Report to Council

Date:	March 20, 2018
File:	0920-02
To:	City Manager
From:	Ashley Lubyk, Community Energy Specialist
Subject:	Energy Step Code Implementation Strategy

Recommendation:
THAT Council receives, for information, the report from the Community Energy Specialist dated March 13, 2018, with respect to the Energy Step Code Implementation Strategy.

AND THAT Council direct staff to engage key stakeholders on the proposed Energy Step Code timeline and strategy for Kelowna.

Purpose:
To inform Council on the BC Energy Step Code and to obtain Council's endorsement on the proposed BC Energy Step Code implementation timeline and strategy prior to stakeholder engagement.

Background:
Buildings account for approximately 36% of Kelowna's community GHG emissions. Increasing energy efficiency in buildings is identified as one of the primary means for Kelowna to achieve its GHG emission reduction target of 4 per cent below 2007 levels by 2023. The easiest and most cost effective time to make energy efficiency upgrades is during the construction of new buildings.

Provincial Climate Leadership Plan

The Province's Climate Leadership Plan, released in 2016, includes several important actions pertaining to reducing emissions in the building sector. These included:

- Accelerating increased energy requirements in the BC Building Code by taking incremental steps to make buildings "net-zero energy ready"[1] by 2032.
- Developing the "BC Energy Step Code", consisting of energy efficiency requirements for new buildings that go beyond those in the BC Building Code.

[1] A net-zero energy ready building is designed and built to reduce energy needs to a minimum such that with the inclusion of on-site renewable energy systems, the building has the ability to produce as much energy as it consumes on a yearly basis.

The BC Energy Step Code

The *BC Energy Step Code* is a provincial standard designed to help both local government and industry incrementally move toward a future in which all new construction across the province is "net-zero energy ready" by 2032. A variety of stakeholders were involved in its development, including the Urban Development Institute, Canadian Home Builders Association, BC Hydro, FortisBC, Architectural Institute of BC, the Association of Professional Engineers and Geoscientists of BC, BC Housing, the Local Government Management Association, as well as a number of local governments.

On April 11, 2017, the Province announced its adoption of the *BC Energy Step Code* as a technical regulation. It is currently a voluntary compliance path within the BC Building Code (9.36.6) that establishes a series of measurable, performance-based energy-efficiency targets (or steps) that supports market transformation from the current prescriptive energy-efficiency requirements to net-zero energy ready buildings by 2032. The BC Energy Step Code aims to provide consistency across BC by creating a standard set of performance requirements, while offering local governments a simple and effective set of standards to support their energy conservation and greenhouse gas reduction goals.

Shifting to a Performance-Based Approach

The BC Energy Step Code marks an end to the prescriptive approach. Instead, a building's performance must be proven, demonstrated through whole-building energy modelling and on-site testing to validate how the design, and the constructed building, meet the performance targets associated with each 'Step'. A "performance" approach is inherently flexible, as it simply establishes a performance target and leaves it to the building team to decide how to meet the target in the most efficient and cost effective manner.

How Many Steps Are There?

The Energy Step Code consists of two broad sets of energy standards that cover:

- "Part 3" buildings – large and/or complex buildings such as large multi-family, commercial, and industrial buildings, and
- "Part 9" buildings – residential buildings three (3) stories and less, and under 600m^2 building area.[2]

Additionally, the Energy Step Code varies between climate zones. Kelowna is within Climate Zone 5, and currently, for municipalities outside Climate Zone 4 (Lower Mainland and South Vancouver Island), the BC Energy Step Code only applies to Part 9 residential buildings. For Part 9 buildings, there are five performance target steps, each representing a higher level of performance. Steps 1 through 3 represent the Lower Steps, while Steps 4 and 5 form the Upper Steps (Figure 1).

[2] In the future, the Energy Step Code Council will work with stakeholder and experts to develop proposals for Part 3 buildings in other climate zones.

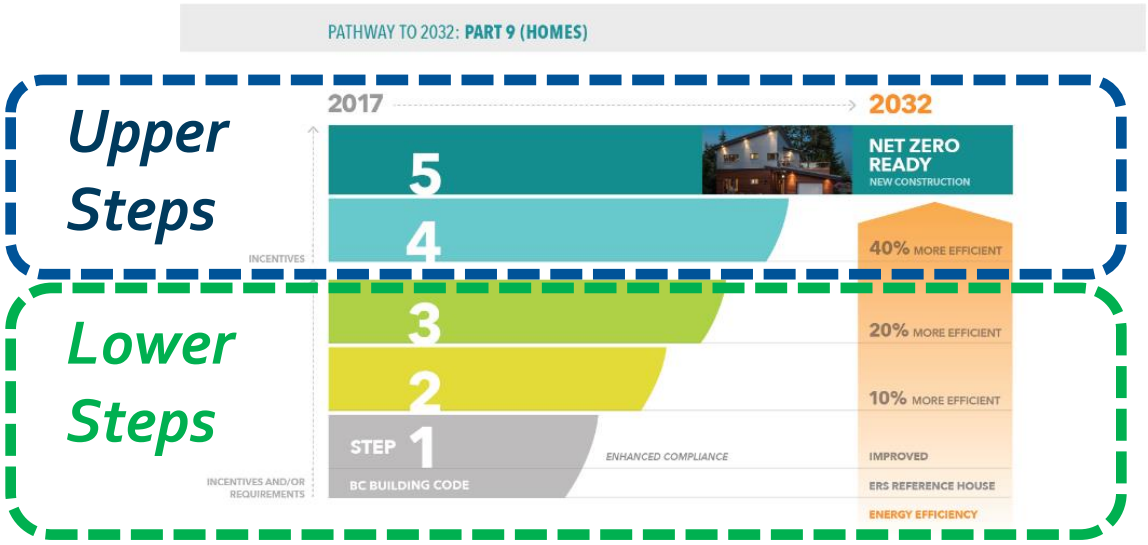

Figure 1: 'Steps' for Part 9 buildings.

Step 1 is designed to familiarize builders with measuring energy efficiency. Builders will need to use a whole-building energy model to calculate the energy consumption of their buildings as well as have a building airtightness test done. However, the construction of the building remains the same as conventional construction and it only needs to meet the performance of the base BC Building Code. The Step Code forms a framework by which the construction industry can, over time, "step up" the performance of their buildings to the net-zero energy ready level that must be achieved by 2032.

How the Energy Step Code can be Used by Local Governments

The BC Energy Step Code policy states that the first three years (2017 to 2020) are to serve as a transition period, during which time the Energy Step Code Council[3] and member organizations will provide support to communities as they learn to apply the regulation. Recognizing that builders, designers, and trades will need time to build capacity to achieve better performing buildings, the Energy Step Code Council recommends that local governments only cite Lower Steps in their policies and regulations (Steps 1 – 3 for Part 9 residential buildings); upper Steps should only be referenced if significant incentives are being offered. Future iterations of the BC Building Code[4] will require Energy Step Code compliance, and this transition period is an opportunity for local governments to be proactive by adopting one or more Steps to enable the local market to mature and to spur increased industry capacity for services and products that support higher performing buildings.

Benefits to the City of Kelowna and Community

Showing leadership on the Energy Step Code not only eases the market into an inevitable future, but the City of Kelowna can champion an initiative that supports its Community Climate Action Plan and Official Community Plan through reduced greenhouse gas emissions and energy use, and its Healthy

[3] The Energy Step Code Council (ESCC) is comprised of associations representing industry professions and trades, local government and public sector organizations, and utilities and consumer interests. Its role is to build consensus between stakeholders and to support a smooth transition to BC Energy Step Code implementation.

[4] The BC Building Code will be updated two or three times prior to 2032, and the Province will most likely move up the steps with each of the Building Code iterations.

Housing Strategy by supporting the creation of housing that results in lower utility bills for owners and occupants. Significant additional benefits are associated with higher performing buildings, including:

- Increased comfort – Buildings with high performance building envelopes are more comfortable, with fewer drafts and more consistent temperatures near exterior windows and walls.
- Quieter homes – Homes with better insulation and airtightness are quieter, with less external noise pollution entering the interior spaces.
- Improved indoor air quality – Buildings constructed with performance in mind have balanced ventilation, delivering fresh air to occupants, while expelling stale air and excess moisture. This results in better indoor air quality and health outcomes for occupants, while reducing moisture related problems.
- Increased building durability and ease of maintenance: Buildings built to Energy Step Code requirements require a whole-systems approach, resulting in buildings with better performing building envelopes that manage moisture and increase durability, while also simplifying building heating and cooling systems. Durable buildings with simpler systems reduce the potential for expensive repairs as a building and its systems age.
- Regional economic development: The global green-building market is said to double every three years, with a value of the green building materials market expected to reach $234 billion by 2019.[5] Since the BC Energy Step Code encourages high performance building envelopes, with many of the components manufactured locally – insulation, windows, a framing components – new local economic development opportunities await.
- Climate change adaptation: Buildings with better building envelopes are more adaptable to changing climates, remaining warmer in the winter and cooler in the summer.

Costs to Energy Step Code Adoption

The BC-Housing-commissioned *Metrics Research Report (2017)*[6] is a comprehensive analysis of the energy, emissions and economic impacts relating to the BC Energy Step Code. It explores the impacts of Step Code adoption across the province's numerous climate zones and across a broad range of building archetypes, including both Part 3 and Part 9 buildings. The general cost implications across all climate zones in BC are summarized as such:

> The research shows that meeting the requirements of the Lower Steps of the BC Energy Step Code involve only very modest construction premiums. **In most situations, builders can achieve the Lower Steps for less than a 2% construction cost premium above that of a home built to the requirements of the *BC Building Code***. The construction cost premiums associated with Step 1 compliance is even smaller—just a small fraction of a percent (Metrics Research Report, 2017, p. 1).

The incremental capital costs associated with Step Code adoption for Part 9 buildings in Climate Zone 5, which Kelowna is in, are summarized in Attachment 1.

Accounts from the certified Energy Advisors working in the region suggest that airtightness practices utilized by many local builders are likely resulting in homes that already meet Lower Step requirements. Although these accounts are anecdotal, they are in keeping with a recent costing study commissioned

[5] "World Green Building Trends 2016, Developing Markets Accelerate Global Green Growth." World Green Building Council.
[6] 2017 Metrics Research Report: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/reports/bc_energy_step_code_metrics_research_report_full.pdf

by FortisBC. The preliminary results of this study suggest that for single family dwellings (both gas/electric and full electric) and townhomes (full electric), Lower Steps (1 & 2) in Climate Zone 5 can be satisfied with only small improvements to airtightness (to 3.0 air changes per hour) on a building built to the prescriptions found in the current BC Building Code; and townhomes (gas/electric) were shown to comply to Lower Steps (1 & 2) with only modest improvements to mechanical systems (an HRV was suggested) and airtightness (to 3.0 air changes per hour) on buildings constructed to the prescriptions found in the current BC Building Code.

Early Stakeholder Engagement

Provincial policy provides guidance for the successful implementation of the BC Energy Step Code. This policy is summarized in the resource titled, *The BC Energy Step Code: A Best Practices Guide for Local Governments*, where it is suggested that local governments provide industry a minimum of six (6) months' notice before new or expanded requirements for Lower Steps are enforced to allow sufficient time to prepare for change.

Engagement to date has included:

- October 5th, 2017 - Mo Bayat, Development Services Director, presented to the Canadian Home Builders Association on the BC Energy Step Code.
- January 11th, 2018 - the City participated in the BC Housing-sponsored Energy Step Code seminar in Kelowna, which was attended by roughly 150 participants, the majority of which are directly involved in the construction industry in the city.
- January 15th, 2018 - the Community Energy Specialist joined Policy and Planning to develop an Energy Step Code implementation strategy for the City of Kelowna.
- January 15th, 2018 – UDI hosted a Step Code roundtable discussion with industry and local government staff from the City of Kelowna, City of West Kelowna, District of Lake Country, District of Peachland and City of Vernon.

Since this time, the Community Energy Specialist has met with internal staff to explore incentives and regulations; regional municipalities to identify synergies for taking a regional approach to implementation; and with key stakeholders (UDI, CHBA-CO, Energy Advisors, ASTT-BC, Okanagan College, and a number of builders and designers) to gather feedback on concerns and to learn what supports industry needs for a smooth transition. The Community Energy Specialist is also part of the Provincial Energy Step Code Peer Network – a platform that allows local governments to share progress updates and best practices for implementation.

This first phase of engagement revealed a number of concerns regarding Step Code implementation, including:

- Concerns over additional building costs;
- Lack of technical training for builders, trades, and designers in achieving Step Code compliance;
- Insufficient Energy Advisor capacity; and
- The process of monitoring for compliance.

These are not unanticipated concerns, and the Energy Step Code Council has created (and continues to develop) a wide-range of tools and resources to help local governments and industry address the

challenges facing Energy Step Code implementation, and City staff intend on using these resources to the fullest extent possible to inform internal staff and the wider building community. City staff have also heard from stakeholders that a clear timeline at the local level is necessary to remove some of the uncertainty as it relates to preparing for the new requirements of the Energy Step Code, particularly in regards to investing in additional training or the hiring of additional staff. Taken together, an implementation timeline is proposed.

Proposed Timeline

The proposed timeline reflects the current capacity of the local building industry to build to a higher standard, and it provides ample time for local government staff (planning department and building officials) and industry to prepare for new requirements. The April 1, 2019 implementation date, which would require that builders of Part 9 residential buildings (see Table 1 below) meet Step 1 of the Energy Step Code, provides City staff time to complete its engagement process, while giving industry and the City's internal departments a full year to prepare for the transition to the new Energy Step Code requirements. It is also in line with what other progressive regions are doing in the province (a full list of municipalities that have submitted their initial intent to consult is included in Attachment 2).

Table 1: Preliminary Step Code Implementation Timeline for City of Kelowna

Pt 9 Building Type	April 1, 2019	October 1, 2020	2022
SFD/2/3/4-plex	Step 1	Step 3	-
Carriage house	Step 1	Step 2	Step 3
Townhouse/Low-rise apartment	Step 1	Step 3	-

Stakeholder Engagement

It is recommended that Council endorse a stakeholder engagement process to allow City staff to gather feedback on the proposed Energy Step Code implementation regime. This process will:

- Inform pertinent stakeholders (see Attachment 3) of the proposed policy timeline;
- Offer educational opportunities that will help support an understanding of the requirements needed to achieve compliance under the new system;
- Identify complementary supports for more energy efficient development; and
- Gather feedback on the tools and resources needed to support a smooth transition to Energy Step Code adoption.

Staff are proposing stakeholder engagement using online and in-person methods as well as a combination of targeted (e.g. workshop) and passive (e.g. advertising) information.

Next Steps

Following the stakeholder engagement process, City staff intends on returning to Council (anticipated for Summer 2018) to recommend a revision to the Building bylaw, adopting and requiring Step 1 of the

Energy Step Code, beginning April 1, 2019. Additionally, an educational program to support a smooth transition to Energy Step Code adoption will be developed.

Internal Circulation:
Divisional Director, Community Planning and Strategic Investments
Development Services Director
Energy Program Manager
Communications Advisor, Community Engagement

Legal/Statutory Authority:
To support energy conservation and greenhouse gas reduction objectives, Section 5 of the *Building Act* ("Unrestricted Matters") authorizes local governments in BC (except the City of Vancouver) to reference the *BC Energy Step Code* in their policies and bylaws, and may begin enforcing requirements as of December 15, 2017, subject to notification timelines.[7]

Existing Policy:
The City of Kelowna has established a number of climate action goals and programs that are delivering on Council's commitment to low-carbon energy, including:

- OCP Objective 5.16. "Improve the energy efficiency and environmental performance of new buildings."
- OCP Objective 6.2. "Improve energy efficiency and reduce community greenhouse gas emissions."
- OCP Objective 6.2.1 The City of Kelowna will, in partnership with: senior governments; local residents and businesses; NGOs; external agencies; and utility providers, work towards reducing community greenhouse gas emissions by 33% (from 2007 levels) by 2020. (Please note that the City is currently updating this target as part of the Community Climate Action Plan update, slated for completion spring 2018).

Implementing the BC Energy Step Code will be recommended as part of the draft Community Climate Action Plan update.

Personnel Implications:

The Community Energy Specialist is tasked with supporting the development of policies and programs that move the City of Kelowna towards a low carbon energy future. The main role priority of the Community Energy Specialist, as identified in the work plan established to align with FortisBC's Climate Action Partners program, is to develop an Energy Step Code implementation strategy to help achieve the goal of a low carbon energy future.

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[7] Local governments are required to give a minimum of 6 months between the time they notify the Building and Safety Standards Branch of their intent to consult and the referencing of Lower Steps in municipal policies or bylaws. The City of Kelowna submitted their Notice of Consultation on the BC Energy Step Code to the Building and Safety Standards Branch on January 22, 2018.

Submitted by:

Ashley Lubyk, Community Energy Specialist

Approved for inclusion: Danielle Noble-Brandt, Department Manager of Policy and Planning

Attachments:
Attachment 1: Costs to Energy Step Code Adoption
Attachment 2: Initial Notification to Consult
Attachment 3: List of Key Stakeholders

cc:
Divisional Director, Community Planning and Strategic Investments
Development Services Director
Building & Permitting Manager
Sustainability Coordinators