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**SUBJECT BC STEP CODE LOW CARBON ENERGY SYSTEM
IMPLEMENTATION**

OVERVIEW

Purpose of Report

To inform the Environment Committee of upcoming changes to the British Columbia Building Code which will allow local governments to regulate greenhouse gas emissions in new buildings and seek support to begin industry consultation on this topic.

Recommendation

That the Environment Committee recommend that Council direct Staff to begin preparation for industry consultation on the implementation of the upper steps of the BC Energy Step Code and greenhouse gas emissions targets for new buildings.

BACKGROUND

The British Columbia (BC) Energy Step Code, enacted in April 2017, is a provincial energy efficiency building compliance path which local governments may choose to use to incentivize or require a level of energy efficiency in new construction that goes above and beyond the requirements of the BC Building Code. The ultimate goal of the Step Code is to support a transition to net zero ready buildings by 2032. Step Code includes a tiered path to energy efficiency standards in new buildings as shown in Attachment A – BC Energy Step Code.

On 2018-JUL-09, Council endorsed the City of Nanaimo's "BC Energy Step Code Implementation Strategy". With the adoption of amendments to the Building Bylaw on 2019-OCT-21, Council introduced phased Step Code requirements for new buildings starting on 2020-APR-21. On 2019-NOV-04, Council adopted the amendment to Schedule D of the Zoning Bylaw No. 4500 to award points towards additional density for developments that exceed the Step Code requirements of the Building Bylaw in the City's density bonus program.

On 2021-JUN-29, the City's BC Energy Step Code Rezoning Policy came into effect. The policy requires all new buildings that require rezoning to be either one step above the BC Energy Step Code prescribed for that building or subject to a legal commitment to install a low-carbon energy system (LCES) that satisfies a greenhouse gas intensity limit of 3kgCO₂e per m² per year. At the time the rezoning policy was developed, the LCES path was not officially included in the BC Energy Step Code. The Province has now advised local governments that a LCES path will be included in the next round of BC Building Code updates, expected in December 2022.

As of 2022-JAN-02, the City's Building Bylaw requires that all new Part 9 (houses and small) buildings in the city meet Step 3 (approximately 20% more energy efficient than current building code requirements) and all Part 3 (large and complex) buildings meet Step 2 (approximately 20-

40% more energy efficient) of the BC Energy Step Code. No further plan has been established for the implementation of the upper steps of the BC Energy Step Code in Nanaimo.

DISCUSSION

Buildings and infrastructure accounted for 31% of the City's 2017 community greenhouse gas (GHG) emissions. Existing low-rise residential buildings alone make up approximately 18% of the City's total emissions. The energy efficiency improvement in new buildings from the implementation of the current BC Energy Step Code is estimated to account for 2.4% of the emissions reductions needed to meet the City's 2050 GHG reduction targets. In order to more effectively meet the City's climate targets, the City needs to take further action to reduce the emissions from new buildings. Staff plan to undertake consultation on accelerating the City's Step Code compliance and LCES adoption in new buildings to directly support the following two policies in the newly adopted City Plan:

C1.1.4 Accelerate zero carbon and energy efficiency building design and practices for all new construction before 2030, and require this for all new construction after 2030.

C1.1.8 Support, prioritize, and advocate for low carbon energy systems in all new construction.

Low Carbon Energy Systems (LCES) / Greenhouse Gas Intensity (GHGi)

A LCES refers to a mechanical system or systems that provides thermal conditioning and domestic hot water for a building using primarily low-carbon energy sources including electricity. LCES's are typically evaluated based on the total greenhouse gas emissions from the building or the building's greenhouse gas intensity (GHGi¹).

In BC, using electricity as the primary heat source within a building has been proven to be a far more effective way of reducing GHG emissions from buildings than Step Code compliance alone. A recent study by AES Engineering has shown that a Step 2 Part 9 building heated with electricity has a lower GHGi than even a Step 5 Part 9 building heated with natural gas, as shown in Attachment B.

Anticipated Provincial Code Changes

In February 2022, the Province of BC shared preliminary information with local governments regarding the Province's intention to make a number of changes to the British Columbia Building Code (BCBC) in order to reduce greenhouse gas emissions from new construction. In addition to requiring Step 3 for Part 9 buildings and Step 2 for Part 3 buildings, the Province is introducing a LCES path by including greenhouse gas (GHG) targets for new buildings. The Province has indicated that it intends to implement GHG targets in a manner similar to the Step Code. Local governments may reference the targets in their building or zoning bylaws and may also apply different tiers of GHG targets. The Province described the four tiers as follows:

¹ GHGi represents the amount of GHG emissions per unit area for the building, typically measured in kilograms of carbon dioxide equivalent (CO₂e) per square metre per year. For example, the LCES path of the City's current rezoning policy requires a low-carbon energy system that satisfies a greenhouse gas intensity limit of 3kgCO₂e per m² per year.

1. Measure-only (requires measurement of a building's emissions *without* reductions, and is intended to build knowledge and capacity);
2. Medium carbon (in most cases, will require decarbonization of *either* space heating or domestic hot water systems);
3. Low carbon (in most cases, will require decarbonization of *both* space heating and domestic hot water systems); and,
4. Zero carbon ready.

The approach to GHG targets varies between Part 3 (large and complex) and Part 9 (houses and small) buildings.

For Part 3 buildings, the approach will use GHGi targets. GHGi targets will be different at each level (medium, low, and zero carbon) based on occupancy types. It is worth noting, the GHGi target at the low carbon level for multi-family, office, and retail buildings is equivalent to the City's existing rezoning policy requirement of 3kgCO_{2e} per m² per year.

For Part 9 buildings, the new approach includes a total GHG base allowance (expressed in kilograms of CO_{2e} per unit per year) as well GHGi targets. The GHG base allowance is suitable for smaller homes while the GHG intensity targets and the total cap approach are more suitable for larger homes. The dual path system for Part 9 buildings is expected to work as follows:

1	Base GHG allowance	A minimum GHG base allowance will be established for each GHG level (medium, low, and zero carbon). If the building meets the base allowance no further action is necessary.
2	GHGi Intensity requirements	If the dwelling unit exceeds the base allowance it must either meet a GHGi or GHG maximum cap, whichever emits the least total GHG.
3	Maximum GHG Cap	

The Province's proposed targets for Part 3 and Part 9 buildings are summarized in Attachment C.

Finally, a prescriptive path to decarbonize buildings is also being proposed. Builders can achieve the prescriptive path by choosing a low carbon energy source for the building's heating and hot water systems.

The Province's studies and modeling suggest the proposed targets will be easily achievable for most buildings that meet a minimum of Step 3 for Part 9 buildings and Step 2 for Part 3 buildings. Any GHG requirements should be implemented along with a minimum step code requirement, but may be used as an alternative to a higher level of Step Code compliance.

While the Province has not officially announced when the code changes will be implemented, they have indicated it will likely be in late December 2022. At such time, municipalities can choose to implement the GHG targets. The Province will be conducting six in-depth consultations with provincial stakeholders including local government, however no dates have been set for these consultations. Minimum province-wide emissions requirements for new buildings are anticipated to be phased in between 2024 and 2030.

Next Steps for Nanaimo

In order to prepare local industry for the 2024 Provincial changes, and accelerate the City's action to meet our climate targets, Staff recommend the City consider implementing GHG targets in 2023 for new buildings. Implementation may include adopting required medium or low GHG levels at the building permit stage and required low or zero carbon ready levels through rezoning and/or incentivizing a zero carbon ready level within Schedule D of the Zoning Bylaw (density bonus).

Before implementing requirements for GHG targets for new buildings, the Province recommends local government's first consult with local building and development industry stakeholders and seek to understand the local industries readiness to implement these changes. To prepare for early implementation, Staff recommend preparing for consultation with building industry stakeholder in the fall with consultation to begin in early 2023, in order to support potential bylaw amendments later in the same year. Staff have also started discussions with the Regional District of Nanaimo and member municipalities to support a region wide engagement approach regarding Step Code and GHG requirements in 2023.

OPTIONS

1. That the Environment Committee recommend that Council direct Staff to begin preparation for industry consultation on the implementation of the upper steps of the BC Energy Step Code and greenhouse gas emissions targets for new buildings.
 - The advantages of this option: This option will allow the City to advance preparations for the proposed code changes and take a leadership role on reducing emissions from new buildings. Early preparation will allow the City to accelerate the implementation of the upper step code compliance and GHG requirements once the Provincial changes are adopted.
 - The disadvantages of this option: While the Province has disclosed the proposed changes to local governments to help prepare for the upcoming update, formal provincial consultation is not complete and the code changes have not been formally adopted. As such, some uncertainty related to the specific changes and provincial implementation timeline may lead to additional Staff effort to adapt to potential changes.
 - Financial Implications: The City will work with the Regional District of Nanaimo to participate in and benefit from a region-wide consultation which will likely provide cost savings. The Sustainability Section has budgeted up to \$5,000 to support consultation that would help tailor the recommendations to the City. Financial implications of adopting potential building GHG targets for both the City (Staff time) and building industry will be considered during stakeholder consultation and Staff recommendations.
2. That the Environment Committee recommend that Council direct Staff do not begin preparation for industry consultation on the implementation of the upper steps of the BC Energy Step Code and greenhouse gas emissions targets for new buildings.
 - The advantages of this option: This option will allow time for the Province to adopt the proposed changes and therefore provide a greater level of certainty before Staff

- begin preparation. This option will also allow a newly formed Council to provide direction after the October municipal election.
- The disadvantages of this option: This option will delay Staff's ability to implement GHG targets for new buildings and prepare local builders for the proposed provincial code changes in 2023.
 - Financial Implications: There are no additional financial implications with this option.
3. That the Environment Committee provide alternate direction.]

SUMMARY POINTS

- Regulating low carbon energy systems and greenhouse gas requirements has proven to be a more effective way of reducing greenhouse gas emissions from new buildings than Step Code compliance alone.
- The Province has shared with local governments the proposed changes to the BC Building Code which will allow local governments to include greenhouse gas emission targets for new buildings.
- The Province has indicated the new changes will come into effect in late December 2022.
- Staff are proposing the City prepare to implement the upper steps of the BC Energy Step Code and greenhouse gas emission targets for new buildings and begin stakeholder consultation in early 2023.

ATTACHMENTS:

ATTACHMENT A: BC Energy Step Code

ATTACHMENT B: Step Code vs. Low Carbon Energy System GHGi Performance

ATTACHMENT C: Proposed Provincial GHG targets

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