have minimal impact on buildable potential, no change to the current inclusion of cellars in floor area calculation is recommended for these uses.

Instead, a new base density is proposed to be established with the remainder density available as a density bonus. This is similar to the strategy used for the recently adopted density provisions for higher energy performance for those Commercial, Industrial and Institutional zones without already established bonusing provisions.

Since those ground-oriented, residential types of development that may have, in the past, been directed towards RT-2 or RG-1 zoning are rezoned to CD zones today, this change is not anticipated to have a significant impact.

Medium Density Apartment Use

Medium Density Apartment Use currently has density bonusing provisions similar to the High Density Apartment and non-residential uses recently amended by Bylaw 8097 (Requirement for Higher Energy Performance in Buildings – All Institutional, Commercial, and Industrial, and All Residential over four storeys). However, since RM-1 buildings are limited to three storeys it was not addressed at that time.

Similar to other uses with density bonusing provisions, the recommendation is to remove the current provisions (bonusing for lot area, concealed parking and reduced site coverage) and to replace them with a single bonusing provision for attaining the EnerGuide 80 standard.

Cedar Village Use

Cedar Village Residential Zones (RC-1 and RC-2) are considered similar to Comprehensive Development Zones in that they apply to a specific, contiguous area of the City and are not used as the basis for new zoning elsewhere. As a result, no change is recommended for RC-1 and RC-2.

SUSTAINABILITY IMPLICATIONS:

Energy conservation, lowered GHG emissions and a reduced need to upgrade the City's energy infrastructure serve as public amenities that may be delivered. Density provisions for higher energy performance would ensure that applicants who realize the benefit of a larger building do not diminish the community's ability to reach its voluntary and legislative obligations to reduce GHG emissions.

Increasing energy efficiency in buildings supports the City's implementation of the *Community Energy and Emissions Plan (CEEP)* and its commitment to meeting the GHG emissions reduction targets in the *Official Community Plan*.

FINANCIAL IMPLICATIONS:

Staff does not anticipate that the proposed energy efficiency requirements would significantly impact the cost of new buildings or reduce the number of building permits. City of Vancouver staff estimates that the cost of its mandatory *Green Homes Program* (with homes expected to be rated Energuide 80-82) is \$4,000 - \$6,000 per home. Unlike the *Green Homes Program*, the proposed bylaw is voluntary: applicants would choose to meet the higher standard in exchange for density that was, in most zones, not permitted five years ago. It is also anticipated that the higher energy standard will be mandatory within two years for all B.C. jurisdictions, and that the development industry is preparing for the anticipated change.

LEGAL IMPLICATIONS:

Section 904 *Local Government Act* provides the authority for local governments to establish conditions that entitle an owner to achieve a higher density than would otherwise be permitted, commonly referred to as 'bonusing'. This may include "conditions relating to the conservation or provision of amenities, including the number, kind and extent of amenities." The *Community Charter* specifies that local governments are responsible for fostering the environmental well-being of the community. Increasing energy efficiency supports this commitment.

INTER-DEPARTMENTAL IMPLICATIONS:

The Civic Projects Team reviewed and endorsed this report on October 26, 2010.

CORPORATE PLAN AND/OR POLICY IMPLICATIONS:

The May 2010 amendment to the OCP added new Community-wide Energy Planning Objectives including:

- 8.5.2.1A To Improve and record the energy efficiency of new and existing residential, commercial, industrial and institutional buildings in the City;
- 8.5.2.2A To pursue increasingly aggressive energy standards for new and existing building over time beginning with a goal of achieving at least 20% better than BC Building Code.

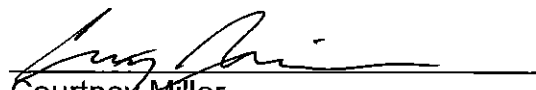
Section 5.12.5 of the OCP specifies that the community environmental benefits of high

efficiency construction may be considered in allowing density bonuses. Increased energy efficiency also supports the direction illustrated in the City's *100 Year Sustainability Vision*.

STRATEGIC PLAN IMPLICATIONS:

A priority of the Strategic Plan is to "achieve a safe and sustainable community," and improved energy efficiency contributes to the delivery of the City's vision.

RESPECTFULLY SUBMITTED:


Courtney Miller
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Attachment

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