



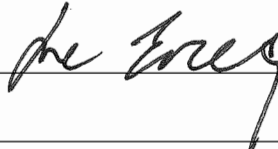
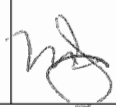

To: Planning Committee **Date:** June 17, 2014
From: Wayne Craig **File:** 12-8060-20-009147
Director, Development
Re: **A Proposed Official Community Plan Amendment To Increase Townhouse Energy Efficiency and Renewable Energy**

Staff Recommendation

1. That Official Community Plan Bylaw 9000, Amendment Bylaw 9147, to add land use policies in Official Community Plan (OCP) Chapter 12.4.2, to establish energy efficiency policies for townhouse developments in the City, be introduced and given first reading:
2. That Official Community Plan Bylaw 9000, Amendment Bylaw 9147, having been considered with:
 - the City's Financial Plan and Capital Program; and
 - the Greater Vancouver Regional District Solid Waste and Liquid Waste Management Plans;is hereby found to be consistent with said programs and plans, in accordance with Section 882(3) (a) of the Local Government Act.
3. That Official Community Plan Bylaw 9000, Amendment Bylaw 9147, having been considered in accordance with OCP Bylaw Preparation Consultation Policy 5043, is hereby deemed not to require further consultation.


Wayne Craig,
Director, Development
(604-247-4625)

WC:pr

| REPORT CONCURRENCE | | |
|--|---|---|
| ROUTED TO: Building Approvals | CONCURRENCE <input checked="" type="checkbox"/> | CONCURRENCE OF GENERAL MANAGER  |
| REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE | INITIALS:  | APPROVED BY CAO  |

Staff Report

Origin

The purpose of this report is to provide information on alternative energy options for townhouse projects in response to direction from the Planning Committee on March 4, 2014. The recommendation is to adopt a Townhouse Energy Efficiency and Renewable Energy policy to apply to in-stream and future townhouse rezonings. This policy would be in effect, until a revised energy efficiency policy, which considers all residential buildings of less than five-storeys, is approved. This broader policy will be brought forward in 2015, by Sustainability and District Energy staff with assistance from Development Applications, Building Approvals and Policy Planning, following a review of the pending BC Building Code (BCBC) amendment that is expected in December 2014.

Increased energy efficiency is supported by Council's adopted policies and plans. The 2041 Official Community Plan (2041 OCP) defines a community-wide energy reduction target of 10% below 2007 levels by 2020, as well as Greenhouse Gas (GHG) reduction targets of 33% below 2007 levels by 2020 and 80% below 2007 levels by 2050, subject to senior government action. The City adopted a Community Energy and Emissions Plan in early 2014, which includes:

Action 4: Promote energy efficiency in all rezonings.

Improving energy efficiency also supports Council's commitments under the BC Climate Action Charter signed in 2008 and it is in line with the following 2011-2014 Council Term Goal #8 (Sustainability):

8.1: Continued implementation and significant progress towards achieving the City's Sustainability Framework, and associated targets; and

8.4: Review opportunities for increasing requirements for sustainable development for all new developments including consideration of increasing requirements for sustainable roof treatments and energy security

Background

Improving the minimum energy performance of new buildings reduces community-wide energy use, related GHG emissions and household energy spending. The incremental cost is reduced, if new homes are designed and constructed for energy efficiency, and improvements can result in energy cost savings to the owner that exceed the initial investment in a short timeframe. The recognition by lenders and other financial institutions of this value is reflected in the availability of reduced mortgage loan insurance premiums for energy efficient homes.

The City has established policies to achieve greater energy performance in new developments including requiring a LEED Silver equivalency for City Centre rezonings and connections to City district energy utilities for larger multi-family residential and mixed use buildings. The City does not currently have similar energy efficiency policies that apply to townhomes. Changes in the market, technologies, incentives and the pending updated BC Building Code create new opportunities to improve energy efficiency in more buildings types, including townhomes.

Analysis

Townhousing in Richmond

Richmond is a leading municipality in Metro Vancouver for new townhouse development. It delivers many of the features of single detached housing, along with the benefits of higher density forms. Townhousing is already a relatively energy efficient form of housing, as their construction details are similar to single detached houses (e.g., insulated wood frame, low window-wall ratios), and they have smaller unit sizes than single detached houses and shared walls with adjoining units. BC Hydro estimates that a single detached house in the Lower Mainland is expected to use over 50% more energy than a townhouse.

Recent Richmond townhouse developments range from 3 to 141 units and one-third have ten units or less. Going forward, to have this type of townhouse development be more efficient, an effective policy would achieve the following: for developers it would provide flexibility, enable them to obtain the advice of energy professionals, maximize access to incentives and minimize incremental capital costs; for residents it would reduce operating costs; and for the City, it would be administrable within existing City Permitting and Inspection resources, and result in measurable progress towards achieving Richmond's energy and GHG reduction goals.

While townhouse construction results in higher energy efficiency, rezoning single-family lots for multi-unit townhouse development increases total energy consumption. This suggests that, to achieve its energy and GHG reduction targets, the City needs take more action.

Policy Approaches

Staff considered three approaches for measuring townhouse energy performance: "Prescriptive", "Performance" and "On-Site Renewables". Table 1 provides an overview of each approach and includes the stakeholder impact and incremental capital cost of different approaches. Staff recommend a policy which utilizes all three approaches, and emphasizes the Natural Resources Canada EnerGuide Rating System (ERS) energy performance requirements (an accepted industry). The proposed policy also includes a requirement for new townhouses to have solar hot water-ready fixtures. Discussion about the Natural Resources Canada EnerGuide Rating System (ERS) and the proposed policy follows.

EnerGuide Rating System (ERS)

The Natural Resources Canada (NRCan) ERS is referenced by the National Building Code, BC Building Code, CMHC and some local government policies. This national initiative is designed to have developers work with professional energy advisors to identify effective and appropriate townhouse efficiency upgrades prior to construction. Predicted energy use modeled from building siting and specifications determines the ERS rating.

| Table 1: Stakeholder Impacts and Incremental Capital Cost of Different Approaches | | | |
|---|---|--|---|
| Item | Prescriptive Approach | Performance Approach EnerGuide Rating System | On-site Renewables |
| Description | List of above code requirements for mechanical equipment | Require Certified Energy Advisor (CEA) Evaluation Report demonstrating that the most marginal unit is designed to minimum ERS standard | List of accepted mechanical equipment and minimum thresholds for on-site renewable energy generation |
| Stakeholder Impacts | Applicant | <ul style="list-style-type: none"> - Maximum certainty - No required support - Limited design flexibility - May be eligible for incentives - Limited building design impact - Not generally visible | <ul style="list-style-type: none"> - CEA guidance and support - Maximum flexibility - May be eligible for incentives - Limited building design impact - Not generally visible |
| | Resident | Not eligible for rebates | <ul style="list-style-type: none"> - Potential uncertainty if performance required - No required support - Limited design flexibility - Limited current incentives - May impact building design - May be visible with potential marketing benefit |
| | City | <ul style="list-style-type: none"> - Staff maintains policy to reflect building practice, codes and technologies - May increase permitting and inspection resources required - The City has limited authority in some instances | <ul style="list-style-type: none"> - Eligible for rebate - No unfamiliar mechanical equipment |
| Incremental Capital Cost | <ul style="list-style-type: none"> - Medium: Highly variable costs depending on prescriptive measures - Estimated at \$5,000 to reduce energy 15% | <ul style="list-style-type: none"> - Natural Resources Canada maintains standard and certifies CEAs - Project review completed by applicant's CEA | <ul style="list-style-type: none"> - Not eligible for rebates - Most cost effective response is typically an air-source heat pump which may have impacts at townhouse densities |
| | | <ul style="list-style-type: none"> - High: \$4,000 to \$20,000 per unit to reduce energy 15%-35% - Costs are declining and efficiencies increasing for some technologies | |

Referencing EnerGuide takes advantage of the established Certified Energy Advisor (CEA) profession and gives builders the flexibility to respond to changes in the industry. Connecting developers with CEAs enables developers to determine cost-effective energy efficiency strategies and up-to-date information on available rebates and incentives. Energuide is familiar to industry, identifies conservation opportunities that are cost-effective and limits resource requirements for municipal enforcement.

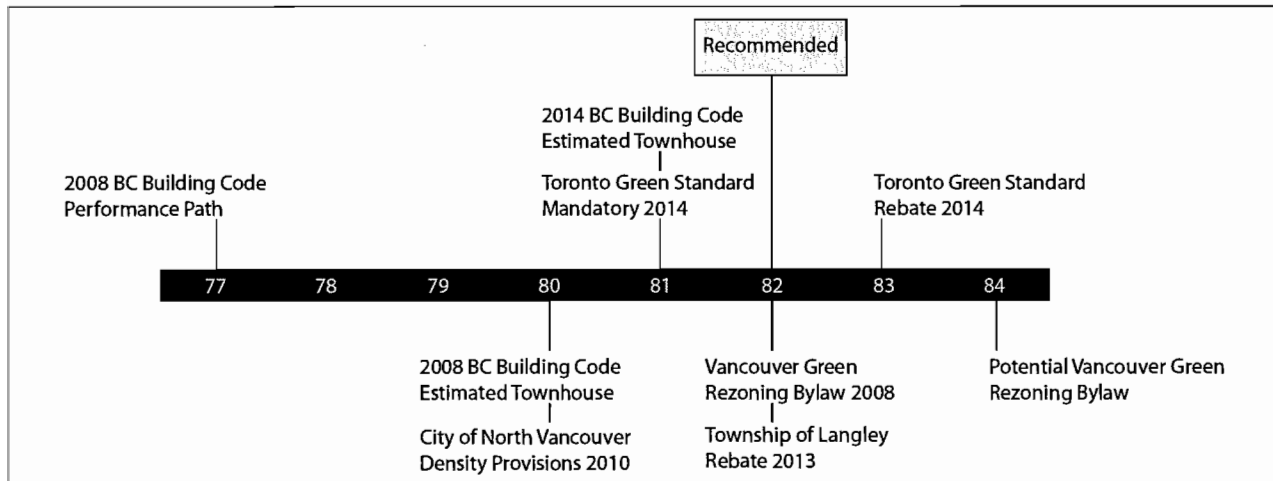
EnerGuide includes a testing component to certify the final buildings. The City's proposed approach does not include a requirement for EnerGuide certification, but the applicant will be encouraged to certify their projects, since developers are eligible for a BC Hydro rebate and buyers' are eligible for a CMHC mortgage insurance premium rebate if the purchased unit is certified.

ERS 82 is the recommended minimum rating, which represents an increase in energy efficiency beyond current requirements for townhouses built to BC Building Code requirements (Figure 1).

This rating allows townhouse projects to rely primarily on improved airtightness and insulation, with improved mechanical equipment such as a heat recovery ventilator.

This standard is intended to serve as an interim step, to allow the building industry time to adapt to both the proposed policy and the upcoming Code change. The estimated median incremental capital cost per unit is \$2,200 reducing to around \$1,000 with the 2014 code. CEA fees for townhouse projects are estimated to be \$350 per unit tested. Annual energy savings are approximately 8.6 GJ per unit or 15%.

Figure 1. EnerGuide ratings applicable to townhouse projects



Recommended Policy

The recommended policy would:

- require new townhouses:
 - to be designed to score 82 or higher on the EnerGuide Rating System (ERS). To achieve this target, developers would be required to retain a certified energy advisor (CEA) to complete an Evaluation Report for improved energy performance on the most marginal (i.e., greatest design heat loss) units, which would confirm that the Building Permit specifications for the all units will achieve or exceed an ERS score of 82. The developer would be required to register a covenant on title that all the units are built and maintained to the ERS 82, or a higher standard; and
 - to be solar hot water-ready; or
- alternatively, new townhouses would be exempt from the above requirement, if they are connected to a district energy utility, or include the installation of industry proven renewable energy systems (e.g., geexchange, solar water heating, photovoltaic energy) which provide the majority (at least 51%) of heating, cooling and/or electrical energy load requirements.

The proposed policy would apply to all new townhouse rezoning proposals regardless of the number of units. If this approach is applied to in-stream projects, the following total savings would be expected:¹

| Estimated Cost Savings | Comment |
|------------------------|---|
| - \$225,400 | - Total utility rebates that would be available to developers |
| - \$362,900 | - Total potential mortgage insurance rebate to buyers |
| - \$158,700 | - Total annual energy savings for owners |
| - 131 tonnes | - Total estimated annual CO2e reduction of community-wide GHG emissions, equivalent to removing 41 cars from the road |

Proposed 2041 Official Community Plan Text Amendment

The proposed Townhouse Energy Efficiency and Renewable Energy OCP amendment provides clarity and transparency to all applicants. The recommendation is that the OCP amendment be applied to those rezoning applications under staff review, or received after the adoption of the proposed OCP amendment. All in-stream townhouse projects that have not been granted 3rd reading for rezoning have already begun committing to these rezoning considerations. The existing 2041 OCP guidelines inform applicants of the City's current energy conservation expectations, but these will be significantly clarified by the proposed amendment.

Each rezoning application would be considered on its own merit and all utility incentives would continue to be available to developers who meet higher energy standards (e.g., BC Hydro incentives). New townhouse applicants who also seek to amend the 2041 OCP land use designation may be expected to exceed these minimum expectations.

Consultation

On May 28, 2014, staff discussed the proposed townhouse energy efficiency changes with the Urban Development Institute (UDI) and Richmond Small Home Builders Group. The Small Home Builders Group indicated acceptance of the proposed approach, noting that the incremental capital costs presented in this report are aligned with their own findings. Both groups raised concerns over the total costs of development, including both development cost charges and community amenity contributions, and the impact that these may have on housing costs and affordability. One developer also responded, indicating support for energy efficiency initiatives, but preferred different approaches to address incremental capital cost. The correspondence supports the City's recommended approach to "rough-in" versus to "require" the installation of renewables to accommodate future technological and energy pricing shifts. The recommended approach is generally preferred by stakeholders when compared to a more prescriptive approach.

In accordance with OCP Bylaw Preparation Consultation Policy 5043, staff recommend that no additional stakeholder consultation is required and the proposed OCP Amendment Bylaw 9147 can be discussed at the Public Hearing.

¹ Calculations derived from median values modeled for electric and gas conditioned units from BC Hydro and FortisBC consultant studies. Rebates assume ERS 82 certification and Energy Star appliance installation. Mortgage insurance amount is based on Richmond townhouse sale prices, median down payment and industry estimates of insurance use.

Policy Monitoring and Review

Should this policy be endorsed by Council, staff will monitor its implementation. Townhouse applicants will be required to submit reports from a CEA facilitating the review process. Staff will consider how and where energy efficiency requirements can be adjusted, or made more rigorous in accordance with the pending December 2014 BCBC amendment. At this point, it is staff’s expectation that a broader residential energy efficiency policy could be prepared for all Part 9 residential buildings city-wide (Table 2) in 2015. This broader policy has the potential to better address energy efficiency requirements for single detached houses, as well as low-rise buildings and may involve bylaw amendments, establishing Development Permit areas and feebate programs. The policy would be prepared in consultation with UDI and the Small Builders Group.

Table 2: Richmond Energy Efficiency Policies and Regulations


| Land Use | Rezoning | Development Permit | Building Permit |
|--|---|--------------------|---|
| Single detached | To be considered after the policy monitoring and review stage, as discussed above in this report. | | |
| Townhousing | Proposed Bylaw 9147 (This Report) | Guideline 14.2.10 | |
| Low-rise housing (outside West Cambie and City Centre) | | | |
| Low-rise housing (City Centre) | | | |
| High-rise housing (City Centre) | LEED equivalency | | ASHRAE / NECB compliance in development |

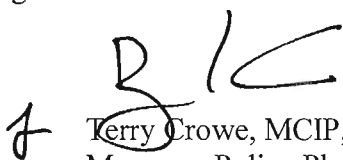
Financial Impact

None at this time.

Conclusion

Richmond has demonstrated leadership in increasing building energy efficiency and reducing related GHG emissions. The 2041 Official Community Plan and Community Energy and Emissions Plan together are a strong framework to pursue the City’s community-wide targets. While Richmond is already a leader in townhouse development, further action is needed to achieve improved energy efficiency. The proposed interim policy provides new townhouse developers with flexible ways to identify and implement more cost effective and energy efficient townhouses at the construction stage. This approach is aimed at providing future townhouse owners with lower energy costs.


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 Manager, Policy Planning Division,
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**Richmond Official Community Plan Bylaw 9000
Amendment Bylaw 9147
(Townhouse Energy Efficiency and Renewable Energy)**

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

- 1. Richmond Official Community Plan Bylaw 9000 is amended by adding the following text after Chapter 12.4 Energy, Objective 2:

Objective 3: To improve townhouse energy efficiency and renewable energy systems.

Policies:

- a) new townhouses are required;
- to be designed to score 82 or higher on the EnerGuide Rating System (ERS). To achieve this target, developers are to retain a certified energy advisor (CEA) to complete an Evaluation Report, for improved energy performance on the most marginal (i.e., greatest design heat loss) units, which confirms that the Building Permit specifications for the all units achieve or exceed an ERS score of 82. The developer would be required to register a covenant on title that all the units are built and will be maintained to the ERS 82, or a higher standard; and
- to be solar hot water-ready; or
b) alternatively, new townhouses will be exempt from a) above, if they connect to a district energy utility, or install industry proven renewable energy systems (e.g., geexchange, solar water heating, photovoltaic energy) which provide the majority (at least 51%) of heating, cooling and/or electrical energy load requirements.

- 2. This Bylaw may be cited as "Richmond Official Community Plan Bylaw 9000, Amendment Bylaw 9147".

FIRST READING

PUBLIC HEARING

SECOND READING

THIRD READING

ADOPTED

MAYOR

CORPORATE OFFICER

CITY OF RICHMOND
APPROVED for content by originating Dept
[Signature]
APPROVED for legality by Solicitor
[Signature]