

Energy Step Code

Charting a Way Forward

July 2018

1435 Water Street
Kelowna, BC V1Y 1J4
TEL 250-469-8610
FAX 250-862-3349
email@kelowna.ca

kelowna.ca



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Introduction

Energy Step Code Overview

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”¹ 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.

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 600m² building area.²

Additionally, the efficiency requirements of the Energy Step Code vary between climate zones. Further, for municipalities outside Climate Zone 4 (Lower Mainland and South Vancouver Island), the BC Energy Step Code only applies to Part 9 residential buildings at this time.

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).

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.

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.

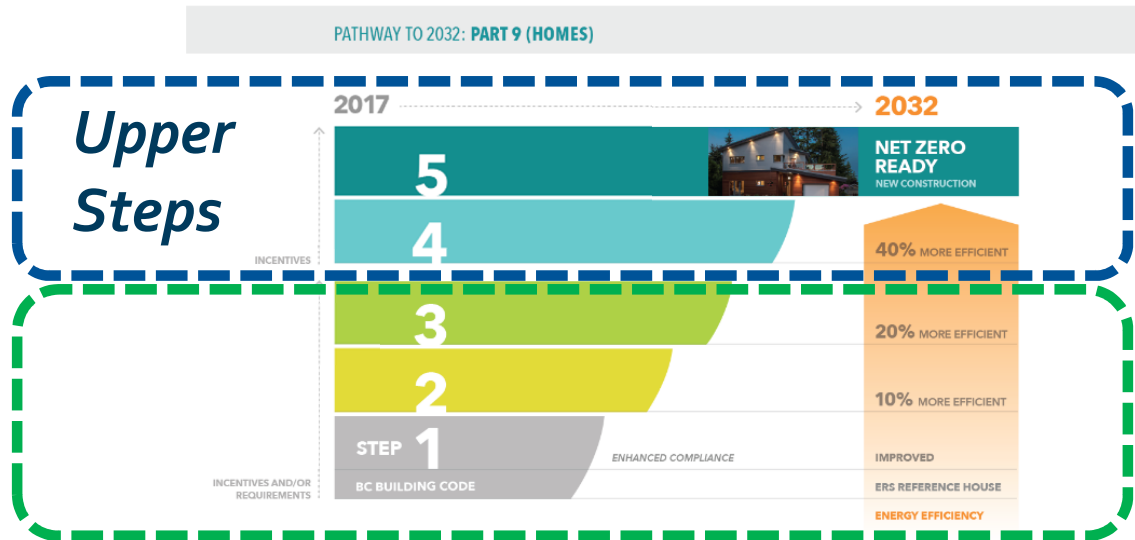


FIGURE 1: 'STEPS' FOR PART 9 BUILDINGS.

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 Council³ 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 Code⁴ 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.

The Provincial Government has recently produced three Clean Growth Intentions Papers. In the *Clean, Efficient Buildings Intentions Paper*, the Province has now announced its intention regarding clear, transparent timelines for the implementation of the Energy Step Code. Once adopted, the Energy Step Code will move from being a voluntary standard to being the minimum standard for all of BC. Compared to the current BC Building Code, new homes would have to be:

- 20 per cent more energy efficient by 2022 (equivalent to Step 3 for Part 9 buildings)
- 40 per cent more energy efficient by 2027 (equivalent to Step 4 for Part 9 buildings)

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.

The intention papers are currently under consultation province-wide and are anticipated to be endorsed by end of 2018.

Benefits to the City of Kelowna and Community

Buildings account for approximately 36% of Kelowna's community GHG emissions. Increasing energy efficiency in buildings is identified as one of the 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. 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.
- Reduced utility costs – Energy efficient buildings result in lower utility bills for owners and occupants.

Approach to Step Code in other BC Communities

Local governments across BC have used a broad spectrum of policy tools including tools that raise awareness, provide incentives, institute bylaw requirements, remove barriers to energy efficient buildings, and/or demonstrate leadership. At the time of writing, the following local governments have referenced the Energy Step Code in their policies:

Adopted the Step Code	Incentivizing the Step Code
City of North Vancouver District of North Vancouver District of West Vancouver City of Victoria Township of Langley City of Surrey	City of Campbell River City of Kimberly City of New Westminster Comox Valley Regional District District of Sparwood

⁵ "World Green Building Trends 2016, Developing Markets Accelerate Global Green Growth." World Green Building Council.

Additionally, 28 local governments across BC, representing more than 60% of the residential building permits issued in the province, have provided their notification to consult to the Province stating their intent to engage with industry on an adoption approach to the Step Code. This includes many Okanagan municipalities:

- City of Kelowna – January 22, 2018
- City of Penticton – January 27, 2018
- City of Vernon – March 19, 2018
- District of Peachland – March 28, 2018
- City of West Kelowna – April 12, 2018
- District of Summerland – June 5, 2018
- District of Lake Country – June 7, 2018

Step Code Strategy for Kelowna

After an initial round of stakeholder engagement that commenced in September 2017, City Council directed staff to engage key stakeholders on the Energy Step Code Implementation Strategy on March 26th, 2018. In collaboration with the Urban Development Institute Okanagan Chapter, Canadian Home Builder's Association Central Okanagan, and with local municipalities from Penticton to Vernon, staff sought to inform and gather feedback from development industry representatives, home builders, architects and designers, engineers, suppliers, energy advisors/modelers and others on three key areas of the implementation strategy:

1. The motivation for and the direction of the Energy Step Code, and the associated requirements;
2. The proposed implementation timelines (as shown below);

Table 1: Proposed Energy Step Code Adoption Timelines

Pt g 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	-

3. Supports needed for a smooth transition.

Guiding Principles

The proposed Energy Step Code timelines for Kelowna were based on the following guiding principles⁶:

1. Industry capacity and readiness:
 - Use the transition period noted in the BC Energy Step Code policy to support industry in preparing for the forthcoming Provincial regulations;

⁶ Adapted from the publication, *BC Energy Step Code: A Best Practices Guide for Local Governments* (August 28, 2017). A publication of the Energy Step Code Council and the Building and Safety Standards Branch.

- Ensure that the building industry has the capacity to deliver projects at the proposed Steps; and
 - Minimize risk of non-compliance with the adopted Steps.
2. Supporting other City policy directives:
 - Ensure the approach is reflective of the goals set out in the City's Official Community Plan, and the recently passed Community Climate Action Plan and Healthy Housing Strategy.
 3. Cost implications:
 - Acknowledge and identify costs associated with each Step and minimize potential impacts to housing affordability.
 4. Regional approach:
 - Create consistency across municipal boundaries and aim for a coordinated, performance-based approach to building throughout the Okanagan region.
 5. Clarity of timelines and 'Steps':
 - Provide clear expectations of what Step(s) will be required, and how the application process, inspections/verification, and occupancy permitting will be administered.

Building Permit Impact

Part 9 residential buildings are three storeys or less and have a building area no more than 600 square meters. These include single family dwellings, duplexes, triplexes, quadplexes, townhouses, some smaller apartment buildings, and carriage houses. In 2017, the City issued building permits for approximately 650 Part 9 residential projects (representing approximately 800 individual units). Broken out by type, these include:

- 517 SFD (including those with a purpose built suite)
- 35 Townhouses (4 or 5 units)
- 33 Carriage houses
- 45 Duplexes/Triplexes/Quadplexes
- 18 Multi Unit Residential Buildings (not necessarily all Part 9; this number represents the number of buildings and not the total number of units)

Based on the trends of previous years, it is anticipated that the Step Code requirements for Part 9 buildings will affect 700 to 800 building permits annually.

Industry Engagement on Proposed Approach

The engagement process included over 30 touchpoints with affected stakeholders from September, 2017 through August, 2018. This was through a series of meetings, informational offerings (print, email, web), several industry surveys, and targeted training opportunities. A full list of stakeholder touchpoints is available in Attachment A.

Feedback from Industry on Proposed Approach

A regional Step Code survey was circulated to key stakeholders inviting participation over six weeks – from April 12th to May 23rd, 2018. In total, 53 participants responded to the survey. The full survey and results are available in Attachment B.

- 86% of survey respondents indicated that the proposed timeline is achievable:
 - 31% indicated that the City should not wait to implement the Step Code, and that we should get started today
 - 29% indicated that it is achievable with the right supports
 - 26% indicated that it is achievable but may pose challenges
 - Only 14% of survey respondents indicated that the proposed timeline was not achievable

- Many viewed training/educational supports as a key to success for a smooth transition, including:
 - Energy modelling and the role of the Energy Advisor
 - Trades specific training (e.g. air and moisture barriers, window installation, etc.)
 - New construction techniques
 - Ventilation and mechanical systems for high performance housing
- Incentives such as those offered by Fortis are seen as an important tool in helping transition the market:
 - 73% of survey respondents said they were 'very likely' or 'somewhat likely' to access the Fortis incentives available for each step achieved of the Energy Step Code in 2018.
- The need for City staff to be trained to ensure a smooth roll-out and processing of building permit applications
- Having sufficient Energy Advisor capacity was noted as necessary for meeting the proposed timelines and ensuring they are accredited and that quality assurance checks are in place
- Some concern for impacts to affordability was noted, especially for the higher 'Steps'
- The need to communicate customer benefits, particularly through home energy labeling programs such as the EnerGuide label.

Addressing Concerns

The engagement process revealed a number of concerns (see

Table 2 below) regarding Step Code implementation. These concerns were carefully considered and informed the implementation strategy and recommended timeline for adoption presented in this report.

Table 2: Addressing Step Code Concerns

Concern	Response
Insufficient Energy Advisor Capacity	Staff have heard from those in the industry that boosted capacity is contingent on governments enacting robust regulations that provide some measure of assurance to those wishing to invest in the training to become an EA, or for those businesses wishing to hire more EAs. This timeline provides this assurance and gives a full year (March 26, 2018 – April 1, 2019) for the capacity to respond to the anticipated demand.
Impacts affordability	Staff have reviewed the findings of two costing studies by prominent organizations – BC Housing's <i>Metrics Research Report (2017)</i> ⁷ and the FortisBC commissioned study (2018). Based on those studies, the incremental capital costs associated with Step Code adoption for Part 9 buildings in Climate Zone 5, which Kelowna is in, are modest (less than 1% cost premium for the Lower Steps). By adopting the Step Code, long term affordability is bolstered by protecting tenants/homeowners from rising utility costs. Furthermore, Fortis BC and Fortis Inc. have recently revamped their New Home Incentive Program to align with the Step Code, thus helping to cushion some of the upfront costs associated with involving an Energy Advisor. ⁸
Will slow down building permit processing times	The energy modelling required as part of the Step Code is a relatively quick and simple process done during the design phase and will be completed before a building permit is applied for. Furthermore, the City of Kelowna has created a Bulletin and compliance reports (pre-build and as-built) to make the reporting requirements straightforward – See Attachment C & D, respectively.

⁷ 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

⁸ Incentives for building to the Energy Step Code range from \$500 to \$8500. A home built in Kelowna to Step Code 3 would be eligible for a rebate of \$2500. <https://www.fortisbc.com/Rebates/RebatesOffers/NewHomeProgram>

Lack of industry skills	Step 1 is the first step in helping move toward the Step Code's performance-based approach and requires that builders simply begin using the services of an Energy Advisor or energy modeler to satisfy the requirements. The design and construction techniques necessary to comply are unchanged from the requirements found in the base BC Building Code. Additionally, staff have noted that both the Canadian Home Builders' Association, BC Housing, Natural Resources Canada, among others, have already begun offering training related to the Step Code, and access to training is not anticipated to be a challenge going forward. Further, the City of Kelowna, in partnership with the Community Energy Association, CHBA CO, and FortisBC hosted a one-day workshop to introduce the Step Code, with a special emphasis on high performance construction methods.
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Recommended Step Code Adoption Timeline for Part 9 Buildings

On July 19, 2018 the Province released Proposed Standard Improvements to the BC Energy Step Code which includes a handful of technical refinements and additions to the BC Energy Step Code which would serve to level the playing field between house sizes and regions. If adopted, these improvements will come into effect in 2018. One of the improvements includes improved fairness for builders of smaller homes (e.g. carriage houses). The Province is recommending an adjustment to the MEUI target to increase the energy budget for those building small buildings. Therefore, staff are recommending that Council directs staff that all new Part 9 residential buildings must comply to the BC Energy Step Code following the updated timelines proposed in Table 3 below. This modest change was made to reflect the proposed changes from the Province noted above.

Table 3: Updated Energy Step Code Adoption Timelines

Pt 9 Residential Building Type	April 1, 2019	October 1, 2020
All Part 9 Buildings: SFD/2/3/4-plex, Carriage house and Townhouse / Low-rise apartments	Step 1	Step 3

This timeline seeks a balance between local and Provincial GHG reduction goals, and provides industry adequate time to build the capacity necessary to achieve the Step Code targets. All projects will be monitored during these first few years of adoption of the Energy Step Code and will help to inform an appropriate adoption timeline for the Upper Steps beyond 2020.

It's worth noting that City staff have been working with neighbouring Okanagan municipalities (City of Penticton, District of Summerland, District of Peachland, City of West Kelowna, District of Lake Country, and City of Vernon) to develop a regional approach to Step Code implementation in order to create consistency across the region. Though each municipality is at a slightly different stage in its engagement process, and each will develop its own implementation strategy and set its own timelines for enforcement, most have indicated they are considering a similar approach to Step Code adoption as is being recommended in the City of Kelowna.

Application Process and In-Stream Applications

The application process for *all new Part 9 residential projects* is recommended to be as follows:

- Projects that have applied for building permit prior to April 1st, 2019 will be considered in-stream and will not be subject to Step Code requirements.
- Building permits applied for on or after April 1st, 2019 will need to demonstrate compliance with Step 1 of the Step Code.
- Building permits applied for on or after October 1st, 2020 will need to demonstrate compliance with Step 3.
- The application process for projects subject to Step Code will require:
 - o A 'pre-build' (aka 'as-designed') compliance report (see Attachment C) completed by a licensed energy advisor and submitted along with the building permit application;
 - o An 'as-built' compliance report (see Attachment D) completed by a licensed energy advisor and submitted along with the occupancy permit application.

Incentives

To help encourage builders to build to the Upper Steps (4 & 5, including Passive House) of the Step Code the following incentives are being proposed:

- 1) a Zoning Bylaw amendment that would relax side, rear, front, and/or flanking street requirements of the zone by up to 0.25 metres. This amendment ensures that incremental additions of insulation needed to achieve the performance targets for the Upper Steps do not inadvertently impact the size of home built on urban lots;
- 2) building permit rebates of \$500 for Step 4-compliant buildings and \$1,000 for Step 5-compliant buildings.

Recommended Future Work

Based on feedback heard during the industry engagement, there are a number of additional and related pieces of work that staff recommends undertaking should the Step Code be adopted.

Home Energy Labelling

Home energy labelling has been identified as an important precursor to stimulate the demand for energy efficient buildings in the marketplace. While labelling has become standard practice for decision making in many other areas, from nutrition labels to EnerGuide labels on new cars, electronics, and appliances, prospective homeowners are not provided essential information about the operating costs associated with what is likely the largest investment of their lives.

The BC Energy Step Code requires that all new buildings undergo energy modelling and airtightness testing, the two principle ingredients required for home energy labelling. Benefits of labelling include, 1) shifting the market for energy efficient homes by providing information to prospective homebuyers to make informed decisions, 2) capturing data necessary for local governments to make informed decisions about programs and policies that meet other policy objectives.

The Provincial Government's *Clean, Efficient Buildings Intentions Paper* includes the Province's intention to require energy labelling when a property is listed for sale or rent.

GHG intensity reporting

While the Step Code is focused on operational energy efficiency, it does not require the reporting of GHG emissions associated with a project (e.g. embodied energy). In light of Council climate action goals, staff recommend exploring the reporting of GHG intensity associated with each project. This metric is generated by most commonly used energy modelling software programs used for Step Code compliance and could simply be reported on the compliance form submitted at project completion. Again, this was not an aspect that staff discussed with industry during engagement, and it is thus recommended to be viewed as an additional area for staff to explore and report back to Council on in the future.

Conclusion

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 Housing Strategy by supporting the creation of housing that results in lower utility bills for owners and occupants.

Attachment A: Engagement Summary

Energy Step Code Implementation

Summary of Engagement Points of Contact

Date	Contact	Notes
Sept 7, 2017	CHBA, BC Housing, various builders, engineers, consultants	Input sought from industry stakeholders on the Energy Step Code as part of the Community Climate Action Plan engagement process.
Oct 5, 2017	CHBA-CO (Marika Luczi)	Mo Bayat, Development Services Director, presented to the Canadian Home Builders Association on the BC Energy Step Code
Jan 11, 2018	Industry stakeholders involved in the construction of new Part 9 buildings in Kelowna and area (150 attendees)	Mo Bayat, Development Services Director, presented at 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
Jan 15, 2018	UDI (Jennifer Dixon)	City staff participated in the UDI-led 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.
Jan 23, 2018	Total Home Solutions (Gilles Lesage)	Met to discuss Energy Advisor capacity, upcoming training opportunities offered by Total Home, and to discuss local builder capacity to build to a higher level, particularly around airtightness.
Jan 23, 2018	City of Penticton (Ken Kunka)	Met to discuss City of Penticton's proposed approach to Step Code and to explore the opportunity for developing a regional approach to Step Code Implementation.
Feb 2, 2018	ROV Consulting (Bahareh Reza)	Met to discuss Energy Advisor capacity, and to discuss local builder capacity to build to a higher level, particularly around airtightness.
Feb 6, 2018	CHBA-CO (Marika Luczi)	Met with Marika to discuss our intended approach to Step Code implementation and to explore ways to get the message out to the CHBA membership.
Feb 26, 2018	Little House Contracting (Tara Tschritter)	Met to discuss the potential impact of the Step Code on small houses/carriage houses.
Mar 1, 2018	ASTT-BC (Bruce Stevens & Jason Jung)	Met to discuss the City's intended approach to Step Code implementation and to explore the potential regulation of Energy Advisors/energy modellers by ASTT-BC.
Mar 3, 2018	Industry stakeholders involved in the construction of new Part 9 buildings in the Okanagan	Participated in the BC Housing-sponsored Energy Step Code seminar in Penticton, which was attended by roughly 60 participants
Mar 8, 2018	Regional Governments	Met with municipal governments from City of Penticton, District of Summerland, District of Peachland, City of West Kelowna, Westbank First Nation, District of Lake Country, Regional District of Central Okanagan, and City of Vernon to discuss moving forward on a regional approach to engagement/implementation.
Mar 21, 2018	OK College (Brian Rippy)	Sent email to discuss the City's intended approach and to discuss opportunities for training opportunities with the College.

Mar 22, 2018	OK College (Rob St Onge)	Met to discuss the City's intended approach and to discuss opportunities for training opportunities with the College.
Mar 27, 2018	UDI (Jennifer Dixon)	Provided email to inform that Council had endorsed Energy Step Code proposed timeline and implementation strategy. Requested that Council Report be shared with the UDI/CHBA Energy Step Code Roundtable group.
Apr 16, 2018	Industry stakeholders involved in the construction of new Part 9 buildings in Kelowna and area	Developed an Energy Step Code landing page on the kelowna.ca to provide information on the Energy Step Code, including the proposed implementation timeline and ways to engage (202 unique page views from April 15 – June 24, 2018)
Apr 19 – May 30, 2018	Industry stakeholders involved in the construction of new Part 9 buildings in Kelowna and area	Invitation to engage on Step Code Survey and Industry Workshop displayed on One Window Screen on Second Floor of City Hall behind Development Services counters
April 20 - 27, 2018	Okanagan Regional Governments	Invitation to engage on Step Code Survey and Industry Workshop: <ul style="list-style-type: none"> - Regional governments (April 20, 2018) - Fortis BC (April 20, 2018) - CHBA-CO (April 23, 2018) - UDI (April 23, 2018) - CEA (April 23) - Okanagan College (April 23, 2018) - City of Kelowna Architect Committee (April 27, 2018)
April 29/30, 2018	BOABC Annual Conference hosted by City of Kelowna	Staffed City of Kelowna booth for 2 days promoting the City's proposed timeline, implementation strategy, and engagement opportunities
May 4, 2018	Daily Courier	Public Notice on Step Code engagement
May 5, 2018	Building Suppliers	Distributed information about the regional engagement process to 11 of the largest building suppliers in Kelowna: <ul style="list-style-type: none"> - OK Builders Ellis St - Home Hardware Springfield - Rona - BC Fasteners and Tools - Home Depot - Brock White - Foundation Building Materials - OK Builders McCurdy Rd - Kenroc Building Supply - Home Hardware Rutland - Home Depot Westbank
May 9, 2018	UDI (Jennifer Dixon)	UDI/CHBA-CO Energy Step Code Roundtable meeting
May 9, 2018	UDI (Jennifer Dixon)	Sent reminder email invitation to engage on Step Code Survey and Industry Workshop and information about the CHBA Innovation Exchange workshop
May 10, 2018	Southern Interior Construction Association (Carolyn Mann)	Sent email invitation to engage on Step Code Survey and Industry Workshop to distribute to the SICA membership
May 10, 2018	CHBA-CO (Marika Luczi)	Emailed Marika requesting the CHBA costing study and methodology that Les Bellamy referenced in the May 9, 2018 Roundtable meeting
May 11, 2018	Daily Courier	Public Notice on Step Code engagement
May 11, 2018	City of Penticton (Ken Kunka)	City of Kelowna's Community Energy Specialist presented on the engagement process at the Penticton-hosted BCBC Training session for area building inspectors and builders. 60 in attendance

May 18, 2018	Troika Group (Josh Klassen)	Sent email invitation to engage on Step Code Survey and Industry Workshop
May 18, 2018	Regional Governments, CHBA-CO (Marika Luczi) & UDI (Jennifer Dixon)	Sent reminder to municipal government contacts that Step Code Industry Survey closes May 23, 2018
May 31, 2018	Industry stakeholders involved in the construction of new Part 9 buildings in Kelowna (106 attendees). Co-hosted with Community Energy Association, and in partnership with CHBA-BC and CHBA-CO	Full day Industry Energy Step Code workshop. Presenters: Peter Robinson: Community Energy Association Marika Luczi: Canadian Home Builders Association - Central Okanagan Ashley Lubyk: City of Kelowna Hayley Newmarch: FortisBC Hamid Heidarali: Hamid Design Build Gilles Lesage: Total Home Solutions
June 12, 2018	CHBA-CO (David Pfuetzner)	Phone call requesting meeting to discuss CHBA-CO Energy Step Code subcommittee
July 13, 2018	CHBA-CO (Marika Luczi)	Received email with Step Code position letter from CHBA-CO
July 19, 2018	Building Safety and Standards Branch (Zach May)	Michelle Kam, Sustainability Coordinator, discussed Province's involvement for Step Code implementation in the Okanagan
July 25, 2018	Local Government Step Code Peer Network	Michelle Kam participated in Province-led discussion on Proposed Standard Improvements for technical refinements and additions to Step Code metrics to even playing field
Aug 3, 2018	CHBA-CO Step Code Committee and Board of Directors	Derek Edstrom, Acting Divisional Director of Community Planning & Strategic Investments, provided a response to the CHBA-CO position letter
Aug 7, 2018	Regional Governments	City's response to CHBA-CO position letter forwarded to regional governments

Attachment B: Regional Industry Survey and Results

Welcome

Estimated time to complete survey: 10 minutes

Purpose

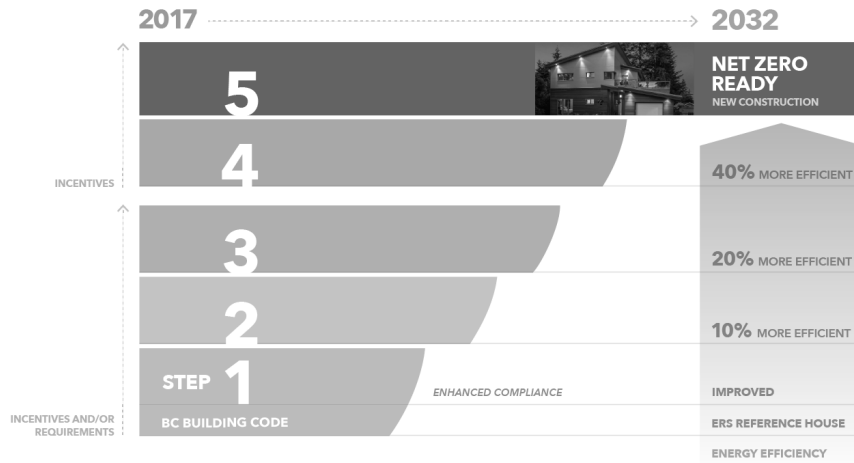
Recognizing that challenges exist and understanding that local governments can be instrumental in helping the building industry prepare for forthcoming regulations and changes to the Building Code to meet the Energy Step Code ("Step Code"), this survey is intended to:

- Raise awareness of the Step Code;**
- Identify capacity gaps as it relates to implementation of the Step Code;**
- Inform respondents of incentives related to the Step Code;**
- Assess industry readiness for the forthcoming changes to the Building Code.**

Background

The Step Code is a new provincial framework aimed at creating healthier, more efficient, and more comfortable buildings. It was adopted Provincially as a technical regulation in April 2017 to provide a consistent standard for energy-efficiency requirements in new buildings. The Step Code establishes a set of incremental performance steps to support the market transformation from the current energy-efficiency requirements in the BC Building Code to the Provincial requirement for net zero energy ready buildings by 2032. Although the BC Building Code will be updated over time to include Step Code requirements, local governments across BC have the opportunity to help transition the market by encouraging—or requiring—the construction of more energy-efficient buildings in their communities by referencing the Step Code in its policies and regulations.

Currently, for municipalities outside Climate Zone 4 (e.g. Lower Mainland), the Step Code only applies to Part 9 residential buildings (max 3 storeys, & under 600m² building area). There are five performance targets for residential Part 9 buildings, each representing a higher level of performance above the base BC Building Code (see image below).



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. By comparison, Step 2 & 3 represent an improvement of 10% and 20%, respectively, above base 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 needs to be achieved by 2032.

A Regional Approach

Local governments from Penticton to Vernon are exploring a regional approach to Step Code implementation. The desire is to be proactive to enable the local market to mature and to spur increased industry capacity for services and products that support more energy efficient buildings.

Who should complete the survey:

Anybody who is involved in the building industry related to the construction of Part 9 buildings in the City of Kelowna or neighbouring municipalities from Penticton to Vernon. This may include licensed residential builders, trades, architects, home designers, and Energy Advisors. Local government staff need not complete this survey.

Initial Questions

1. In which municipalities and electoral areas are your projects located? Check all that apply.

- ☐ City of Kelowna
- ☐ City of West Kelowna
- ☐ City of Vernon
- ☐ City of Penticton
- ☐ Regional District of Central Okanagan
- ☐ District of Lake Country
- ☐ District of Summerland
- ☐ District of Peachland
- ☐ Other (please specify)

2. How would you describe your role in the building industry? Check all that apply.

- ☐ Property owner / developer
- ☐ General contractor
- ☐ Design-builder
- ☐ Construction manager
- ☐ Trade contractor
- ☐ Design professional
- ☐ Energy Advisor
- ☐ Other (please specify)

3. Which types of Part 9 residential buildings do you construct? Check all that apply.

- ☐ Carriage/Laneway Houses
- ☐ Small Single Family Dwellings (SFDs) (up to 1100 ft2)
- ☐ Medium SFDs (1100 to 2550 ft2)
- ☐ Large SFDs (greater than 2550 ft2)
- ☐ Duplexes
- ☐ Tri/Quadplexes
- ☐ Row houses
- ☐ Multi Unit Residential Buildings (3 storeys and under & under 600 m2 (~6,500 ft2) building area)

4. How many Part 9 building units are you involved in the design/construction of on a yearly basis. Check the one that applies.

- ☐ 5 or fewer
- ☐ 6 to 10
- ☐ 11 to 25
- ☐ 26 to 50
- ☐ 51 to 100
- ☐ 101+

Current Experience

5. How often do you currently build using the *performance path* for energy efficiency in the BC Building code, use energy modelling, and/or air tightness testing? Check the box that applies for each row.

A performance path requires that the building as a whole performs to a certain standard, as opposed to a prescriptive path that requires each component be built to a certain standard (e.g. Wall R-value at least 20). Although the performance path requires energy modelling and air tightness testing, some professionals may have used these while following prescriptive code requirements (for example when obtaining an EnerGuide label).

	All the time	Sometimes	Never	N/A
Performance path	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy modelling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air tightness testing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. If you've used the tools listed above have they helped to improve design performance or resulted in other benefits? Check the box that applies.

- ☐ Yes
- ☐ Maybe
- ☐ Unsure
- ☐ No

Please comment on your previous answer. In particular, please state what benefits you have seen.

7. What is the most stringent energy efficient home building standard you have designed or built, and what do you typically build to? Check all that apply.

	Have built to this once or more	Typically build to this level
Base BC Building Code	<input type="radio"/>	<input type="radio"/>
BUILT GREEN® Silver	<input type="radio"/>	<input type="radio"/>
BUILT GREEN® Gold	<input type="radio"/>	<input type="radio"/>
BUILT GREEN® Platinum	<input type="radio"/>	<input type="radio"/>
LEED® Homes	<input type="radio"/>	<input type="radio"/>
ENERGY STAR® for New Homes	<input type="radio"/>	<input type="radio"/>
R-2000	<input type="radio"/>	<input type="radio"/>
Passive House	<input type="radio"/>	<input type="radio"/>
CHBA Net Zero Ready Home	<input type="radio"/>	<input type="radio"/>
CHBA Net Zero Home	<input type="radio"/>	<input type="radio"/>

Other, e.g. EnerGuide rating (please specify)

Assessing Capacity Gaps & Training Needs

At its core, the Energy Step Code marks an end to the prescriptive approach for achieving energy efficiency in newly constructed buildings. 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'. This will require that builders familiarize themselves with the performance pathway in order to achieve compliance with the Energy Step Code.

It is also understood that some challenges need to be addressed prior to the Step Code being implemented across the region. Some of the key concerns identified during the initial phase of stakeholder engagement include:

- Additional building costs;
- Lack of technical training for builders, trades, building officials, and designers in achieving Step Code compliance;
- Insufficient Energy Advisor capacity;
- Compliance monitoring.

While some of these concerns constitute real challenges to implementation, others seem to be a matter of perception. This section is intended to help local governments better understand these challenges/concerns, and to help identify the tools and supports needed by industry as it prepares for the requirements of the Energy Step Code.

8. Which of the following Education and Training Opportunities would be helpful in supporting a smooth transition to Step Code adoption? Check all that apply.

- ☐ Introduction to BC Energy Step Code
- ☐ Energy modelling and the role of Energy Advisors
- ☐ Hands-on training
- ☐ Trades specific training (e.g. air and moisture barriers, window installation...)
- ☐ Marketing energy efficient homes
- ☐ New technologies
- ☐ New construction techniques
- ☐ Right-sizing of heating systems
- ☐ Ventilation in energy efficient homes
- ☐ Other (please specify)

9. Aside from the challenges to implementation outlined in the introduction (e.g. costs, lack of technical training, energy advisor capacity, compliance monitoring), do you have any other comments on what the regional governments should consider leading up to the implementation of the Energy Step Code? Please comment.

Incentives

Beginning March 29, 2018, Fortis (including FortisBC and Fortis Energy Inc.) is offering incentives to builders in eligible BC communities that achieve Energy Step Code compliance. Eligibility requirements are as follows:

- Applies to builders of single family dwellings, townhouses, row houses, and laneway/carriage houses;
- For builders in Fortis Energy Inc.'s natural gas territory (e.g. West Kelowna, District of Lake Country, City of Vernon, District of Peachland, District of Lake Country), the rebates will be available to builders using both natural gas space and water heating;
- For builders in Fortis BC's combined electric and natural gas territory (e.g. City of Kelowna, Summerland, Penticton), the rebates are available to builders using electric or natural gas space and water heating;
- FortisBC water heater incentives will not be available to those projects reaching Step 2 or higher.

The incentives are as follows:

Description	Incentive per Unit*
Energy Advisor Support (includes Step 1)	\$500
Step 2	\$1000
Step 3	\$2000
Step 4	\$4000
Step 5	\$8000

*** Energy advisor support fees are stacked on the highest Step Code incentive achieved (some exceptions apply for municipalities in the Lower Mainland).**

10. How likely are you to use the incentives being provided by FortisBC/Fortis Energy Inc. in 2018? Keep in mind that performance requirements of the Step Code will be embedded in the base BC Building Code in future code updates, and that these incentives are an initial offering for 2018 and may change beyond that.

- ☐ Very likely
- ☐ Somewhat likely
- ☐ Somewhat unlikely
- ☐ Very unlikely
- ☐ I'm ineligible

11. If you are likely to use the incentives being provided by FortisBC/Fortis Energy Inc. in 2018, what Step of the Energy Step Code are you most likely to attempt to build to:

- ☐ Step 1 (Enhanced Compliance)
- ☐ Step 2 (10% improvement over base BC Building Code)
- ☐ Step 3 (20% improvement over base BC Building Code)
- ☐ Step 4 (40% improvement over base BC Building Code)
- ☐ Step 5 (Net Zero Energy Ready)
- ☐ N/A

Proposed Implementation Date

While each municipality will set its own policies and regulations, it has been acknowledged that having a consistent set of standards across the region is advantageous for those in the building industry that work in multiple communities. As such, regional governments throughout the Okanagan are assessing a regional approach to Energy Step Code implementation.

The initial intent is to reference and require Energy Step Code compliance within local building bylaws. The proposed timeline would require:

- Step 1 compliance within 12 to 18 months (Spring/Summer 2019); graduating to:**
- Step 3 compliance 18 months later (Autumn/Winter 2020).**

This timeline provides one year for industry to prepare for the new performance approach, while also sending an important signal to the market to help enable the Energy Advisor capacity to grow to fulfill the coming demand.

12. Which statement best reflects how you feel about the proposed timeline?

- ☐ Why wait a full year? We should get started today
- ☐ The timeline is achievable with the right supports
- ☐ It's achievable but may pose challenges
- ☐ Not achievable

Please comment on previous answer. In particular, please state your perspective.

13. If you have any additional comments you'd like to add, please include them here:

Thank You.

Thank you for your contribution.

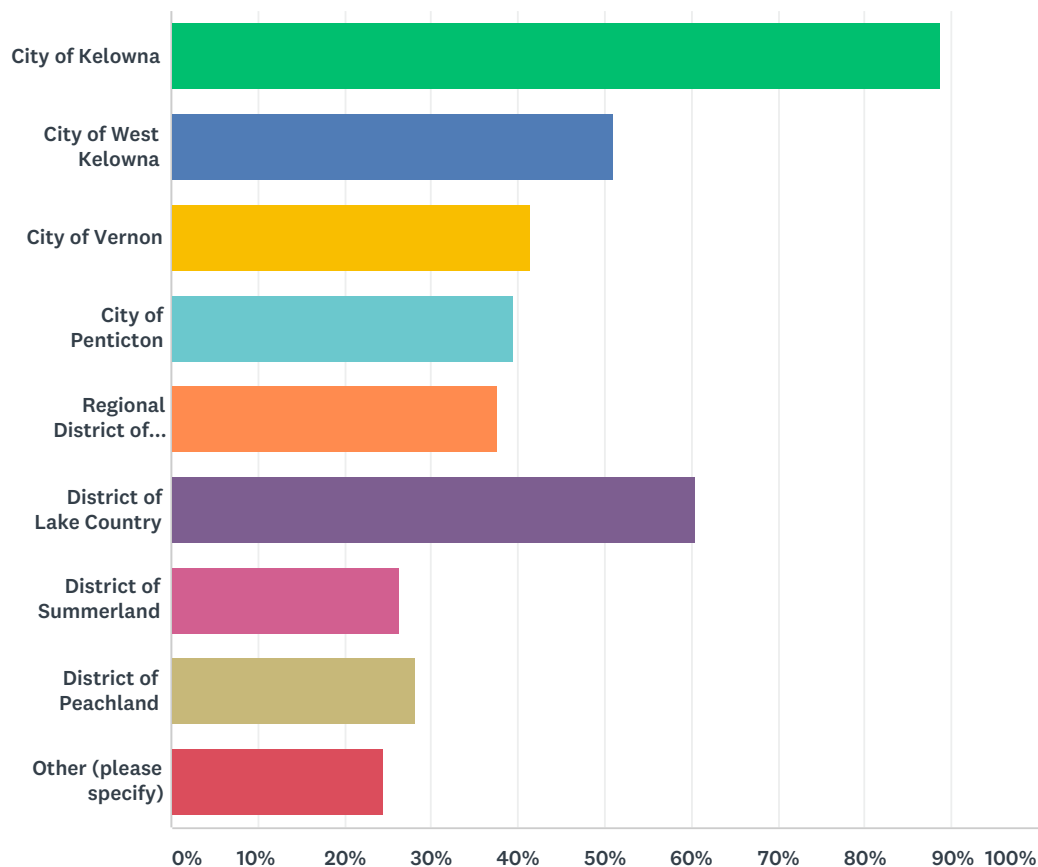
For more information about the BC Energy Step Code visit:energystepcode.ca

Please note, the survey results will be shared with other partners including other local governments, particularly those in the region, to assist in developing a regional approach to Step Code implementation.

Survey deadline: end of the day May 23, 2018

Q1 In which municipalities and electoral areas are your projects located? Check all that apply.

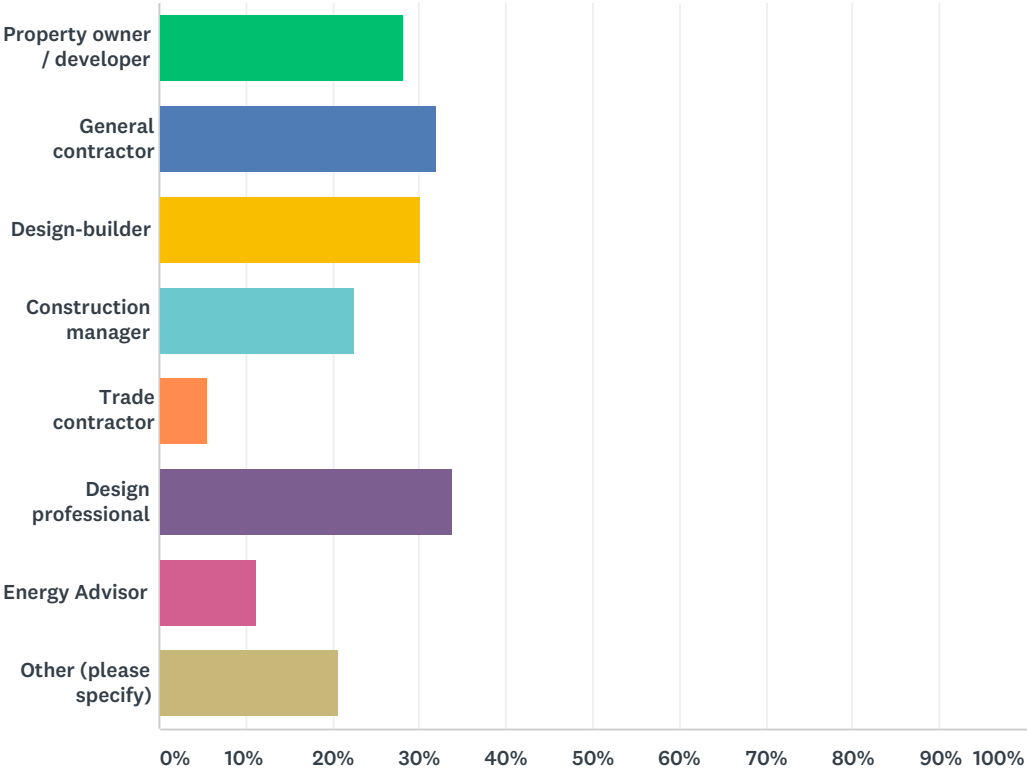
Answered: 53 Skipped: 0



ANSWER CHOICES	RESPONSES	
City of Kelowna	88.68%	47
City of West Kelowna	50.94%	27
City of Vernon	41.51%	22
City of Penticton	39.62%	21
Regional District of Central Okanagan	37.74%	20
District of Lake Country	60.38%	32
District of Summerland	26.42%	14
District of Peachland	28.30%	15
Other (please specify)	24.53%	13
Total Respondents: 53		

Q2 How would you describe your role in the building industry? Check all that apply.

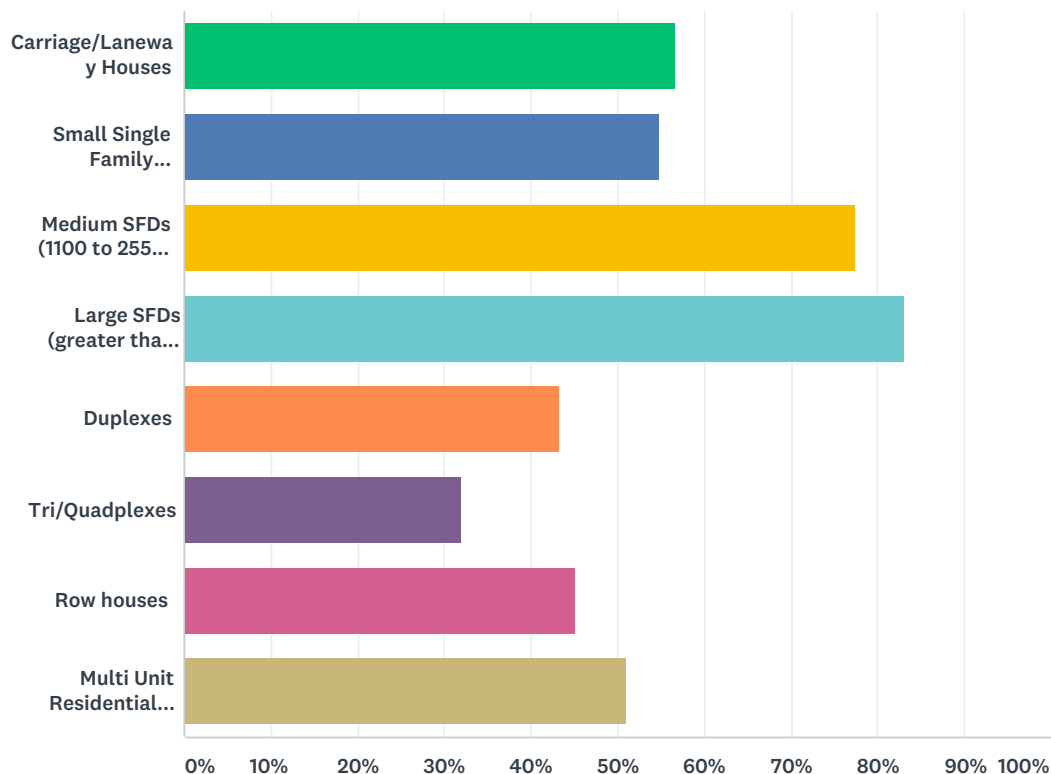
Answered: 53 Skipped: 0



ANSWER CHOICES	RESPONSES	
Property owner / developer	28.30%	15
General contractor	32.08%	17
Design-builder	30.19%	16
Construction manager	22.64%	12
Trade contractor	5.66%	3
Design professional	33.96%	18
Energy Advisor	11.32%	6
Other (please specify)	20.75%	11
Total Respondents: 53		

Q3 Which types of Part 9 residential buildings do you construct? Check all that apply.

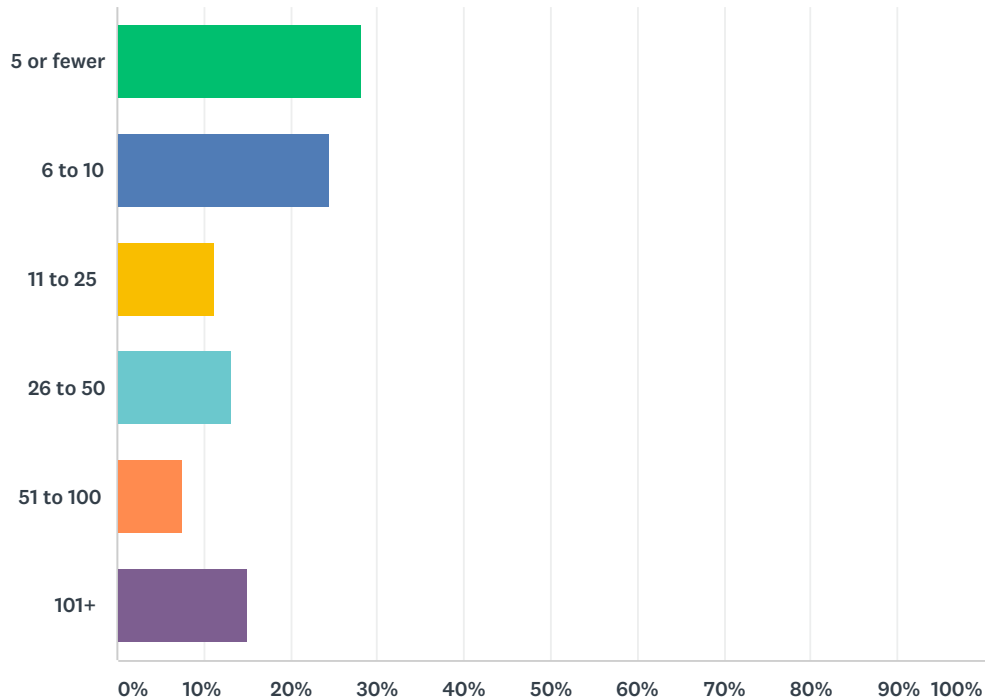
Answered: 53 Skipped: 0



ANSWER CHOICES	RESPONSES	
Carriage/Laneway Houses	56.60%	30
Small Single Family Dwellings (SFDs) (up to 1100 ft²)	54.72%	29
Medium SFDs (1100 to 2550 ft²)	77.36%	41
Large SFDs (greater than 2550 ft²)	83.02%	44
Duplexes	43.40%	23
Tri/Quadplexes	32.08%	17
Row houses	45.28%	24
Multi Unit Residential Buildings (3 storeys and under & under 600 m² (~6,500 ft²) building area)	50.94%	27
Total Respondents: 53		

Q4 How many Part 9 building units are you involved in the design/construction of on a yearly basis. Check the one that applies.

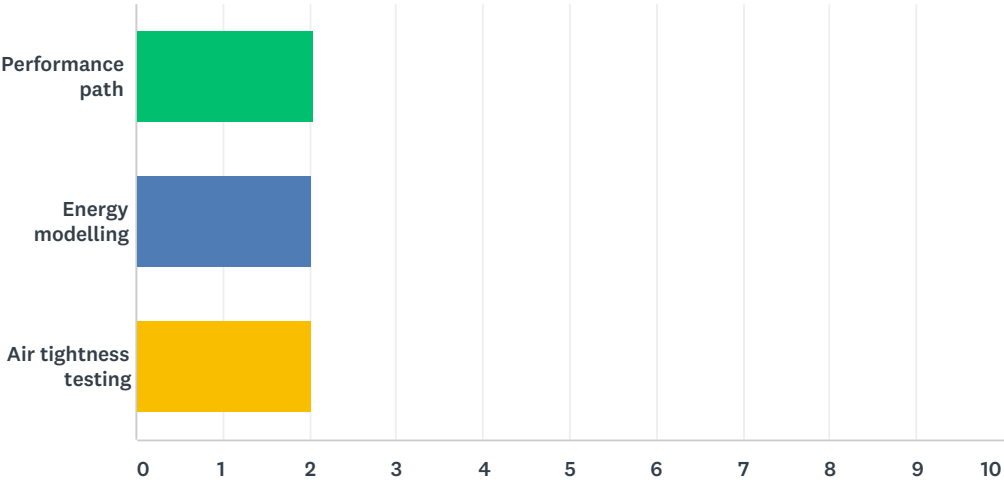
Answered: 53 Skipped: 0



ANSWER CHOICES	RESPONSES	
5 or fewer	28.30%	15
6 to 10	24.53%	13
11 to 25	11.32%	6
26 to 50	13.21%	7
51 to 100	7.55%	4
101+	15.09%	8
TOTAL		53

Q5 How often do you currently build using the performance path for energy efficiency in the BC Building code, use energy modelling, and/or air tightness testing? Check the box that applies for each row. A performance path requires that the building as a whole performs to a certain standard, as opposed to a prescriptive path that requires each component be built to a certain standard (e.g. Wall R-value at least 20). Although the performance path requires energy modelling and air tightness testing, some professionals may have used these while following prescriptive code requirements (for example when obtaining an EnerGuide label).

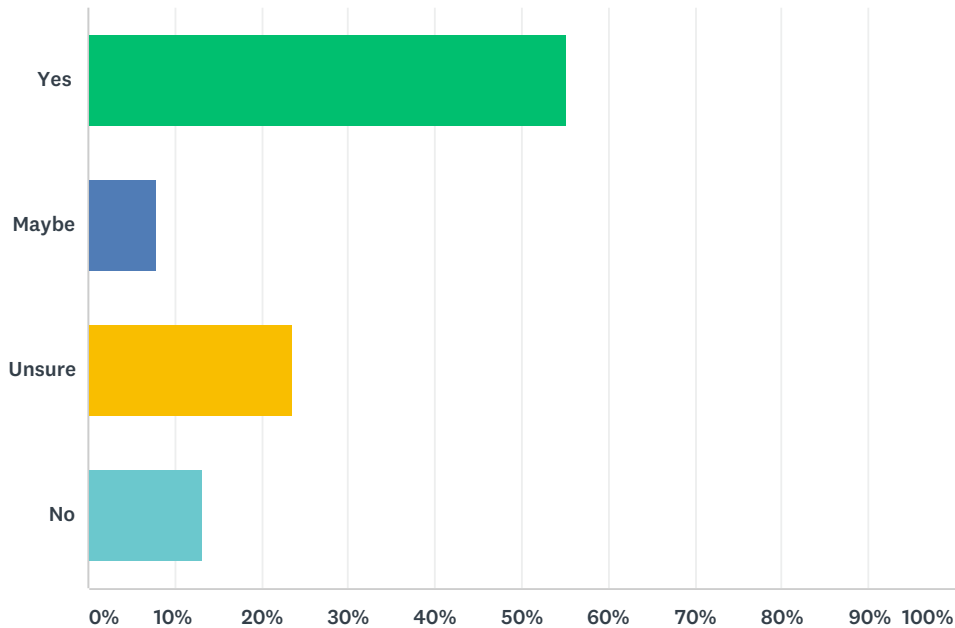
Answered: 38 Skipped: 15



	ALL THE TIME	SOMETIMES	NEVER	N/A	TOTAL	WEIGHTED AVERAGE
Performance path	23.68% 9	42.11% 16	28.95% 11	5.26% 2	38	2.06
Energy modelling	34.21% 13	23.68% 9	36.84% 14	5.26% 2	38	2.03
Air tightness testing	28.95% 11	34.21% 13	31.58% 12	5.26% 2	38	2.03

Q6 If you’ve used the tools listed above have they helped to improve design performance or resulted in other benefits? Check the box that applies.

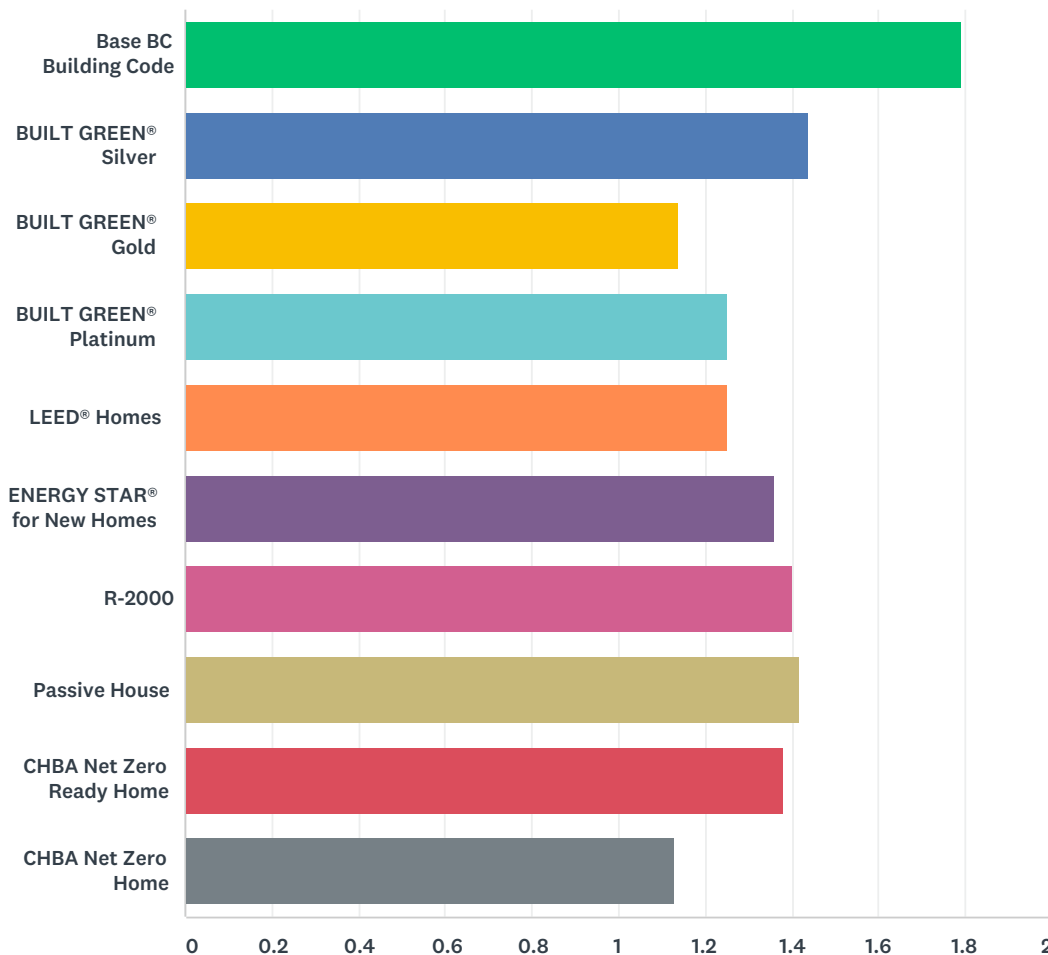
Answered: 38 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	55.26%	21
Maybe	7.89%	3
Unsure	23.68%	9
No	13.16%	5
TOTAL		38

Q7 What is the most stringent energy efficient home building standard you have designed or built, and what do you typically build to? Check all that apply.

Answered: 38 Skipped: 15

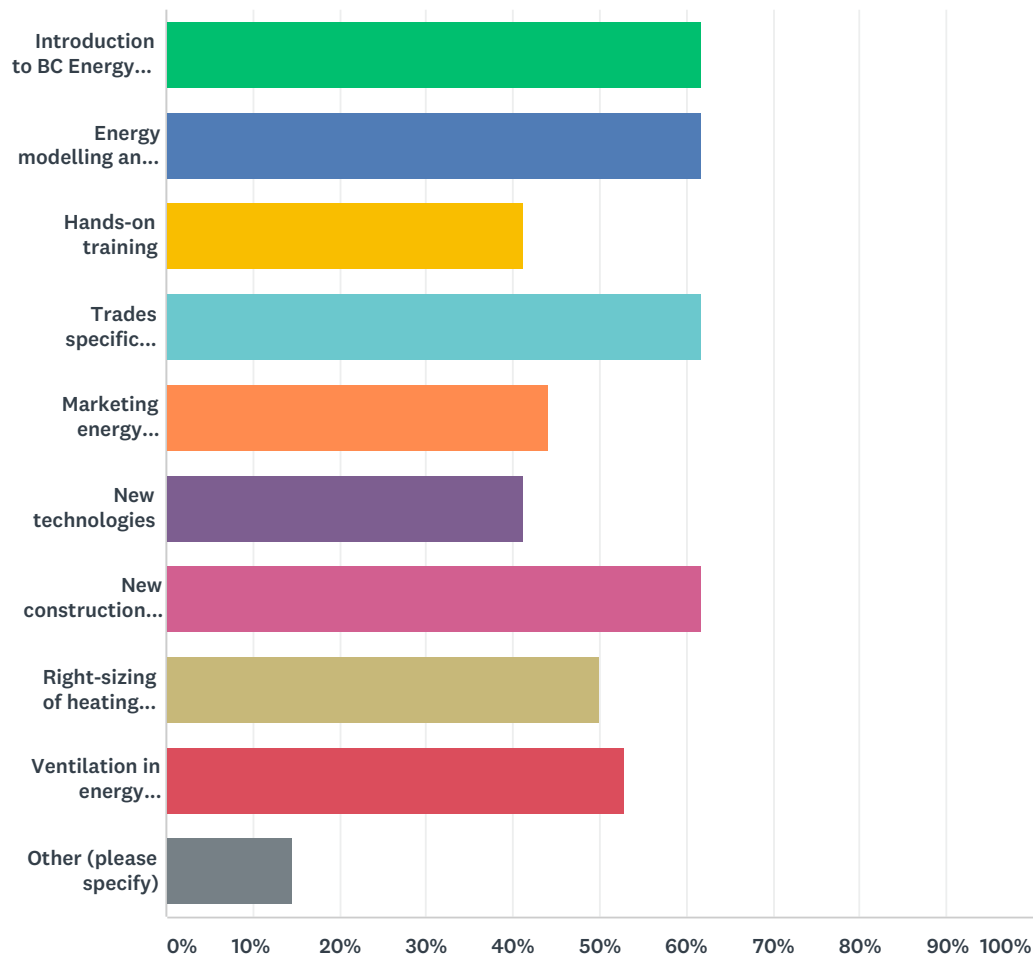


	HAVE BUILT TO THIS ONCE OR MORE	TYPICALLY BUILD TO THIS LEVEL	TOTAL	WEIGHTED AVERAGE
Base BC Building Code	21.43% 6	78.57% 22	28	1.79
BUILT GREEN® Silver	55.56% 5	44.44% 4	9	1.44
BUILT GREEN® Gold	85.71% 6	14.29% 1	7	1.14
BUILT GREEN® Platinum	75.00% 3	25.00% 1	4	1.25
LEED® Homes	75.00% 3	25.00% 1	4	1.25
ENERGY STAR® for New Homes	63.64% 7	36.36% 4	11	1.36

R-2000	60.00% 3	40.00% 2	5	1.40
Passive House	58.33% 7	41.67% 5	12	1.42
CHBA Net Zero Ready Home	62.50% 5	37.50% 3	8	1.38
CHBA Net Zero Home	87.50% 7	12.50% 1	8	1.13

Q8 Which of the following Education and Training Opportunities would be helpful in supporting a smooth transition to Step Code adoption? Check all that apply.

Answered: 34 Skipped: 19



ANSWER CHOICES	RESPONSES	
Introduction to BC Energy Step Code	61.76%	21
Energy modelling and the role of Energy Advisors	61.76%	21
Hands-on training	41.18%	14
Trades specific training (e.g. air and moisture barriers, window installation...)	61.76%	21
Marketing energy efficient homes	44.12%	15
New technologies	41.18%	14
New construction techniques	61.76%	21
Right-sizing of heating systems	50.00%	17
Ventilation in energy efficient homes	52.94%	18
Other (please specify)	14.71%	5

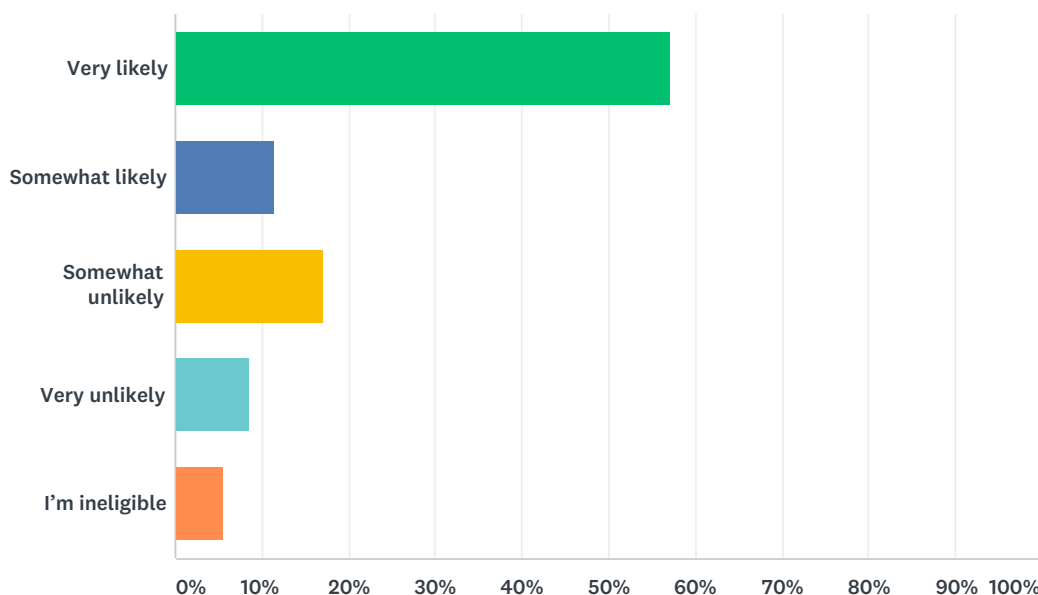
Total Respondents: 34	
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Q9 Aside from the challenges to implementation outlined in the introduction (e.g. costs, lack of technical training, energy advisor capacity, compliance monitoring), do you have any other comments on what the regional governments should consider leading up to the implementation of the Energy Step Code? Please comment.

Answered: 22 Skipped: 31

Q10 How likely are you to use the incentives being provided by FortisBC/Fortis Energy Inc. in 2018? Keep in mind that performance requirements of the Step Code will be embedded in the base BC Building Code in future code updates, and that these incentives are an initial offering for 2018 and may change beyond that.

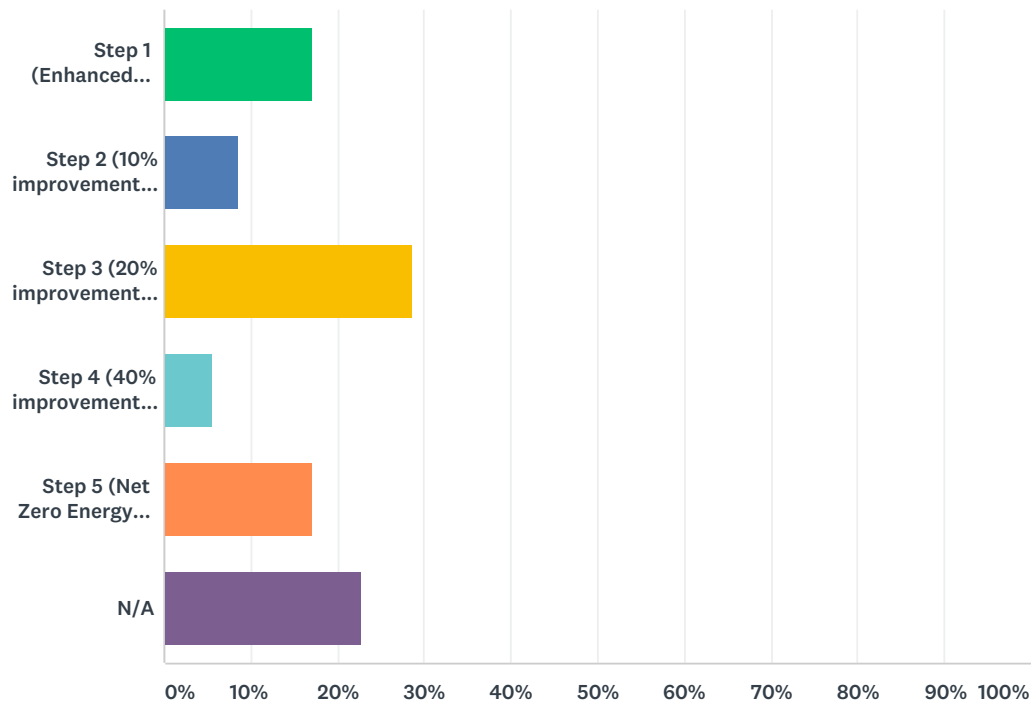
Answered: 35 Skipped: 18



ANSWER CHOICES	RESPONSES	
Very likely	57.14%	20
Somewhat likely	11.43%	4
Somewhat unlikely	17.14%	6
Very unlikely	8.57%	3
I'm ineligible	5.71%	2
TOTAL		35

Q11 If you are likely to use the incentives being provided by FortisBC/Fortis Energy Inc. in 2018, what Step of the Energy Step Code are you most likely to attempt to build to:

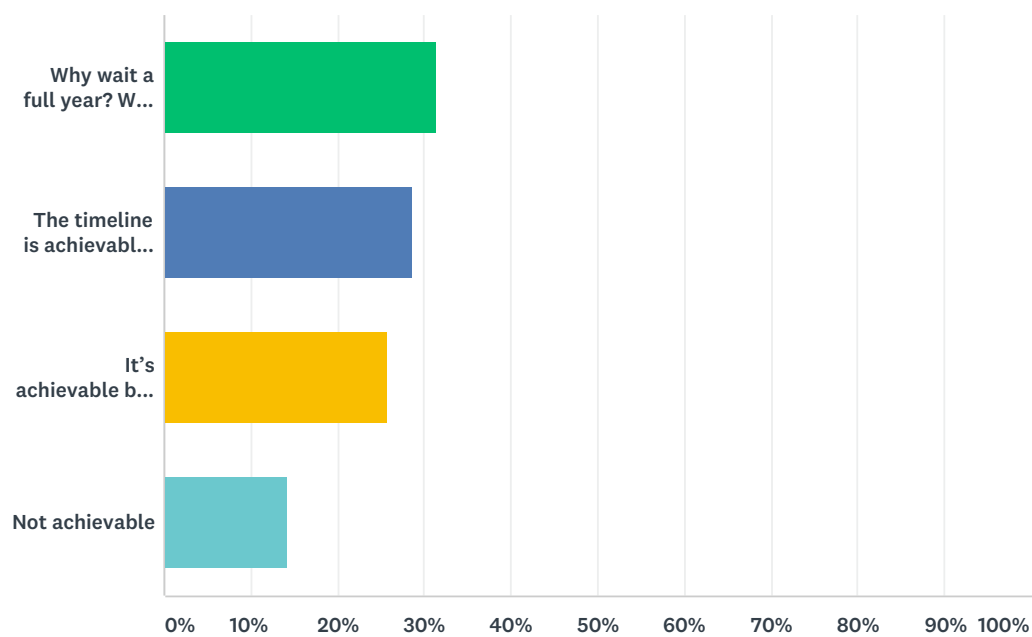
Answered: 35 Skipped: 18



ANSWER CHOICES	RESPONSES	
Step 1 (Enhanced Compliance)	17.14%	6
Step 2 (10% improvement over base BC Building Code)	8.57%	3
Step 3 (20% improvement over base BC Building Code)	28.57%	10
Step 4 (40% improvement over base BC Building Code)	5.71%	2
Step 5 (Net Zero Energy Ready)	17.14%	6
N/A	22.86%	8
TOTAL		35

Q12 Which statement best reflects how you feel about the proposed timeline?

Answered: 35 Skipped: 18



ANSWER CHOICES	RESPONSES	
Why wait a full year? We should get started today	31.43%	11
The timeline is achievable with the right supports	28.57%	10
It's achievable but may pose challenges	25.71%	9
Not achievable	14.29%	5
TOTAL		35

Q13 If you have any additional comments you'd like to add, please include them here:

Answered: 8 Skipped: 45

1. In which municipalities and electoral areas are your projects located? Check all that apply.

Other (please specify)

- Thru-out the Province of BC
- Township of Spalluncheon
- RDOS
- City of Revelstoke
- Vancouver, Surrey, Whistler
- Western Canada & US
- RDOS and TNRD
- Kamloops
- Princeton
- The Edmonton Capital Region
- Alberta and British Columbia
- Across BC
- Rest of BC

2. How would you describe your role in the building industry? Check all that apply.

Other (please specify)

- Modular Builder
- Solar System Provider
- Passive House Consultant
- Renovator
- Supplier
- retired building inspector
- Realtor
- Certified Passive House Consultants
- Structural and Building Energy Engineering
- OVERSIGHT
- Building Inspections

Q6: If you've used the tools listed above have they helped to improve design performance or resulted in other benefits? Check the box that applies.

Please comment on your previous answer. In particular, please state what benefits you have seen.

- Energy modelling and performance path makes the design options to be more open, being able to search for trade-off solutions among the passive design and HVAC systems.
- PHPP Energy Modeling is a fully encompassing piece of software for all assemblies and systems of a home. Even if it's not being used for passive house applications, it calculates a very accurate snapshot of how the house consumes energy and gives a target for air tightness requirements. I have always taken the prescriptive approach for building assemblies to meet or exceed minimum code requirements.

- Energy modelling has helped optimize our designs for performance and cost-effectiveness to our clients. They help us optimize everything from building form, to what wall assembly is necessary to meet the insulation requirements, how much to insulate the slab and roof, specifying HVAC equipment so that it's right sized, optimizing design for passive cooling, and understanding the impact of glazing and air tightness on overall performance. The air tightness testing is a no brainer. By testing air tightness before drywall is up we are able to locate leaks to further enhance energy performance.
- in the past the performance path has resulted in the buildings only requiring the basic insulation requirements to meet code yet perform close to the old EnerGuide level of 80
- Simple, yet accurate, energy modelling is used on every project to establish a direct, specific estimate of annual energy consumption and intensity, as well as sizing of peak loads for heating, cooling and DHW. The carbon intensity (kg CO₂e per year) is also a straightforward byproduct of energy modelling. It makes total sense to do this for every project.
- The only way to get a modern building is by measuring it.
- use of air tight testing helped establish new standards for us in the use of spray foam in complex assemblies
- More coordination between architect and design professionals for a more comprehensive design.
- Have a hard time gauging the accuracy of our modelling results.
- We recently air tested a 4200sf home just prior to drywall. We used the test to seal penetrations.
- Performance based compliance allows for cost-optimized design regardless of the target.
- Yes, using the PHPP (Passive House Planning Package) allows our projects to exceed Step 5. When not doing full Passive House, we still energy model all of our projects and use "high-performance" assemblies using the five basics - superinsulation, airtightness, high-performance windows/doors, thermal bridge free and heat recovery ventilation.

Q7: What is the most stringent energy efficient home building standard you have designed or built, and what do you typically build to? Check all that apply.

Other, e.g. EnerGuide rating (please specify)

- Many homes we design use Passive House principles. Some clients don't want to certify so we design homes well above minimum code but short of Passive House to give them the best possible house within their budget and design constraints.
- Living Building Challenge. NetZeroEnergy (ILFI)
- Living building challenge
- EGR 82
- 9.36. compliance or BC Step 1 equivalent (nic airtightness)

Q8: Which of the following Education and Training Opportunities would be helpful in supporting a smooth transition to Step Code adoption? Check all that apply.

Other (please specify)

- Giving incentive to North American HVAC manufacturers to offer smaller capacity systems. Many of the current systems are oversized because the minimum capacities are beyond what a building requires.
- A systems approach. A course tailored to help the industry understand the tradeoffs and potential avoided costs to do the right things right. Then also trade specific training in window installation, HRVs, and air tightness. Moisture management in wall assemblies will be a big concern with these thicker walls. It's important there are good resources in the design of walls that work for our climate.
- Educating how much the envelope and orientation effect the energy performance - especially with regard to preventing summertime overheating - one of the most important issues with climate change and the Okanagan.
- how to conduct a blower door test and calculate air changes
- The energy component is one side, what is being lost in the discussion is that water (air borne or liquid) behaves differently in thicker assemblies. Training must be provided on this or the number of failures of higher performance assemblies will be the next "leaky condo" problem.

Q9: Aside from the challenges to implementation outlined in the introduction (e.g. costs, lack of technical training, energy advisor capacity, compliance monitoring), do you have any other comments on what the regional governments should consider leading up to the implementation of the Energy Step Code? Please comment.

Open-Ended Response

- It is not feasible to accurately test Modular buildings until they are set up on site. As we deliver homes throughout BC including smaller remote communities availability and cost of the energy advisors would be even greater to our industry and could result in lost sales opportunities.
- Have an immense concern with the Energy Step Code being introduced as it will have an overall dramatic negative effect with the cost of housing. Based on studies that I have researched and partaken in we are moving towards \$300 per square foot without land. I can appreciate there are efficiencies and cost savings with respect to utilities, but I don't believe those efficiencies will be greater than the mortgaged amount the typical homeowner will be borrowing. This is a really bad idea!!!!
- Don't hesitate on implementation. Industry needs a wake up call and we can't keep building to the current minimums. I also think the municipal or provincial governments should be in charge of energy modeling, right along side plan checking in the permit application stages.
- Implementation of Step Code is absolutely necessary to support consumer choice and keep energy costs low. Having a performance based approach is entirely reasonable despite resistance to change from the industry. One important point, once we start designing and building homes with more insulation than a 2x6 stud wall then adding more insulation beyond that based on budget or energy model requirements is straightforward. With housing prices

rapidly rising step code or not, it is essential that at the very least a massively better product is offered. I hope governments will take this opportunity to lead in this important initiative.

- The energy used by pools and hot tubs. This should be included with the home modelling. Silly that we can build an energy efficient home and then waste electricity heating a pool in the early fall and late spring.
- building to this level should be an option not a mandate. This adds to the cost of a home and does not promote getting young families into the housing market. Also what about all the commercial buildings that are energy hogs with no standards for insulation
- Try to make builders and consumers understand the big picture. The long term effects of energy efficient housing and how it reduces GHGs and costs due to the efficiency of the product.
- Mainly the costs will rise to an unattainable or sellable level. We need affordable homes.
- The cost benefit ratio for home owners as the requirements for higher steps cost way more money
- We need to consider the promotion of healthier buildings in the light of energy efficiency. Most specifically the ventilation/air-exchange during peak summer/winter when outdoor air is often reduced due to energy costs for tempering. We have proven alternate solutions that we have installed on numerous projects in the Okanagan that guarantee healthier buildings with no energy penalty.
- We need legislation to bring our building practices out of the dark ages.
- They should at min do air test regardless of the ACH outcome. This should happen now.
- rate of implementation as it relates to additional cost. i.e. selling similar spec homes with different step code levels and inherent cost.
- Education is extremely important. More emphasis on the building envelope design and air sealing especially.
- Lack of supply of building products that help achieve air tightness. Currently only 3 companies providing this product with only one them being sold locally.
- no
- An educated, consistent and practical enforcement from the local building officials so all buildings are on the same basis. Respect the knowledge and assistance of design professionals.
- Costs of implementation, it is becoming very expensive to build and although these programs sound fantastic with increases in every sector of building we need to be aware of how this will impact the consumer, currently with all the engineering required the cost of permits and cost of materials how one will it be before the average consumer will not be able to afford a Home, we are already there
- Negative impact to creating affordable Housing. Does not address the real energy users - like older homes.
- With building compliance to be largely dependent on the quality of energy compliance reports, it will be important for municipalities to be versed with what are 'reasonable results' and to be able to detect obvious modeling mistakes if they are made. I think it is important that municipalities be aware of the advantageous modeling flexibility currently built into the Step Code to ensure it is retained in future code editions. The current allowance for the use of alternate ASHRAE 140 compliant (as opposed to a Hot2000 only approach) ensures consumer choice and design innovation is not limited to the capabilities/scope of a single software tool.

As an active energy consultant I would be pleased discuss these matters in person or over the phone. Mikhael Horvath mikhael@enforma.ca 778.363.0401

- Make using www.u-wert.com (u-value.com in English) mandatory to mitigate potential moisture issues within thicker assemblies. When submitting this data to local municipalities, our experience has shown that plan checkers do not understand the information presented and yet this should be mandatory in our opinion. I also recommend using U-values (not RSI...!!!) consistently for all assemblies including windows as mixing RSI into the same discussion is confusing. u-wert allows users to quickly build assemblies to determine the U-value, condensate, moisture content of wood, drying time, interior surface temperatures, drying reserve, temperature amplitude drying, phase shift and finally heat storage capacity.

Q12: Which statement best reflects how you feel about the proposed timeline?

Please comment on previous answer. In particular, please state your perspective.

- It is difficult to make the whole construction market be ready for such a challenging task, without fail in some other important aspects like economic feasibility, quality control of new construction methods, implementation of new HVAC systems...
- Feasibility of energy testing on 100% of Modular homes delivered within BC is unrealistic with current capacity of energy advisors and due to associated costs.
- There are not enough Energy Advisors to take up this demand. I think Energy Advisors should be a public service at the Municipal or Provincial Level. This also guarantees a third party to confirm all the data hand in hand while a building permit application is being reviewed.
- Step 3 should be sooner, 12 months after Step 1. Step 1 doesn't require any deviation from minimum code.
- The sooner the better.
- Costs will rise to a point people will not build anymore. Costs are not worth the risk of our construction economy. This is should be by choice of the client building there home. Not pushed on by governments.
- Still concerned about the costs of construction
- Let's get going. I am all for soft starts to get things moving and everyone on board, but energy efficiency is a NOT A NEW IDEA! Just take the lead and show the community that we are a grown up and responsible region of districts, towns and municipalities - who want to get this moving. With growth in the Okanagan expanding - we are constructing a legacy of buildings that will be around for many years. Lets start the process with Step 3 right now - and offer benefits to Step 4 / 5 that offer tangible rewards to the developers who want to take them on. We are a growing region and have the means to do this.
- How will home assessments vary for each step achieved. How will home pricing vary based on which step home was built to. Until home pricing is valued the same way as the automotive industry ie .cost of automobiles is based on performance.
- Many builders and trades are unaware of the energy step code and haven't prioritized ongoing education as business is so good right now in the Okanagan that they don't have to.
- Not sure, with the large demand for energy advisors, that the current professionals will meet the time demands on completing the calculations in a timely manor.

- educating every single trade to the level required will be very difficult. Especially trades that are not governed by an organizing body (ex. insulators)
- I am biased. We intend to support Step Code compliance within the Okanagan.
- Get on with it.....what are we waiting for? We've been designing and building Passive Houses since 2012 and the rest of the industry is stuck. The reality is that every builder/designer is not going to make the cut and the question that should be asked is, is that a bad thing?
- Based on my experience, the one year gap is not encouraging the industry to get ready for the changes, but is rushing them to build more building before the new changes apply!

Q13: If you have any additional comments you'd like to add, please include them here:

Open-Ended Response

- This initiative is extremely negative towards housing affordability. I believe we need to restructure our overall approach to the BC Building Code with respects to overall phasing/levels of the code. In essence it would be the same as purchasing a vehicle. Standard safety code applies (typical construction - Level 1), then add steps as they have been outlined, however it should not be "required" for housing to reach "net zero". When these houses are sold it would be disclosed under which level of the Building Code home was constructed under. This will maintain affordability measures for those looking to be introduced to home ownership or don't believe efficiency measures are of priority.
- Affordable homes should be top priority.
- I greatly admire and offer sincere thanks to the City and Fortis for funding this process to get energy efficiency rolled out in our region. Please use this timing to achieve the higher goal of straight to step 3, rather than moving slowly, by which time another 5,000 homes will be less efficient for their lifetime. Let's go higher now. Thank you to those involved in this program.
- We support legislation to get this move forward in our building practices.
- very proud of our construction community leading the way to energy efficient building
- Need to have incentives in BC Hydro territory as well as Fortis areas.
- The Step code will negatively impact housing affordability for only a minuscule return in energy savings to the consumer. It does not address the real energy usage - older homes. The step code is politically motivated in its current form and should be applied to all homes - not just new homes (low hanging fruit)
- Incentives....hmmm.....if it is like the FortisBC new home program incentives then a lot of Passive House projects will not be eligible because we are forced to use European components simply because the comparable components, on a performance level, do not exist in North America (this is starting to change but we shouldn't be penalized when the data clearly shows higher performance). For example, on numerous projects we have used Zehnder HRV's and European windows simply because we can't get the same levels of performance from North American products. The issue is that the European products do not have the silly "EnergyStar sticker" and so our customers are not able to obtain the incentive. To date, our customers have received very little to zero, on average, for building massively better and that is quite honestly pretty frustrating.

Attachment C: Compliance Report (Pre-Build)



Building & Permitting Branch
1435 Water Street
Kelowna, BC V1Y 1J4
250-469-8500

Compliance Report (Pre-Build)

For 9.36.5 or 9.36.6 (Energy Step Code)
Energy Performance Pathway

- Instructions**
1. Effective December 15, 2017 as per the BC Building Act.
 2. To be completed by a 'certified' Energy Advisor, Certified Passive House Designer/Consultant ('Step' 5 only), or an energy modeler using an ASHRAE-140-compliant software*.
 3. To be **submitted prior to issuance** of Building Permit, accompanied with supporting documentation.

PROJECT INFORMATION

Project Address: _____

Building Type: ☐ Single Family Dwelling ☐ Carriage House ☐ Duplex ☐ Townhome ☐ Apartment <4 storeys

BC Building Code Performance Path (select one):

☐ 9.36.5 (COMPLETE SECTIONS A + B)

☐ 9.36.6 (ENERGY STEP CODE – COMPLETE SECTIONS A + C) – Step pursued: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Software Name: _____ Version: _____ Climatic Data (Location): _____

SECTION A: BUILDING CHARACTERISTICS SUMMARY

	Details (Assembly/System Type/Fuel Type/Etc.)	Effective R-Value/ Efficiency
Exterior Walls	Construction Details	Effective R-Value
Roof/Ceilings	Construction Details	Effective R-Value
Foundation/Below-Grade Walls	Construction Details	Effective R-Value
Windows	Type	Overall U-Value
	FDWR:_____ %	
Air Barrier System and Location	Details	
Space Conditioning (Heating & Cooling)	System Type, Fuel Source	Performance Rating
Ventilation	Design basis according to Section 9.32	
Water Heating	System Type, Fuel Source	Performance Rating
Other Energy Impacting Features	Design basis	

The above information is correct based on drawings prepared by _____,

dated (dd/mm/yr): _____.

SECTION B: 9.36.5 – ENERGY PERFORMANCE COMPLIANCE (COMPLETE IF APPLICABLE)

Proposed House Rated Energy Consumption (GJ/yr)		Reference House Rated Energy Target (GJ/yr)	
HVAC		HVAC	
Water Heating		Water Heating	
Sum		Sum	

The airtightness value used in the energy model calculations for the **Proposed House** is:

☐ 4.5 ACH @50Pa ☐ 3.5 ACH @50Pa OR Tested At _____ ACH @ 50Pa

☐ The above calculation was performed in compliance with Subsection 9.36.5. of Division B.

SECTION C: 9.36.6 – ENERGY STEP CODE COMPLIANCE (COMPLETE IF APPLICABLE)

Energy Consumption: Proposed House (GJ/yr): _____ Reference House (GJ/yr): _____

Metric		Units	Required	Proposed
Step Code Level		Step 1, 2, 3, 4 or 5		
Airtightness		ACH @ 50 Pa	(max)	
Building Equipment & Systems	ERS Improvement over Reference House OR	% lower	(max)	
	Mechanical Energy Use Intensity (MEUI)	kWh/m ² ·yr	(max)	
Building Envelope	Thermal Energy Demand Intensity (TEDI) OR	kWh/m ² ·yr	(max)	
	Peak Thermal Load (PTL)	W/m ²	(max)	
Step Code Design Requirements Met: <input type="checkbox"/> Yes <input type="checkbox"/> No				

The above calculation was performed in compliance with (see Clause 2.2.8.3.(2)(e) of Division C). **Select one:**

- ☐ Subsection 9.36.5. of Division B,
☐ The EnerGuide Rating System (ERS), version 15 or newer, or
☐ Subsection 9.36.6.3.(3) of Division B (Passive House Planning Package version 9 or newer) – applies to Step 5 only.

DESIGN CONFIRMATION (APPLICABLE TO ALL PERFORMANCE COMPLIANCE PATHWAYS)

*The undersigned has produced and/or reviewed the Compliance Report for the above-mentioned project, created based on the project's design as provided by the Owner or Builder. The undersigned has verified that the project complies with the Subsection 9.36.5/9.36.6 of Division B, as detailed in the 2012 BC Building Code. **

Full Legal Name:		Company Name & Business License # (if applicable):	
Mailing address:			
Phone #:	Energy Advisor ID #:	Service Organization:	
Email:	EnerGuide P #:		
Signature:	Date Signed (dd/mm/yr):		

* Energy modelers using an ASHRAE-140-compliant software must include a **City of Kelowna Assurance of Compliance** form prior to issuance of **Occupancy Permit**.

Attachment D: Compliance Report (As-Built)



Building & Permitting Branch
1435 Water Street
Kelowna, BC V1Y 1J4
250-469-8500

Compliance Report (As-Built)

For 9.36.5 or 9.36.6 (Energy Step Code)
Energy Performance Pathways

- Instructions**
1. Effective December 15, 2017 as per the BC Building Act.
 2. To be completed by a 'certified' Energy Advisor, Certified Passive House Designer/Consultant ('Step' 5 only), or energy modeler using an ASHRAE-140-compliant software*.
 3. To be submitted prior to the issuance of Occupancy Permit, accompanied with supporting documentation.

PROJECT INFORMATION

Project Address: _____

Building Permit #: _____

BC Building Code Performance Path (select one):

☐ 9.36.5 (COMPLETE SECTIONS A + B)

☐ 9.36.6 (ENERGY STEP CODE – COMPLETE SECTIONS A + C) – Step pursued: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

- Check one: ☐ This compliance report is unchanged from the pre-build compliance report and submitted documentation
- ☐ This compliance report includes modifications from the pre-build compliance report (**any changes must be noted in the proceeding sections**)

Software Name: _____ Version: _____ Climatic Data (Location): _____

SECTION A: BUILDING CHARACTERISTICS SUMMARY

	Details (Assembly/System Type/Fuel Type/Etc.)	Effective R-Value/ Efficiency
Exterior Walls	Construction Details	Effective R-Value
Roof/Ceilings	Construction Details	Effective R-Value
Foundation/Below-Grade Walls	Construction Details	Effective R-Value
Windows	Type	Overall U-Value
	FDWR:_____ %	
Air Barrier System and Location	Details	
Space Conditioning (Heating & Cooling)	System Type, Fuel Source	Performance Rating
Ventilation	Design basis according to Section 9.32	
Water Heating	System Type, Fuel Source	Performance Rating
Other Energy Impacting Features	Design basis	

The above information is correct based on a site evaluation completed on (dd/mm/yr): _____

SECTION B: 9.36.5 – ENERGY PERFORMANCE COMPLIANCE (COMPLETE IF APPLICABLE)

Proposed House Rated Energy Consumption (GJ/yr)	
HVAC	
Water Heating	
Sum	

Reference House Rated Energy Target (GJ/yr)	
HVAC	
Water Heating	
Sum	

The airtightness value used in the energy model calculations for the **As-Built House** is:

☐ 4.5 ACH @50Pa ☐ 3.5 ACH @50Pa OR Tested At _____ ACH @ 50Pa

☐ The above calculation was performed in compliance with Subsection 9.36.5. of Division B.

SECTION C: 9.36.6 – ENERGY STEP CODE COMPLIANCE (COMPLETE IF APPLICABLE)

Energy Consumption: As-Built House (GJ/yr): _____ Reference House (GJ/yr): _____

Metric		Units	Required	Proposed	As-Built
Step Code Level		Step 1, 2, 3, 4 or 5			
Airtightness		ACH @ 50 Pa	(max)		
Building Equipment & Systems	ERS Improvement over Reference House OR	% lower	(max)		
	Mechanical Energy Use Intensity (MEUI)	kWh/m ² ·yr	(max)		
Building Envelope	Thermal Energy Demand Intensity (TEDI) OR	kWh/m ² ·yr	(max)		
	Peak Thermal Load (PTL)	W/m ²	(max)		
Step Code Requirements Met: <input type="checkbox"/> Yes <input type="checkbox"/> No					

The above calculation was performed in compliance with (see Clause 2.2.8.3.(2)(e) of Division C)

Select one:

- ☐ Subsection 9.36.5. of Division B,
☐ The EnerGuide Rating System (ERS), version 15 or newer, or
☐ Subsection 9.36.6.3.(3) of Division B (Passive House Planning Package version 9 or newer) – applies to Step 5 only.

DESIGN CONFIRMATION (APPLICABLE TO ALL PERFORMANCE COMPLIANCE PATHWAYS)

*The undersigned has produced and/or reviewed the House Performance Evaluation for the above-mentioned project, created based on the project's design as provided by the Owner or Builder. The undersigned has verified that the project complies with the Subsection 9.36.5/9.36.6 of Division B, as detailed in the 2012 BC Building Code.**

Full Legal Name:		Company Name & Business License # (if applicable):	
Mailing address:			
Phone #:	Energy Advisor ID #:	Service Organization:	
Email:	EnerGuide P #:	EnerGuide N #:	
Signature:	Date Signed (dd/mm/yr):		

* Energy modelers using an ASHRAE-140-compliant software must include a **City of Kelowna Assurance of Compliance** form prior to issuance of **Occupancy Permit**.