



City of Richmond

Report to Committee

To: Planning Committee **Date:** May 12, 2016
From: John Irving, P.Eng. MPA **File:** 10-6125-07-02/2016-
Vol 01
 Director, Engineering
Re: **Energy Policies for New Private Buildings Update**

Staff Recommendation

That the report "Energy Policies for New Private Buildings Update" dated May 12, 2016, from the Director, Engineering, be received for information.

John Irving, P.Eng. MPA
 Director, Engineering
 (604-276-4140)

REPORT CONCURRENCE		
ROUTED TO: Development Applications Policy Planning	CONCURRENCE <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	CONCURRENCE OF GENERAL MANAGER
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: DW	APPROVED BY CAO

Staff Report

Origin

The inclusion of solar energy and other energy efficiency measures in new private developments has been frequently discussed as part of a number of development applications at Planning Committee. This report reviews solar and other renewable energy and energy efficiency building technologies, and provides an update on development of energy policy for new private developments in Richmond.

This report supports Council's 2014-2018 Term Goal #4 Leadership in Sustainability:

Continue advancement of the City's sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond's position as a leader in sustainable programs, practices and innovations.

4.1. Continued implementation of the sustainability framework.

Background

Community Energy & Emissions

In 2010, Council adopted targets in Richmond's Official Community Plan to reduce community greenhouse gas (GHG) emissions 33% below 2007 levels by 2020, and 80% below 2007 levels by 2050. The 2041 Official Community Plan also includes a target to reduce energy use 10% by 2020 below 2007 levels. Richmond's 2014 Community Energy and Emissions Plan (CEEP) outlines an array of strategies and actions for the City to take to reduce community energy use and GHG emissions, including:

Strategy 2: Increase Energy Efficiency in New Developments

- **Action 4:** Promote energy efficiency in all rezoning.
- **Action 5:** Develop incentives for new development to exceed the building code energy requirements.

Strategy 10: Utilize Local Energy Sources

- **Action 26:** Promote building scale renewable energy - explore opportunities to implement education, incentives and requirements.

Modeling undertaken as part of the CEEP indicates that in order for Richmond to meet its emissions targets, all new buildings would need to be constructed to achieve zero carbon emissions by 2025. Thus, pursuing Carbon Zero Buildings is one of the "Big Breakthroughs" called for in the CEEP.

Current Energy-Related Requirements in Private Developments

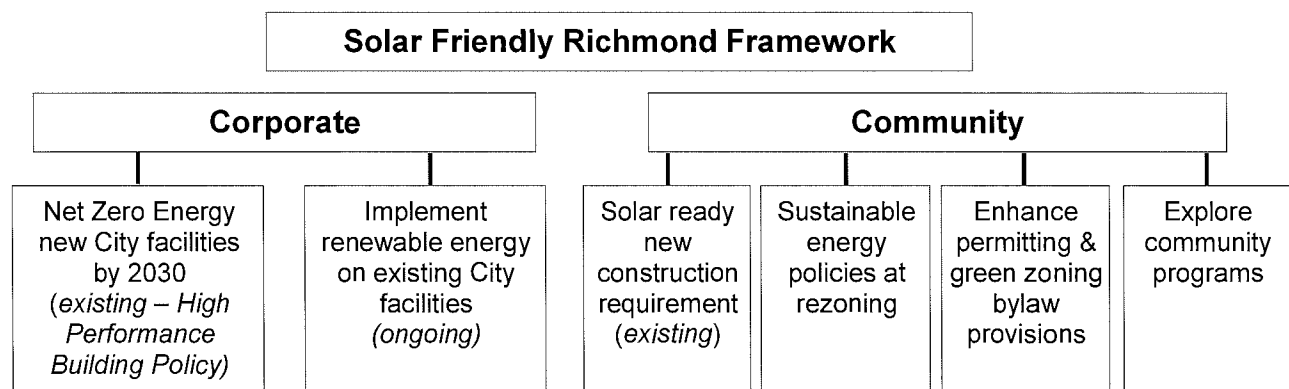
A variety of existing City policies support energy performance in new developments, including:

- The “Sustainability Package” in the City Centre Area Plan
 - Leadership in Energy and Environmental Design (LEED™) Silver in City Centre – The 2009 City Centre Area Plan includes a policy that new developments over 2000m² undergoing rezoning achieve a minimum of LEED™ Silver performance.
 - District Energy Ready – New mixed use and residential developments located in areas of the City Centre where district energy systems may be established are expected to be developed with mechanical system that can connect into these systems. This requirement allows for provision of heating, cooling and domestic hotwater energy to developments using low-carbon sources.
- Townhouse Energy Efficiency and Renewable Energy policy – In 2014, Council adopted a policy in the Official Community Plan that new townhome developments undergoing rezoning achieve Energuide 82. In 2015, adherence to the Energy Star for Homes rating system was added as an additional compliance option.
- Solar Ready Homes Requirement – In 2010, Council opted into the provincial Solar Hot Water Ready Regulation for new single family homes. This regulation requires new homes to be constructed so that rooftop solar systems may be installed in the future.
- LEED™ Silver referenced in Green Roof Bylaw 8385 – In 2008, Council adopted Bylaw No. 8385 Green Roofs & Other Options Involving Industrial & Office Buildings Outside the City Centre. The bylaw applies to industrial or office buildings greater than 2000m². LEED™ Silver is a compliance option.

There are currently no energy related requirements or policies applicable to large developments outside of the City Centre Area Plan.

Solar Friendly Richmond Framework

In February 2016, Council received a report regarding the Solar Friendly Richmond Framework, outlined in the diagram below:



Staff are currently working on implementing this Framework and an update will be provided in the next Community Energy & Emissions Plan update. This report pertains to the “Sustainable energy policies at rezoning” component of the Framework.

Analysis

The Building Act and the “Stretch Code”

In 2015, the provincial government enacted the Building Act for the intended purpose of unifying building regulations and their implementation throughout British Columbia. The Building Act gives the Minister Responsible for Housing sole authority for developing building regulations. Section 5 of the Building Act stipulates that as of December 2017, local government building requirements will have no effect to the extent that they relate to provincial building regulations, such as the BC Building Code.

Provincial staff have stated that the *Building Act* will not impact local government policies, nor negotiated agreements at time of rezoning. Thus, policies applying to rezoning may be unaffected by the Building Act. Determination of the extent and effect of the Building Act is expected to evolve as provincial regulations are developed.

City staff are participating in an Energy Efficiency Working Group (Working Group) convened by the provincial Building and Safety Standards Branch. The Working Group is providing recommendations on “Stretch Code” energy standards, which the Province may endorse as an energy standard that local governments can adopt in bylaw, as well as reference in policies and negotiated agreements. Representatives on the Working Group include local governments, utilities, design professional associations (the Architectural Institute of BC and the Association of Professional Engineers and Geoscientists of BC), the Urban Development Institute, Canadian Home Builders Association, Greater Vancouver Home Builders Association and others.

The Stretch Code is intended to more consistently realize low energy and emissions buildings than current green building rating systems. It is envisioned to have increasingly stringent tiers of energy performance, ultimately leading to “zero energy ready” buildings of similar performance to the world’s most efficient buildings. The structure of these tiers for houses and residential buildings three stories or less and more than 600m² (“Part 9” construction) is under development. For larger construction, each tier will involve:

- Adherence to an “Enhanced Compliance Package”, involving:
 - Energy modeling for all projects.
 - Whole building air-tightness testing.
 - Energy commissioning requirements.
 - Building energy reporting.
- Exceeding minimum energy and emission targets. Targets that are anticipated include:
 - Thermal energy demand intensity (kWh/m²/year) – The annual modeled thermal energy required to provide space heating for a development, assuming 100%

equipment efficiency. This target supports energy efficient building envelop and passive design features.

- Total energy use intensity (kWh/m²/year) – The total annual modeled energy demand of a development. This target encourages all building systems to be energy efficient.
- Option for consideration: Greenhouse gas intensity (kg CO₂e/m²/year) – The total annual greenhouse gas emissions from a development. This metric encourages efficiency, and low-carbon energy sources, including renewable energy.

Staff continue to engage with the Working Group to finalize the proposed Stretch Code.

High Performance Policy for New Private Buildings

To fulfill the CEEP's Action 4 to "Promote energy efficiency in all rezoning", staff are in the process of developing a High Performance Policy for New Private Buildings for Council's consideration. As currently conceived, this policy is intended to apply to all rezonings across the City. The intent of this new policy is to replace LEED Silver energy requirements in the City Centre Area Plan and Green Roof Bylaw 8385.

Benefits for implementing a policy for new private buildings include:

- Decreased carbon emissions.
- Reduced energy spending.
- Improved comfort and interior air quality (due improved ventilation).
- More durable buildings due to improved envelopes.

Further development of the High Performance Policy for New Private Buildings and the Stretch Code is required before they are presented to Council for consideration. Staff intend to bring forward a report on the policy in 2016 for consideration for the purposes of stakeholder consultation. The report will recommend how energy efficiency performance standards, including the Stretch Code, may be referenced as part of rezoning applications and other policy mechanisms.

Sustainable Energy Technologies and Costs

Building scale renewable energy systems, particularly solar photovoltaics (solar PV) which produce electricity, have been decreasing in price. Solar PV is projected to become increasingly viable in coming years, and rooftop solar installations are increasing in BC. Staff estimates that using solar PV to meet 10% of the total energy demand of a new multiunit residential building constructed to the energy requirements of the BC Building Code would cost approximately \$6,000 per unit.

Notwithstanding solar PV's increasing viability, energy efficiency can realize lower cost energy resources above and beyond minimum BC Building Code requirements. Analysis of a recent development proposal in Richmond suggests a cost of approximately \$2500 per housing unit to

reduce energy consumption 20% below the energy requirements of the BC Building Code through common energy efficiency technologies. Likewise, modeling completed to inform the Stretch Code development process suggests that investing \$4,000 to \$11,000 per housing unit can realize 40-60% energy savings through more efficient building design, depending on building systems. Other recent studies reach similar conclusions. The development industry has also communicated that investing in building efficiency can be more cost effective and realize greater total energy resources.

The High Performance Policy for New Private Buildings will focus predominantly on energy efficiency. Developments will continue to be free to incorporate renewable energy systems, such as solar, to meet or exceed prescribed performance standards. Additionally, provisions will continue to be applied mandating that new developments are “solar ready”.

Financial Impact

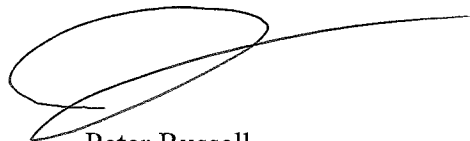
None.

Conclusion

This report provides an update regarding renewable energy and energy efficiency building technologies, and the development of a High Performance Policy for New Private Buildings that is currently under development.



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