

BC Energy Step Code: Fall 2017 Capital Region Building Industry Engagement Summary

1.0 Introduction

The BC Energy Step Code is a provincial building regulation that applies to new residential, multi-unit and commercial construction. It provides a voluntary roadmap that establishes progressive performance steps in energy efficiency for new buildings from the current BC Building Code level to net zero energy ready buildings by 2032. More information is available at www.energystepcode.ca.

There are several engagement and training opportunities under way across the Province related to the Step Code ranging from BC Energy Step Code Council (ESCC) webinars and resources, industry lunch and learns and conference presentations through industry associations.

In the late summer and fall of 2017, working with staff on the CRD Climate Action Inter-Municipal Working Group (IMWG), the CRD Climate Action Program (CRD CAP) supported regional engagement activities to gather local building industry feedback on the BC Energy Step Code on behalf of local governments. Objectives of these engagement activities were to:

- Generate broad awareness on the BC Energy Step Code, in support of the CRD Energy Step Code Program (see Section 1.1).
- Collect initial building industry feedback on local step code policy and program opportunities.
- Further understand current industry practices and readiness around new energy efficient buildings.
- Support the development of educational tools.
- Understand how to best support industry construction of better performing buildings, in relation to energy efficiency.

1.1 Fall 2017 CRD Energy Step Code Program

The CRD CAP, with financial support from BC Hydro Sustainable Communities led the CRD Energy Step Code Program in the fall of 2017 (herein referred to as the 2017 Step Code Program).

The CRD Climate Action IMWG (with additional municipal Building Official guests) provided input into the overall scope of the program, and sustainability staff from Victoria and Saanich provided ongoing guidance and input into the CRD online survey and various workshops. Victoria and Saanich staff also led the development of the November 1 Building Industry Workshop and follow-up survey.

The scope of the 2017 Step Code Program consisted of the following activities:

- 1. Capital Region Building Industry Survey**
 - To determine local awareness and preparedness and to inform workshop engagement
- 2. CRD Housing Action Team Presentation**
 - ESCC presentation, CRD Builder Industry Survey, local government engagement plans
- 3. Building Inspectors Working Session**
 - Understanding energy modelling and air tightness testing, Energy Advisors role, reporting the Step Code
- 4. Local Government Staff Workshop**

- Results of the Building Industry Survey, implementation considerations, opportunities and gaps, next steps
- 5. Local Government Elected Official and Senior Staff Energy Efficiency Building Tour**
 - ESCC presentations, results of CRD Builder Industry Survey, tour of energy efficient buildings equivalent to different Step Code levels and Q&A with developers.
- 6. Realtor Workshop: “Selling Energy Efficiency”**
 - New and retrofit energy efficiency, tour of retrofit and new homes, informational toolkit
- 7. Building Industry Workshop #1 (November 1, 2017) and follow-up survey (until November 27)**
 - Co-hosted by Urban Development Institute – Capital Region, Canadian Home Builders’ Association – Vancouver Island, City of Victoria, District of Saanich, District of North Saanich, CRD CAP
- 8. Energy Literacy Communications Tools**
 - Backgrounder on Step Code, energy efficiency technologies, costing, energy modelling and other considerations for the general public and industry.
- 9. Local Government Peer Networks**
 - Participate in and share information from Vancouver Island and province-wide Energy Step Code peer networks.

The CRD retained City Green Solutions to assist in the development, execution and final reporting of #3 to #6, above. A separate report outlining the scope, attendance and outcomes of the workshops is provided in a separate report, entitled *Project Report – CRD BC Energy Step Code Education Program, City Green Solutions (December 2017)*.

1.2 Scope of this Report

This report provides results of feedback collected by the CRD CAP and partners between August 2017 and November 27, 2017. Results are categorized as follows:

- CRD Building Industry Online Survey
- Building Industry Workshop #1 and follow-up survey

Unsolicited written or verbal correspondence intended for the CRD Board or provided directly to municipalities is not included in this report.

1.3 Key Findings

The majority of respondents indicated that they work within more than one municipality in the capital region. There is a strong desire for regional consistency on step code policies and processes.

In summary, key opportunities identified through the survey and workshop were operational cost savings, greenhouse gas and energy reductions, and consumer benefits. Respondents indicated there is a need for training, education and awareness-raising amongst the building industry and general public, and that mechanisms need to be in place to ensure quality control and minimize risk and liability. There was a desire from participants to see incentives that support adoption, and to have builder and trades

training available. There was a range of suggestions on what step is achievable or should be adopted in the short term.

2.0 CRD Building Industry Online Survey

Working with, and on behalf of local governments within the region, the CRD CAP developed a survey to gather local building industry feedback on the BC Energy Step Code. The purpose of this survey was to:

- Establish an initial sense of local industry readiness for the BC Energy Step Code.
- Support the development of needed educational and capacity building programming.
- Understand the best mechanisms to support industry in developing better performing buildings as outlined in the BC Energy Step Code.

2.1 Method

The survey was distributed and promoted between August 11 and September 15, 2017.

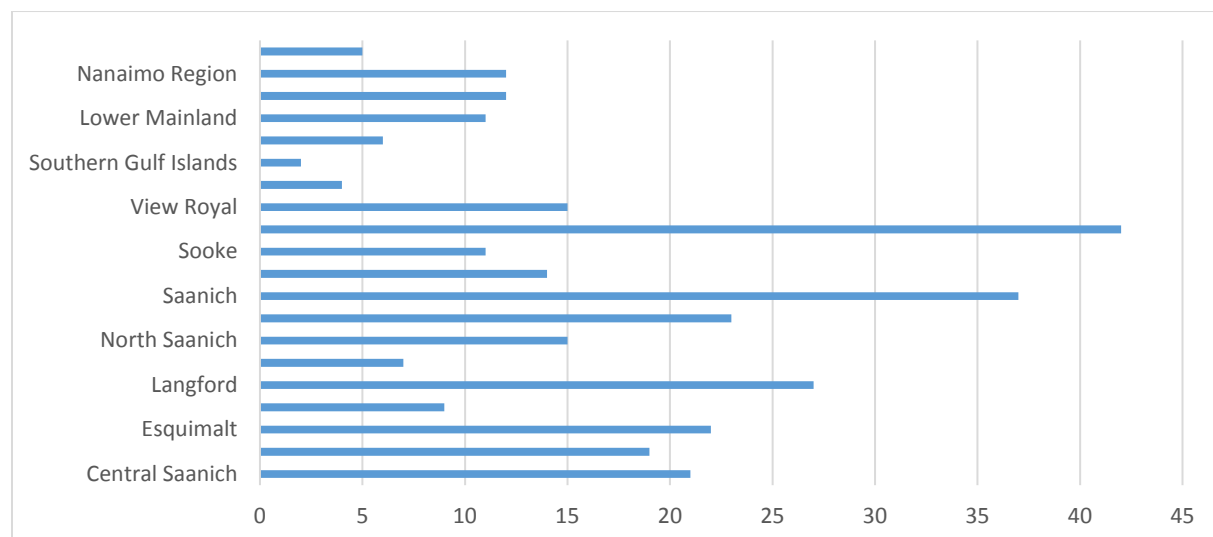
Requests to distribute the survey were sent to local building industry associations including but not limited to: Canadian Home Builders' Association (CHBA) – Vancouver Island, Urban Development Institute (UDI) – Capital Region, Victoria Residential Builders Association, local business associations, construction associations, and to local governments via their builder lists.

2.2 Results

The CRD received 57 total applicable responses. The following results are from the online survey.

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

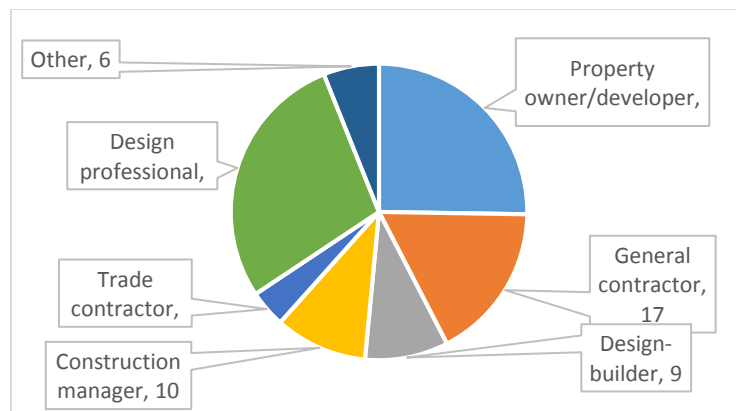
Responses – 57



Based on this information, 81% of respondents build or have built in more than one municipality; 49% build or have built in five or more municipalities.

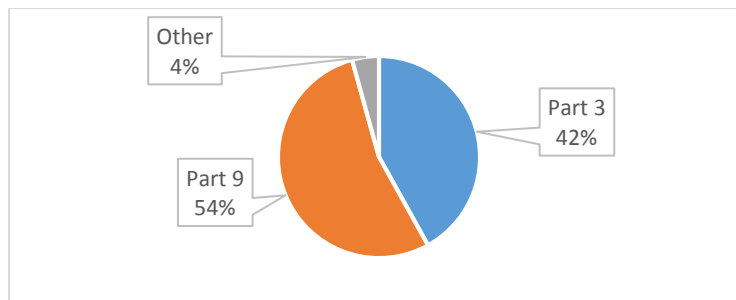
Question 2: How would you describe your role in the building industry? Check all that apply.

Responses - 57



Question 3: Which types of buildings do you construct (Part 3, Part 9, other)? Check all that apply.

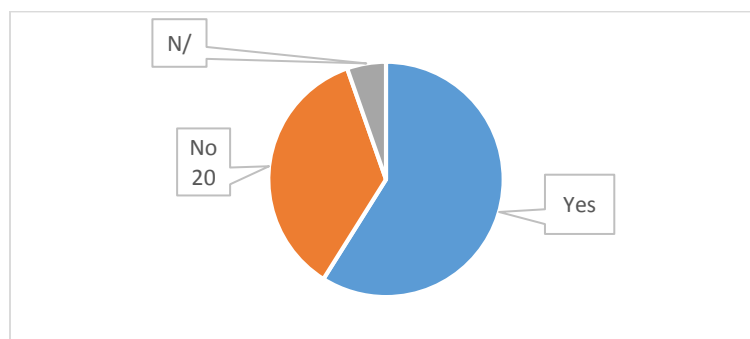
Responses – 56



Question 4: Do you currently build using a performance path for energy efficiency?

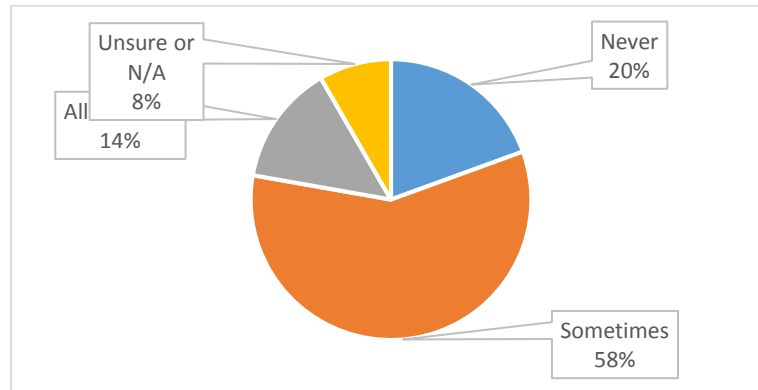
A performance path requires that the building as a whole performs to a certain standard, as opposed to a prescriptive path that requires each component be built to a certain standard (e.g. Wall R-value at least 20.)

Responses – 56



Question 5: For Part 3 buildings, on what percentage of your projects do you currently use an energy model program?

Responses - 36



Question 6: For Part 3 buildings, has using an energy model program helped to improve design performance or resulted in other benefits?

Responses: 23

In regards to design performance, of the written responses:

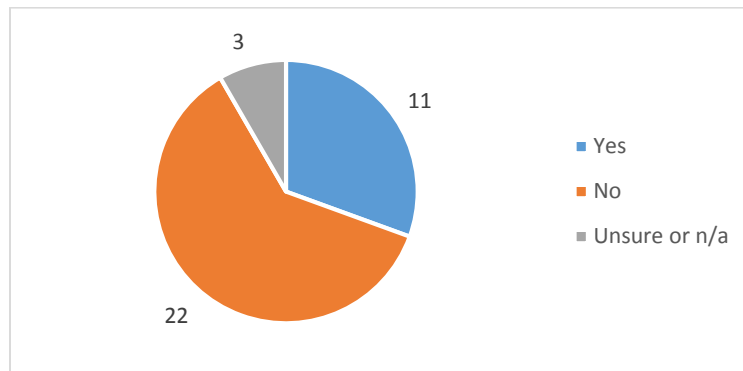
- 17 or 74% indicated there is benefit to using an energy model
- 2 or 9% indicated sometimes or somewhat of a benefit
- 2 or 9% indicated there is no benefit to using an energy model
- 2 or 9% indicated unknown.

Other benefits noted include:

- Improved energy performance and independent modeller saved capital costs through finding errors on design documents during design phase (i.e. before tender and construction).
- Better comfort for occupant.
- Higher sale prices.
- Optimized cost benefit analysis.
- Better understanding of building performance.
- In many cases energy modeling is the only way to properly quantify performance.
- Generally results in more deliberate design decisions.
- Good to understand where dollars can be best applied to meet the target performance.
- Trade-offs: the energy model has sometimes allowed us to see how efficient we design already without it or prior to applying the model calculations.

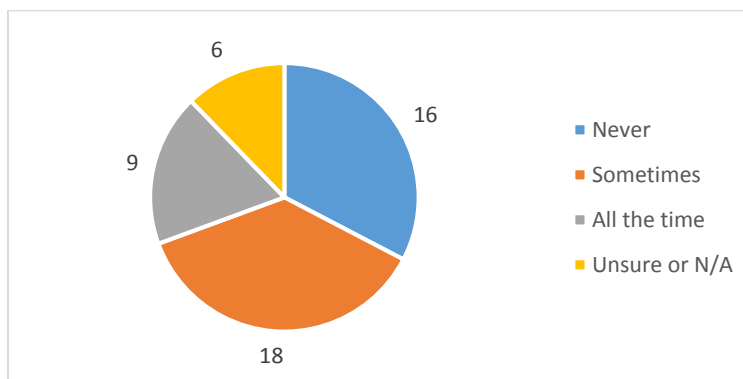
Question 7: For Part 3 buildings, do you currently engage a Commissioning Authority to confirm building performance and energy use upon completion of a project?

Responses - 36



Question 8: For Part 9 buildings, what percentage of your projects do you currently use an energy model program?

Responses – 49



Question 9: For Part 9 buildings, has using an energy model program helped to improve design performance or resulted in other benefits?

Responses – 24

In regards to design performance, of the written responses:

- 18 or 75% indicated there is benefit to using an energy model.
- 4 or 17% indicated there is no benefit to using an energy model.
- 2 or 8% indicated unknown.

Other benefits noted include:

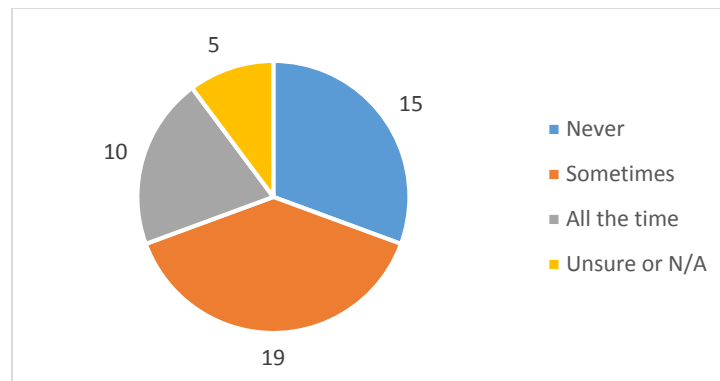
- Better targeting spending.
- Better building comfort which leads to higher customer satisfaction and higher sale prices. People are willing to pay more for better buildings.
- It has primarily helped to reassure clients that their investment in a higher energy performance makes sense both environmentally and economically. The well-structured model makes it easier

to accept as being valid and meaningful, as opposed to the older style of discussions with clients around the advantages of just buying better windows, or increasing attic insulation, etc.

- Results in more deliberate design decisions.
- Better comfort for occupants. Much more efficient building. Cost optimization for improvements.
- It definitely helps us to make sure our construction techniques are on point to ensure we are providing healthy durable homes for our customers.
- Generally an overall better quality of build, in particular tightness of building.

Question 10: For Part 9 buildings, what percentage of your projects do you conduct airtightness testing (ex. blower door testing)?

Responses - 49



Question 11: For Part 9 buildings, how has blower door testing or other airtightness testing helped to improve design performance?

Responses - 24

In regards to design performance, of the written responses:

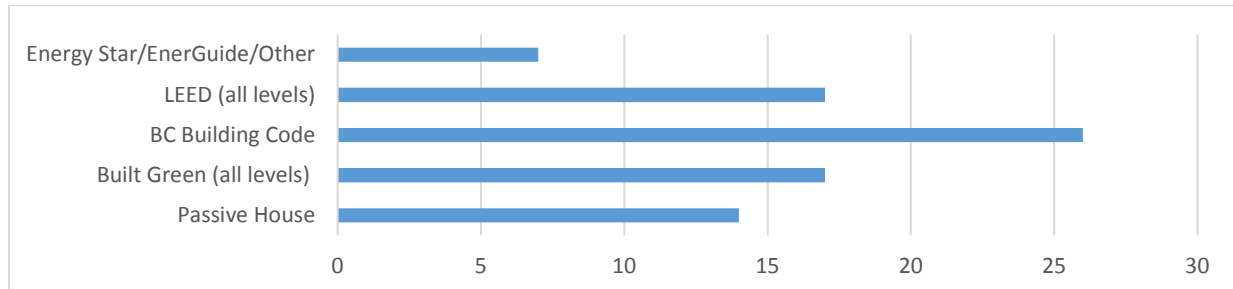
- 18 or 75% indicated there is benefit to using an energy model.
- 3 or 12% indicated there is no benefit to using an energy model.
- 3 or 12% indicated unknown.

Other benefits noted include:

- Helps to locate air leakage and deal with leaks early.
- Air leakage is one of the biggest losses in buildings and is a key measure for building verification and quality assurance.
- Focuses design attention on appropriate detailing and provides a hard requirement that the contractor knows they have to meet.
- Knowing it is happening and having it as something to measure our building quality against other builders is a great asset.
- As professional designers we know that 80 - 90% of the heat loss in a building is due to leakage/convective effects, not conduction.

Question 12: To which energy efficient home building standard(s) do you typically design or build (For example: BC Building Code, EnerGuide Rating System, LEED Silver, LEED Gold, Built Green, ENERGY STAR for New Homes, R-2000, Passive House etc.)?

Responses -53



Question 13. What is the most stringent energy efficient home building standard you have designed or built?

Responses – 47

Standard Noted	# of Responses
BC Building Code / None above	9
Passive House	13
Built Green Platinum	1
Built Green Gold	3
LEED Platinum	1
LEED Gold	7
LEED	4
Energy Star	1
Living Building Challenge	2
86	2
R2000	2
NECB/ASHREA	1
Net Zero Energy	1

Question 14: Do you consider the following a barrier to constructing more energy efficient homes?

	Always	Sometimes	Never	N/A	Responses
Incremental cost	31	13	8	0	52
Insufficient construction methods expertise	13	31	9	1	54
Insufficient energy modelling expertise	7	23	21	3	54
Insufficient airtightness testing expertise	7	21	19	6	53
Sub-trade coordination	11	29	9	3	52
Inability to convey long-term benefits to market	16	25	10	3	54

Question 15: Are there other barriers to constructing more energy efficient homes?*Responses - 36*

Other barriers noted are categorized as follows. Detailed responses are found in Appendix A. Note: Table does not include repeats of items noted above, or “no” or “n/a” responses.

Barrier Category	# of responses
Public/consumer knowledge	9
Product availability	6
Differing Building Official interpretations / municipal inconsistencies	6
Changing the status quo or breaking habits	5
Impacts to affordable housing	2
Unclear implications on other parts of the BC Building Code	1
Political willpower	1
Design limitations	1
User behaviour	1

Question 16: Do you consider the following a benefit to constructing more energy efficient homes?

Benefit	Always	Sometimes	Never	Responses
Marketability	22	18	11	51
Industry Leadership	20	24	7	51
Measurable Performance	26	19	8	53

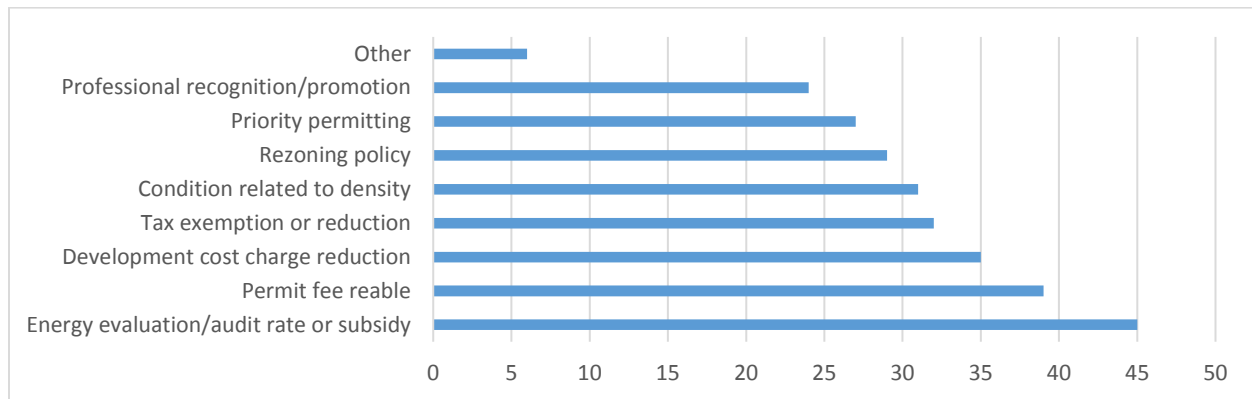
Question 17: Do you consider the following a benefit to constructing more energy efficient homes?*Responses – 29*

Other benefits noted are categorized as follows. Detailed responses are found in Appendix A. Note: Table does not include repeats of items noted above, or “no” or “n/a” responses.

Benefit Category	# of responses
Long term affordability / lifecycle costs	8
Quietness / comfort	7
Health / quality	6
Overall energy use reduction	5
Climate / environmental	4
Advances construction industry	3
Building science / envelope	3
Long term durability	2
Simplicity of systems	2
Assists in municipal rezoning negotiations	1
Disaster resilience	1

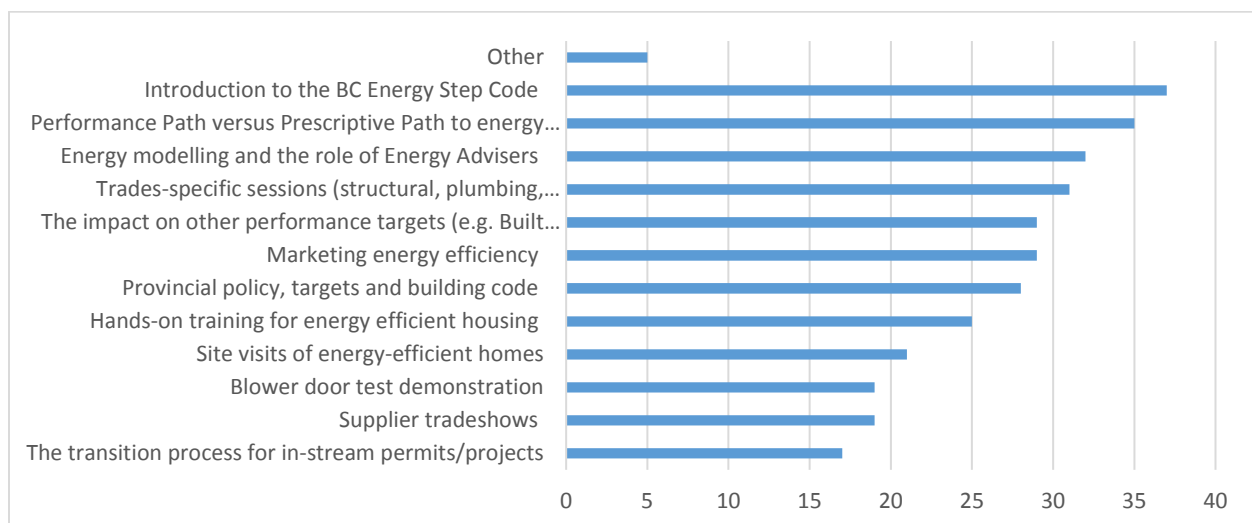
Question 18: If a municipality were to provide incentive(s) to the building industry in support of BC Energy Step Code implementation, what incentives would you like to see? Check all that apply.

Responses: 52



Question 19: Which topics would be helpful in future training sessions? Check all that apply.

Responses: 52



3.0 Building Industry Workshop #1 (November 1, 2017) and follow-up survey (until November 27)

The City of Victoria, District of Saanich, District of North Saanich, CRD CAP, Canadian Home Builders' Association – Vancouver Island (CHBA) and Urban Development Institute – Capital Region (UDI) planned and delivered an in-person building industry engagement workshop on local opportunities for the Step Code.

The purpose of this workshop was to provide information and raise awareness of the Step Code and for industry to provide feedback to municipalities in the Capital Region on the opportunities and potential approach for local implementation, including Step levels, timeline and support required.

3.1 Method

The workshop was held on November 1, 2017 and designed with input from UDI, CHBA, local government staff and feedback from the industry survey. The workshop was promoted through CHBA and UDI newsletters, mailing lists, municipal builder lists, local government websites and flyers at planning and engineering front counters.

The workshop format included formal presentations from representatives of the Province of BC Building Safety Standards Branch, the CRD CAP, City of Victoria and District of Saanich, a local energy modeller/advisor, and local builders and designers of both Part 9 and Part 3 buildings, followed by a question and answer period. A facilitated table discussion was then held based on pre-determined questions with table facilitators. Attendees received a hardcopy follow-up survey, which they were encouraged to fill out at the event or return to staff at the City of Victoria and District of Saanich by November 27, 2017.

3.2 Results

There were 90 attendees at the workshop, and organizers received 13 follow-up surveys. Through an informal survey of attendees, approximately a quarter identified themselves as working on both Part 3 and Part 9 buildings, the remainder indicated they work on Part 9 buildings only.

3.2.1 Facilitated Table Discussions

For the discussions, there were eight tables total. Five tables were labelled as Part 9, and three were labelled as Part 3. Attendees chose where to sit. Tables 1-4 provide a summary of the feedback from the facilitated table discussion.

Q1 a. What are your key concerns regarding implementation of the Step Code?		
Training / Education / Awareness (7 out of 8 tables)	General Comments	<ul style="list-style-type: none">• Need for local, Vancouver Island based training• Shortage of trainers• Understanding roles, especially energy advisors• Concerns about accurate information and need to address misinformation• Need to set clear expectations

Q1 a. What are your key concerns regarding implementation of the Step Code?		
	Municipalities	<ul style="list-style-type: none"> Building officials training – ensures consistent application Misinterpretation/misinformation on applications across municipalities, timelines etc.
	Builders	<ul style="list-style-type: none"> Busy schedules & demands – hard to undertake Training for all- especially the inexperienced e.g. unregistered building designers are not included in the conversation More work for consultants to support staff training Challenging to change habits
	Sub-trades	<ul style="list-style-type: none"> Required – need to clarify who is responsible for training Prefer on-site options
	Public	<ul style="list-style-type: none"> Need buyer awareness Education for all to address fear of change
Risk, Assurance and Liability (7 out of 8 tables)	Technology & New Products	<ul style="list-style-type: none"> Desire to ensure new technology is proven Risk of new products being used incorrectly Risk of stretching to reach higher steps beyond capabilities
	Quality Control Issues	<ul style="list-style-type: none"> Future issues e.g. vapour issues Workmanship - no/little control Trades, etc. have skills
	Liability	<ul style="list-style-type: none"> Performance confirmation e.g. through letters of assurance.
Regional Consistency (4 out of 8 tables)	Municipal Coordination	<ul style="list-style-type: none"> Need general coordination between municipalities Need consistency between building officials Questioned whether Province is providing direction for consistency in implementing across municipalities Similar requirements and timing for implementation regionally
Enforcement / Reporting (3 out of 8 tables)	General	<ul style="list-style-type: none"> Slow permitting process Implications if required Step is not met Follow-up – commissioning, performance, occupancy
Additional Comments	General	<ul style="list-style-type: none"> Lack of available energy auditors Availability of energy verifications for Part 3 buildings Product availability and access for first timers. Limiting choice for consumers (e.g. electric vs. gas) Step Code for renovations to achieve municipal targets

Q1 b. What are the key opportunities regarding implementation of the Step Code?		
Operational Savings & Consumer Benefits (5 out of 8 tables)	Messaging & Communication	<ul style="list-style-type: none"> Need more communication in general Messaging related to operational savings Consider pay back and full cost, not just upfront capital Consumer awareness of value/thermal comfort
	Added value and quality control	<ul style="list-style-type: none"> Ensures quality control and transparency for consumers Ability to enforce and report building code compliance (energy) More opportunities beyond the costing study

Q1 b. What are the key opportunities regarding implementation of the Step Code?		
		<ul style="list-style-type: none"> Market demands energy efficiency - forces developers to higher standard Cost vs. performance, opportunity to see the bigger picture Generally low cost for considerable value
Additional Comments	General	<ul style="list-style-type: none"> Allows for innovation Lower steps only require quick learning curve Collaboration and consistency across region and province Provides predictability to building industry re: forecasting New business opportunity for support agencies

Q2. What would help with adoption?		
Incentives (6 out of 8 tables)	General	<ul style="list-style-type: none"> Useful to offset incremental costs Provincial and municipal support Incentives valuable for at least 2 years to allow for process
	Rebates	<ul style="list-style-type: none"> Incentivize the energy audit Prefer money back Utilities should be contributing to these as well Building permit rebate
	Land Use	<ul style="list-style-type: none"> Density bonus incentive Re-zonings/development permit with covenant
	Other	<ul style="list-style-type: none"> Get training credits in ways to reach steps Tax incentive program Caution about the impact fast tracking may have on other applications
Builder and Trades Training (5 out of 8 tables)	Training Topics	<ul style="list-style-type: none"> Clear professional responsibility and people understanding Prescriptive vs. performance
	Format	<ul style="list-style-type: none"> Accessible, practical training on-site vs. desk based Ability for sub-trades/developers to attend mid-construction blower door test and energy evaluation walkthrough of active developments to learn on-site on regional projects Building tours Get training credits in ways to reach steps Workshop focused (e.g. walls)
	Support	<ul style="list-style-type: none"> Municipalities support identification of developers willing to allow other industry players to come on their site for energy evaluation learning through forms? Requirement of a financial incentive to get the mid-construction blower door test? UDI or CHBA facilitate registration for onsite blower door tests/walk through onsite training? Addresses the need for local training in a real scenario whilst reducing resource requirements and understanding that the workforce is extremely busy. Provincial/municipal support

Q2. What would help with adoption?		
		<ul style="list-style-type: none"> • Municipalities could offer in-kind space for training. • Need expertise/consultants.
Municipal Consistency and Policy (4 out of 8 tables)	Training and Education	<ul style="list-style-type: none"> • Need for collaboration and consistency • Building Officials training to ensure consistent interpretation • Community and elected officials training to ensure they do not ask for architectural or design features that limit ability to achieve higher Steps
	Policy	<ul style="list-style-type: none"> • Amend method for calculating allowable areas and height of buildings to ensure energy efficient buildings are not penalized for thicker walls or high trusses required for additional insulation • Amend design guidelines to reflect some of the design restrictions that may apply to Step 4/5 net zero developments • Allow for grace periods • Consistent plan if projects don't meet targets • Should have to model to Step 2 or 3, to meet Step 1 • Provide sufficient lead-time for implementation – min. 6 months for lower levels
Blower Door Tests & Energy Advisor (3 out of 8 tables)	General	<ul style="list-style-type: none"> • List of Energy Advisors needs to be publicized • Energy advisor will help with learning curve • Should be tied to performance • Mid-point blower door should be mandatory
Robust Information and Education Campaign (3 out of 8 tables)	General Audience	<ul style="list-style-type: none"> • Deadlines and timelines • Municipalities have to opt into its use • Step 1 is just reporting (no change to code) • Packaged consumer education to explain tangible benefits – use story telling, language is important
	Target Audience	<ul style="list-style-type: none"> • Politicians (key for rezoning/Development Permit applications) • Homebuyers - link to financing/mortgage • Front counter staff - knowledgeable & enthusiastic • Local building magazines, realtors and home tours
Additional Comments	General Comments	<ul style="list-style-type: none"> • Energy modelling encourages integrated design processes • Data capture and energy labeling - educate realtors and include in home inspections • Strong local government and provincial leadership

Q3. What Step do you think is achievable today and into the future?		
Step 2 (4 out of 8 tables)	General	<ul style="list-style-type: none"> • This is already best practice – small learning curve • Similar materials used but need to show how similar
	Timing	<ul style="list-style-type: none"> • Achievable now • Safe and reasonable for next 2-5 years
Step 1	General	<ul style="list-style-type: none"> • BC Province should state what step with Step 1 required

Q3. What Step do you think is achievable today and into the future?		
(4 out of 8 tables)		<ul style="list-style-type: none"> Require model to Step 2/3 but meet Step 1 - allow grace period Will help to train and learn process
	Timing	<ul style="list-style-type: none"> Now as introduction, with lead time, mid-end of 2018 Achievable today
Step 3 (3 out of 8 tables)	General	<ul style="list-style-type: none"> Uses conventional techniques – small learning curve Some Part 9 already achieving Step 3 and Step 4 for Part 3 Transitioning from Step 3 to 4 will be more challenging
	Timing	<ul style="list-style-type: none"> Now
Additional Comments	General comments	<ul style="list-style-type: none"> Municipal policy – mandate lower and incentive higher Steps Provide consistent standards amongst building form Requirements and quality need to be considered together Provide sufficient lead-time Municipalities should forecast out (ex. 2 years, then 5 years). Steps depend on which municipality

3.2.2 Follow-up Survey Findings

A follow-up survey was provided to attendees at the November 1, 2017 workshop in print and digital format. The survey included the same questions asked at the industry workshop and allowed for additional feedback from attendees as well as feedback from other industry members unable to attend the event. Hosts collected the surveys at the event, and also allowed for submittals up to November 27, 2017. A total of 13 surveys were received and the feedback focused on similar themes identified at the industry workshop as outlined in Figures 1-3 and Tables 5-7 below.

Figure 1: In what municipalities or electoral areas within the Capital Region do you work?

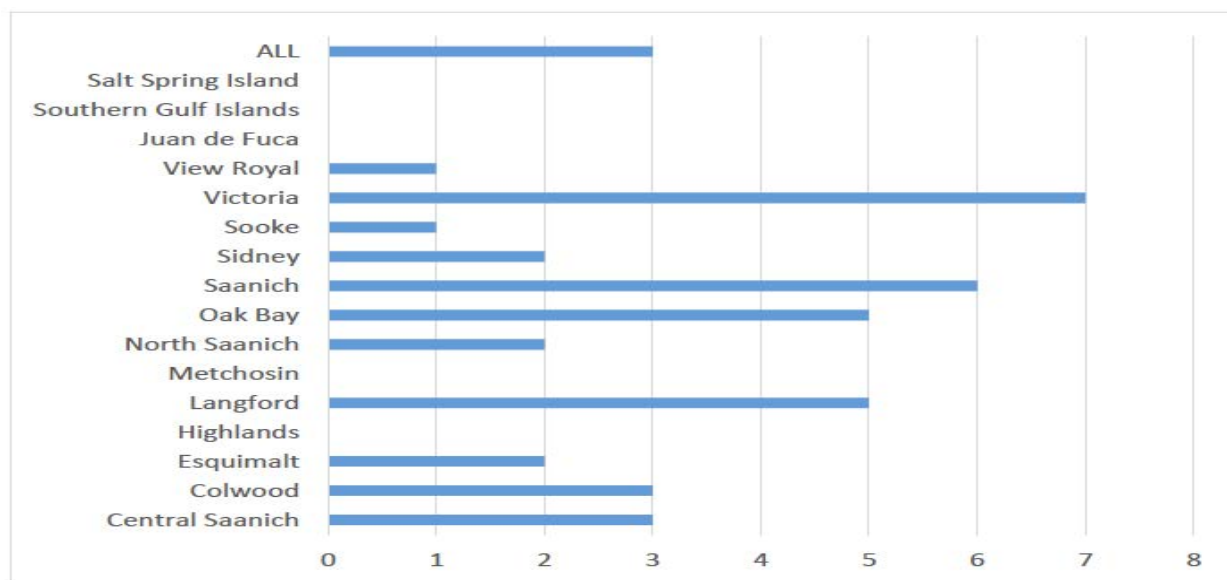


Figure 2: How would you describe your role in the building industry?

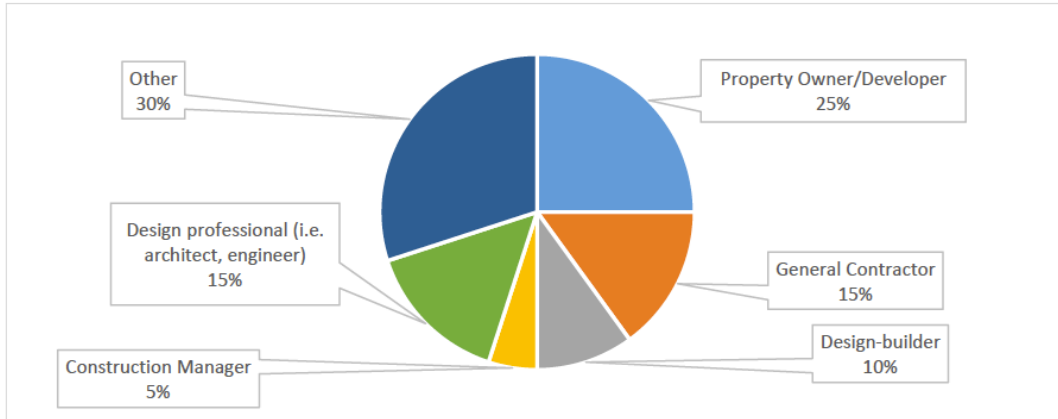
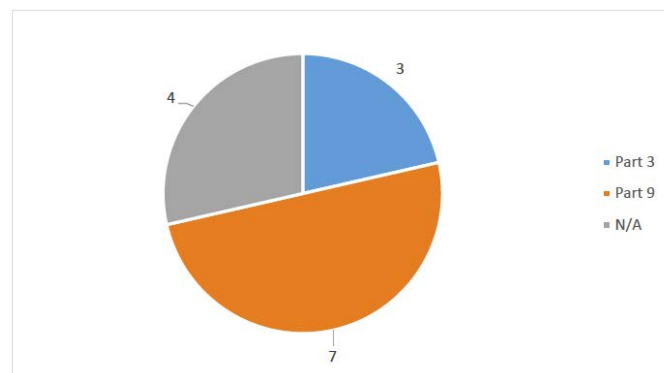


Figure 3: What type of buildings do you construct?



Question: Key concerns and opportunities regarding implementation of the Step Code

Key Concerns (# responses)	Key Opportunities (# responses)
Education, awareness, communications and training (5)	Quality control (6)
Consistency between municipalities (4)	Greenhouse gas reduction (4)
Municipal readiness (3)	Operational savings (1)
Lack of buy-in (2)	Awareness and profile (1)
Lack of energy modellers and energy advisors (2)	Predictability (1)
Risk, assurance and liability (2)	Economic and business opportunities (1)
Costs (1)	Consumer benefits (1)
None (1)	

Question: What would help with adoption of the Step Code?

What would help with Adoption (# responses)
Education and training (9)
Incentives (2)
Energy labeling on all new homes / Quality Assurance (2)
Builder inspector training (1)

Energy modeling (1)
Collaboration and Consistency (1)

Question: What Step is achievable today and into the future?

Step Level (# responses)	Detailed comments
Step 4/5 (6)	<ul style="list-style-type: none"> • Step 5 - currently do passive house. May be a stretch now - but within 3-5 years • Net zero actual - 5-7 years due to solar photovoltaic cost curve • Step 4 by 2025 (Part 3 Net zero ready) • Step 5 by 2030 (Part 9 net zero ready) • Step 4/5 by 2032 • All steps are achievable today – some builders require training • Any builder able to achieve middle steps – fairly easy to achieve top step
Step 2 (4)	<ul style="list-style-type: none"> • Step 1 and 2 are current practice - do now, easy and safe • Already existing bylaws and growing base of high performance builders.
Step 1 (2)	<ul style="list-style-type: none"> • Step 1 now - Step 3 by 2020
Step 3 (1)	<ul style="list-style-type: none"> • Step 3 now • Step 3 by 2020

4.0 Next Steps

The feedback above will be summarized alongside input from other CRD Step Code events and presented to the CRD Board in early 2018. This will then be provided to local municipalities for their information and to inform options for implementation where applicable. The CRD CAP will support municipalities on their efforts, as required, through the CRD Climate Action IMWG.