BC Energy Step Code Feasibility Review for the City of Abbotsford

Executive Summary

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Introduction

This research was conducted for the City of Abbotsford to investigate the BC Energy Step Code, to see how local municipalities are implementing or referencing it, and to see how the City of Abbotsford might move forward with implementation. The BC Energy Step Code is a series of amendments to the Building Act and the Local Government Act that have been adopted by the Province of British Columbia. The Step Code is a voluntary pathway under the BC Building Code, and local governments have the option of adopting or referencing parts of the Step Code as desired. Although currently voluntary, the BC Step Code aims to have province-wide net zero ready construction by 2032, with a series of transitional targets along the way, starting with Step One being required province wide by 2020 (Intentions Paper, pg. 5)

Background

The City of Abbotsford did not have any previous green building legislation, which meant that they were approaching this research from the beginning. Many municipalities who were taking on the Step Code had already previous green building legislation or high-performance construction experience. The major change to the BC Building Code is that the Step Code is performance-based, rather than prescriptive-based. This requires the need for energy modelling and air tightness testing in new construction, required certified energy advisors and understanding of energy modelling software. This is a big impact on local builders, as well as municipalities, to try to understand these new requirements and how they affect new construction. The testing process is new as well, and requires a new experience in the local market, as well as building officials to understand how to inspect performance-based construction techniques.

Abbotsford wanted to understand how other municipalities were moving forward with these changes both internally and externally. They wanted to look at the timelines of implementations, local hurdles, and which steps might make sense for Abbotsford to take on. The end goal was a report to Council outlining several options and tasks to take forward internally in terms of approaches to the Step Code.

Abbotsford did have an Official Community Plan from 2016 which outlined energy consumption reduction targets, which supported taking on Step Code initiatives, including:

- a 15% reductions in GHGs caused by buildings by the year 2025 (OCP, 2016), and
- a 35% reduction in GHGs caused by buildings by the year 2040 (OCP, 2016).

As well, there are various incentives and targets supported by BC Hydro and other partnership organizations to take on this work. The City of Abbotsford also recognized that there are multiple benefits to reducing energy consumption in buildings, including benefits to the community and occupants such as increased comfort, reduced noise, and greater durability; benefits to the environment such as reduced greenhouses gases, energy consumption and fossil fuel dependence; economic benefits in generative a competitive green-building economy, reduced mechanical systems, and more efficient designing through energy modelling; and industry benefits through simplified processes by having consistency across local governments (Best Practices Guide for Local Governments, page 9).

Research Approach

My research was essentially broken down into two components: a literature review and phone interviews. I also participated in in-person Peer Group Meetings with members of the Step Code Council, where I got to discuss issues and meet with representatives of other municipalities who were moving forward with the Step Code. The literature review involved a thorough research of all the documentation prepared by the Government of British Columbia and supporting organizations, including reports for local governments, metrics studies, and builders' guides.

The interviews were mostly with representatives from other local municipalities in the Greater Vancouver and Fraser Valley areas, asking questions about where they were at with the Step Code, goals for moving forward, existing strategies or incentives, stakeholder engagement, and challenges with implementation. I also interviewed members of supporting local organizations and industry members, including builders and engineers.

Summary

In talking to and researching sixteen jurisdictions primarily in the Greater Vancouver and Fraser Valley regions (see Appendix A), 25% are implementing Step 1 for detached single family homes, 38% are implementing Step 3 for detached single family homes, and 38% are currently not requiring any Steps for detached single family homes. Most municipalities have plans to work towards higher steps or implement Step Code compliance in the coming years, and are viewing the targets as an evolving process.

For Part 3 buildings, 31% municipalities are requiring Step 2 for commercial buildings, and 31% are requiring Step 2 for residential buildings. 19% are requiring Step 3 for residential buildings, and 44% have no requirements for any Part 3 buildings yet, though many plan to work towards this step.

In general, many municipalities are also choosing to require higher steps for very large single-family homes, as it is found to be easier for larger buildings to meet the steps than smaller buildings. The next version of the BC Energy Step Code will likely address this issue by setting different targets for different sizes of homes. Municipalities with previous green building bylaws tend to be targeting one or two steps higher than those who do not have previous requirements. Many municipalities have also chosen to skip Step 2 entirely for Part 9 buildings, as it is seen as a very small increment that is not worth the legislative changes required, and Step 3 is understood to be very achievable once the industry has adapted to understand the requirements of blower door tests and energy modelling.

There were several ways that Abbotsford could move forward in adopting the BC Energy Step Code. These options were outlined in a formal report to Council with recommendations for moving forward, that have not been made public yet.

Recommendations

In addition to the optional recommended Step Code pathways that the City of Abbotsford could pursue, there were also a series of action plan items that could be pursued regardless of the step chosen. These could also be supported by numerous incentives or tools as listed below:

- Zoning bylaw revisions
    - FSR allowances
    - Thick wall exemptions
    - Rezoning policies
    - Local area plan policies
- Where value is being added to land, increase Step Code requirements
- Density bonuses
- Green-streaming or fast-tracking permitting
- Funding for builder's air tightness courses (potential BC Hydro rebate), energy modelling or air tightness testing
- Increased ease of compliance if district energy systems are used
- Energy advisor rebate program
- Building permit rebate program
- Revitalization tax exemption
- Corporate policies
- Public sector building leadership compliance with higher standards
- Provisions for local government-owned land to meet OCP or neighbourhood planned objectives
- Revised building bylaws
- Proposed design guidelines
  Phased development agreements

Internally, the first step for the City of Abbotsford would be to create an Internal Working Group that is made up of multiple departments from the City, and is a member of both the Small Peer Network Group and the Large Peer Network Group hosted by the Community Energy Association, BC Hydro and the Energy Step Code Council. This group could then work towards the initiatives to take on the Step Code and engage in stakeholder consultation.

No matter which option Abbotsford chooses to pursue, the first step for any Energy Step Code implementation is to facilitate local education and engagement, for both the internal city staff as well as the surrounding industry and building community. An understanding of performance-based code requirements and high energy performance construction is essential for all personnel involved. Many municipalities have engaged in this education in different ways, including the following strategies:

- Builder's workshops and seminar breakfasts to explain construction requirements, internal process changes and cost implications, as well as to receive feedback, with different considerations for Part 9 and Part 3 builders
- Internal education seminars or workshops on high performance wall assemblies and the BC Energy Step Code
- Setting up a newsletter, website or local marketing strategy to inform industry of upcoming changes

There are some internal initiatives as well that the City of Abbotsford can pursue, regardless of which Step Code option is chosen that can help Abbotsford work towards their GHG reduction targets, and move towards Step Code compliance. These can include:

- Using public works projects as showcases for green building initiatives, which could be built to higher steps than whatever is required by bylaw
- Requiring home energy labelling as an administrative requirement for new homes which helps to identify high performance homes, increase demand for energy efficiency and educate home owners
- Requiring new building benchmarking for large buildings as a way to identify good and poor performance, track energy use, compare data and learn from Step Code implementation
- Creating a sustainability checklist for projects coming through development / building permits
- Updating the Official Community Plan and Energy Policy to reflect Step Code targets

It was also recommended to register with the Energy Step Code as soon as possible, as it is recommended to give a six-month notification period to local industry when implementing lower steps, and a twelve-month notification period when implementing higher steps. The new BC Building Code is set to be released in December 2018, and will likely include some new changes to the BC Energy Step Code.

The recommendations on which Step Code pathway to pursue were broken down into three options for Council to choose from, with several variation options also available. This information is not public, but is broken down into a high-achieving option, a middle-road option, and a most-achievable option. In all three options, certain action plan items are recommended to help Abbotsford work towards the inevitable province-wide legislation of Step Code so that local industry is prepared for longer term changes.

Appendix A

Table of Local Municipality Initiatives

Notes:

1. *Data collected as of July 25th, 2018*
2. *Steps indicate current or short-term targets, and not long-term transitions*

Municipality	Steps	Incentives / Strategies	Former Green Policy	Engagement	Internal Structure
Township of Langley	Part 9: • Step 2 (Inside development permit areas) • Step 1 (outside development permit areas) Part 3: • Step 2 (Inside development permit areas) • Step 1 (outside development permit areas)	• Voluntary Green Building Rebate Program, paid for by minor sustainability fee on all permits; only steps 4 and 5 have rebates • Have an energy efficiency performance bond written into the bylaw to ensure compliance • Have $300 rebate for energy modelling	Had a previous energy reduction incentive program; builders familiar with blower door tests	• Held two stakeholder workshops, both open to the public, first asking for feedback on various approaches • Hired energy consultant to test GHG emission reductions (Pinna)	Have an internal sustainability working group from 5 departments
https://www.tol.ca/at-your-service/engineering-building-development/building/bc-energy-step-code/					
City of Langley	Not undertaking any Steps currently; following the baseline BC Building Code and waiting to see impacts on affordability	• None	Encourage large projects to follow LEED system	• None	No separate sustainability department
City of Chilliwack	Not undertaking any Steps currently; waiting to see how housing affordability and industry capacity are affected (specifically related to energy advisor availability)	• Have solar hot ready requirements • No other incentives	None	• Have been holding builder's workshops to prepare for change • Providing internal staff training	No separate sustainability department (currently)
City of Maple Ridge	Taking a different process – building a case study house that is aiming for Step 3, and bringing in builders along the way to test air tightness and use it as a learning tool – currently under construction (have a grant from BC Hydro) Anticipate going to Step 3 for single family homes afterwards in approximately a year Want to build capacity to make sure builders and staff know what to do before it is legislated	• None	No, had incentive program several years ago for building to a LEED standard but nobody opted in	• Did an internal staff workshop on high performance wall systems and Step code reviews in January • Hold builder's forums twice a year on code changes and high-performance construction • Are hosting workshops around test house	Have separate sustainability department; most Step Code initiatives taking place under Building
https://www.mapleridge.ca/1749/Energy					
City of Surrey	Part 9: • Step 1, detached homes • Step 3, townhouses + apartments Part 3: • Step 2-3, residential	• Density bonus policy where additional density achieves higher energy efficiency standards (West Clayton) • Applying upper steps to	Density bonus in West Clayton for building above minimum	• Builder engagement workshop sessions (3 part series) • Free air tightness	Separate Sustainability Group with a Climate and Energy Manager

	concrete towers • Step 3, residential wood frame • Step 2, commercial office + mercantile	future local area plans • Possibly paying for mid-construction blower door test • Part 3 residential can go to Step 2 if connected to district energy system	code	course for builders - anticipated	
City of North Vancouver	Part 9: • Step 1, under 1200 sq. ft. • Step 3, over 1200 sq. ft. Part 3: • Step 2, residential • Step 1, commercial	• Moodyville redevelopment is a massive density increase requiring Step 4 or 5 compliance • Any rezoning requires part 3 buildings to meet 1 step above • Floor space exclusions for thicker walls	Already had air tightness testing and energy modelling requirements since 2011 (essentially Step 1)	• Lots of internal engagement • Targeted industry consultation with Part 9 and Part 3 builders • Provided resources on websites and gave inspectors BC Housing Training • Providing new construction guides	Sustainability department in Engineering; started in planning – requires a lot of cross – department coordination
https://www.cnv.org/property-and-development/building-and-development/plans-and-programs/energy-efficient-buildings-initiative/energy-efficient-bylaws-for-new-buildings					
City of Richmond	Part 9: • Step 1, detached homes • Step 3, townhouses • Step 1, low rise apartments • Commercial / industrial: none • Renovations / additions: none Part 3: • Step 3, residential within city centre • Step 2, commercial	• Thick wall FSR exclusions • Green energy mechanicals FSR exclusion • Higher steps negotiated on a case by case basis • Required pre-drywall blower door test	History of above code construction, eg. Townhouse Energy Efficiency and Renewable Energy Policy	• One day air-tightness workshop (free) • Pre-drywall blower door testing (free) • Builders breakfasts (3) • Seminars • Internal working groups and workshops	District Energy and Sustainability Group within Engineering (Part of Engineering and Public Works)
https://energy.richmond.ca					
District of West Vancouver	Part 9: • Step 1, coach houses • Step 3, single family • Step 3, multi-family Part 3: • Step 3, single family • Step 2, multi-family • Step 1, commercial	• Any projects following Step Code prior to legislation have reduced fees • Reduced fees for Passive House Projects • Zoning amendments are required to be step above • Expedited permitting for Step 5 projects	No, some high-performance buildings	• Builders air tightness workshops • Benefitted from work done by CNV •	
https://westvancouver.ca/sites/default/files/dwv/council-agendas/2018/jan/22/18jan22-6.pdf					
District of Squamish	Part 9: • Step 3 single family • Step 1, carriage houses Part 3: • Step 3, all	• Priority permitting for Step 5 aiming projects	No, one passive house building	• Continuous stakeholder engagement workshops	
https://squamish.ca/yourgovernment/projects-and-initiatives/building-bylaw-update/energy-step-code/					
City of New Westminster	Part 9: • Step 3, single – quadriplex buildings (currently step 1) • Step 3, townhouses	• Zoning bylaw amendments • Energy Save New West Program • Incentives for energy		• Builders breakfasts and workshop seminars	Sustainability group in Engineering

	• Step 2, carriage homes Part 3: TBD	modelling • Density bonuses require higher steps			
https://www.newwestcity.ca/services/environment-and-sustainability/energy-save-new-west http://newwestcity.ca.granicus.com/DocumentViewer.php?file=newwestcity_8d32c8d273cc64a9fe8c7cb40145c10e.pdf&view=1					
City of Vancouver	Part 9: • Step 3, all residential units Part 3: • Step 3, residential wood frame • Step 3, residential concrete (in 2020) • Step 2, office and retail (in 2019)	• Rezoning policies applicable for Step 4 in Part 9 buildings and Step 3 in Part 3 buildings • Floor space exclusions to accommodate improved building performance • 5% additional density allowance for high performance buildings - upcoming	Yes – long history of building above base code	• Long history of stakeholder engagement and coordination with surrounding municipalities	Have a green building department
http://vancouver.ca/home-property-development/zero-emissions-buildings.aspx					
District of North Vancouver	Part 9: • Step 3 (all) Part 3: • Step 2, residential • Step 1, commercial	• Density bonuses require higher steps		•	
http://www.dnv.org/news/streamlining-building-process-new-construction-bylaw http://www.dnv.org/property-development/energy-step-code					
City of Burnaby	Part 9: • No requirement yet Part 3: • Step 2 for all, MURB + commercial (to be approved late summer 2018)	• Rezoning policy: Step 2 and low carbon energy system with defined carbon limits, OR Step 3 (this is 90% of projects)	Performance consistent with step 3 for MURBS was being achieved in some developments in Burnaby	•	
https://www.burnaby.ca/City-Services/Policies--Projects---Initiatives/Environment/Environmental-Sustainability-Strategy/ESS-and-CEEP-In-Action.html					
Resort Municipality of Whistler	Part 9: • Step 3 for single family residential Part 3: • Cannot reference yet as they are climate zone 6; will adopt when changes to Energy Step Code are made	• Amended gross floor area definition to exclude incremental exterior wall thickness • Have a rebate available for energy advisors • Owner-initiated rezoning increasing density or changing use to meet Step 4 • Residential buildings taking advantage of basement below grade not adding to GFA must be Step 4 (2/3 of all SFH)	Long history of high performance construction; builders already doing blower door tests on most construction	• Public open houses • Stakeholder working groups • Public survey on legislative changes • Have a plan to run on-site workshops over the next six months with energy advisors and builders	One staff member manages climate and energy initiatives; hoping to grow department
Regional District of East Kootenay		• Incremental building permit rebate aligned with steps		• Builders workshops • Construction of wall assembly units for hands-on training • Year-long industry	

				engagement sessions with all stakeholders	
City of Campbell River		• Increasing financial rebates for all steps of step code for Part 9, from covering 50% of energy advisor costs to 100% of building permit fees for Step 5		•	
http://www.campbellriver.ca/your-city-hall/green-city/green-building-renos/incentives-for-new-buildings					

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