CITY OF NANAIMO
THE HARBOUR CITY

Staff Report for Decision

DATE OF MEETING July 26, 2023

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SUBJECT **BC ENERGY STEP CODE AND ZERO CARBON STEP CODE IMPLEMENTATION**

OVERVIEW

Purpose of Report

To inform the Governance and Priorities Committee of engagement and present recommendations related to implementation of the Zero Carbon Step Code and acceleration of the BC Energy Step Code and seek Council direction to bring forward amendments to "Building Bylaw 2016 No. 7224".

Recommendation

That the Governance and Priorities Committee recommend that Council direct Staff to prepare the necessary "Building Bylaw 2016 No. 7224" amendments in order to:

a) adopt the Provincial Zero Carbon Step Code and require that all applicable building permit applications meet the Measure-only Level (EL-1) upon bylaw adoption;
b) require all Part 3 and Part 9 applicable building types and occupancies meet the Zero Carbon Performance Level (EL-4) of the Zero Carbon Step Code by 2024-JUL-01; and,
c) require all applicable Part 3 building types and occupancies meet the Step 3 of the Energy Step Code by 2026-JAN-01.

BACKGROUND

On 2022-AUG-29, Council directed Staff to prepare for industry consultation on implementation of the upper steps of the BC Energy Step Code and greenhouse gas emissions targets for new buildings. In early 2023, the City of Nanaimo engaged industry in partnership with the Regional District of Nanaimo (RDN), Town of Qualicum Beach, and District of Lantzville.

On 2023-JUL-10, Council endorsed the *Integrated Action Plan* to guide *City Plan*'s implementation. It includes action C1.1.29: *Confirm final steps with respect to Nanaimo's Energy Step Code implementation strategy, to ensure higher Step Code compliance requirements come into effect before the Provincial mandated implementation timelines.*[1]

BC Energy Step Code

The BC Energy Step Code (ESC) was introduced in 2017 and is a provincial building compliance path that focuses on energy efficiency in new construction for both Part 9 buildings (homes and small buildings) and Part 3 buildings (large, complex buildings).

[1] Note that this action was drafted before the Province released the Zero Carbon Step Code.

On 2018-JUL-09, Nanaimo City Council adopted a phased in approach to implement the lower steps of the Energy Step Code in 2019 as follows:

Effective Date	Building Types	BC Energy Step
2020-APR-21	Part 3 and Part 9	Step 1
2021-JAN-01	Part 9	Step 2
2022-JAN-01	Part 3	Step 2
2022-JAN-01	Part 9	Step 3

BC Zero Carbon Step Code

On 2023-MAY-01, the province added the Zero Carbon Step Code (ZCSC) to the BC Building Code to regulate greenhouse gas (GHG) emissions in new construction.

The four Emissions Levels (ELs) of increasing stringency are:

1. Measure-only (EL-1): requires measurement of a building's emissions without reductions, and is intended to build knowledge and capacity;

2. Moderate Carbon Performance (EL-2): in most cases, will require decarbonization[2] of either space heating or domestic hot water systems;

3. Strong Carbon Performance (EL-3): in most cases, will require decarbonization of both space heating and domestic hot water systems; and,

4. Zero Carbon Performance (EL-4): in most cases will require the full decarbonization of a building.

Provincial Policy Context

The Province has shared the implementation timeline for both ESC and ZCSC as follows:

	Building Type	2023-MAY-01	2024	2027	2030	2032
BC Energy Step Code	Part 9	Step 3		Step 4		Step 5
	Part 3	Step 2		Step 3		Step 4
Zero Carbon Step Code		Optional Compliance Path	TBD*	TBD*	Zero Carbon Performance Level (EL-4)	

**The province has indicated they plan to enact amendments to the BC Building Code in 2024 and 2027, but have not yet identified what level will be required.*

The Province also made the following relevant commitments through *CleanBC Roadmap to 2030* climate plan:

a) Highest efficiency standards, meaning that after 2030, all new space and water heating equipment sold and installed in BC will be at least 100% efficient (i.e. electric resistance heating, heat pumps, and hybrid electric heat pump-gas systems).
b) 100% Clean Electricity Delivery Standard to ensure the grid is zero emissions.

[2] Decarbonization means reduction or elimination of carbon dioxide emissions.

In addition, the next BC Building Code, expected later this year, includes a proposed maximum summer design temperature of not more than 26°C in at least one living space in each dwelling unit to mitigate overheating in residential spaces. Residential building applicants will have to include mechanical cooling or by passive design measures where achievable to comply with overheating criteria.

DISCUSSION

Staff are recommending applicable new buildings meet the highest emissions reduction level – Zero Carbon Performance Level (EL-4) in about one year, and Part 3 buildings meet Step 3 of the Energy Step Code in about two years, after taking into account the following considerations:

Meeting City's Climate Goals

Zero Carbon Performance Level (EL-4) is a key step to achieving the City's community-wide emissions targets to be 50% to 58% below 2010 levels by 2030 and 94% to 107% below 2010 levels by 2050, given that buildings accounted for 31% of 2017 community emissions (approximately 500,000 tonnes a year). Being a growing city, Nanaimo will have a challenge achieving net emissions reductions from buildings if new buildings continues to add new emissions at a rate that outpaces the rate of emissions reductions from the existing building stock.

Emissions Modeling Results

The impact of different code adoption pathways on Nanaimo's community-wide emissions between 2023 and 2050 was modelled based on projected floor area growth. Modelling of scenarios involving implementation of EL-4 level in early 2024, indicates that the City could avoid up to 3,800 tonnes of GHG emissions by 2030 and up to 24,800 tonnes by 2050 compared to the baseline scenario, which follows the provincial timeline. The accelerated Energy Step Code adoption has a negligible impact on emissions reductions. More details on the modeling results and method can be found in Attachment A.

Recent Building Trends

Analysis of the buildings permitted in Nanaimo since the adoption of the Energy Step Code in April 2020 confirmed that buildings which use electricity for their space and water heating could easily meet EL-4, whereas buildings which primarily use natural gas for those systems were generally unable to meet EL-4 and in most cases unable to meet EL- 3 either.

The majority of Part 3 buildings (47 buildings) permitted since April 2020 are already using electric systems for space heating (73%) and hot water (69%). A detailed analysis of these buildings indicates that the majority are using electricity for both space and hot water heating in the absence of ZCSC.

The opposite is true for Part 9 buildings (approximately 700 buildings) where natural gas systems are still the primary space heating (65%) and water heating (74%) choices. This means on average, 160 new homes built every year continue to contribute to emissions in the city despite having met Energy Step Code requirements. Based on current provincial direction, when the provincial Highest Efficiency Standards come into effect in 2030, homes that primarily rely on fossil fuel heating equipment would have to be retrofitted to electric or hybrid electric heat pump with gas back up equipment at the time of the equipment's replacement or failure.

Engagement Results

The project team focused on a group of over 150 industry stakeholders, including builders, architects, energy advisors, developers, contractors, and industry and professional associations. Responses were received from 48 different industry stakeholders at an online engagement session, and 26 from completed online surveys. Staff interviewed four representatives from the non-profit social housing sector and received 30 email responses primarily from builders and developers as well as FortisBC and the Canadian Home Builders' Association – Vancouver Island. A detailed summary of the workshop is included in Attachment A, survey results in Attachment B, equity stakeholder interviews in Attachment C, and the verbatim email responses to the draft policy pathway in Attachment D.

The project team heard:

1. overall support to reduce emissions and improve energy efficiency;
2. incremental step changes every few years are challenging to continually adapt to;
3. preference for fewer changes even if it means accelerating the ESC and ZCSC timelines;
4. a desire for consistency in regulations among jurisdictions both within and outside the RDN; and,
5. a need for homeowner awareness and education.

The concerns related to the feasibility of reaching EL-4 of the ZCSC are mostly about grid capacity and power reliability, and less about industry capacity or cost. Builders have the ability to build all electric homes.

As for the feasibility of reaching the top step of the ESC by 2025-NOV-01 as a potential pathway in the original draft policy (presented in Option 2), greater concerns were raised in terms of industry capacity and cost. A notable number of developers for large residential projects (primarily Part 3 buildings) are already building to Step 3, one step higher than required, due to BC Housing funding requirements and/or generous financing from Canadian Mortgage and Housing Corporation (CMHC) but few indicated support for achieving the top step. A number of local energy advisors who have been involved in conducting energy modelling and airtightness testing for hundreds of new homes (primarily Part 9 buildings) suggested that many homebuilders struggle to meet the current ESC requirements and will likely have difficulty meeting the upper steps of ESC in the near future. In addition, currently there is little financial incentive for builders to build to the top step.

Cost Implications

For ZCSC, costing studies estimate the incremental capital cost increase for implementing EL-4 is minimal – up to 0.6% for single-family homes and -0.1% to 2.2% for Multi-Unit Residential Buildings (MURBs) compared to buildings built to current Energy Step Code requirements heated with conventional natural gas (see Table 9 in Attachment A).

For ESC, the expected capital cost increase for buildings to achieve the top step ranges from 1% to 6.6% for single-family homes and 1.3% to 3.1% for MURBs (see Table 8 in Attachment A). Historically, the cost premiums of high-performance building components have gone down over time, as the technology develops and the market matures. Experienced high-level step code builders noted cost increases are generally the result of early mistakes made during learning new building techniques.

Utility costs can vary widely, due to the type of equipment installed, fluctuating energy costs, and user preferences. Modeling studies published in 2022 suggests utility costs could decrease 9% to 24% for MURBs and range from a decrease of 12% to an increase of 7% for single-family dwellings when built to EL-4 and upper energy steps (see Table 7 in Attachment A).

The cost of future retrofits could be significant for both homeowners and governments. The City has supported 403 existing building retrofits ($149,450 in rebates) to switch from fossil fuel systems to electric systems through the CleanBC Better Homes Program since April 2020. Even with the rebates from all levels of government, homeowners could be spending thousands of dollars to complete the retrofits and invest significant energy and time managing their projects.

Electrical Capacity

On 2023-MAY-01, BC Hydro staff presented to Council and confirmed BC Hydro is currently in an energy surplus position and is developing long term plans to meet projected demand from accelerated electrification. BC Hydro also issued a Local Government Electrification Bulletin in June 2023 to address how they plan to support the implementation of the ZCSC (Attachment E).

Renewable Natural Gas (RNG)

While Renewable Natural Gas (RNG)[3] can be used to reduce emissions in buildings, there is currently no mechanism to ensure that a building continues using RNG after it is occupied and does not switch to conventional natural gas. There is also a limited amount of RNG produced in BC. In the BC Building Code, RNG is not listed with an emission factor, which makes it challenging for local governments to determine its emissions reduction potential. In June 2023, Pembina Institute released a publication on the role of RNG in the Zero Carbon Step Code and cautioned the risks of locking in gas infrastructure with the intention of continued use of RNG.

Other Local Governments

A number of local governments in BC have already taken action to restrict carbon emissions from new buildings. The District of Saanich and the City of Victoria worked collaboratively to become the first municipalities to enact regulations referencing the ZCSC. Top level EL-4 is required for Part 9 buildings in both cities by 2023-NOV-01, for Part 3 residential buildings (4-6 storey) by 2024-JUL-01, and for the remaining Part 3 buildings by 2024-NOV-01.

On 2023-MAY-23, the District of Central Saanich Council supported the move to implement EL-4 for Part 9 buildings by 2023-NOV-01. A list of local governments taking actions on step code adoption is included in Attachment F.

Next Steps

Should Council direct Staff to proceed with the recommended pathway, Staff plan to do the following:

[3] Renewable Natural Gas or RNG refers to biomethane derived from captured and cleaned biogas. Biogas is produced from decomposing organic waste from landfills, agricultural waste and wastewater from treatment facilities.

- Bring the Building Bylaw amendments to implement ZCSC forward for Council's consideration;
- Continue to work with the industry to support education, training, and capacity building on developing the knowledge and skills necessary to successfully deliver zero carbon and upper steps compliant buildings;
- Educate homeowners about the benefits of low carbon space and hot water heating options;
- Work with industry stakeholders to review and update the BC Step Code Rezoning Policy, references to the BC Energy Step Code within Schedule D (bonus density) of the City of Nanaimo Zoning 2011 Bylaw No. 4500, and the General Development Permit Area Design Guidelines;
- Monitor emissions reductions in new construction through building permit applications;
- Continue to promote low carbon energy systems through rebate and education programs; and,
- Work with BC Hydro to conduct a grid capacity analysis and incorporate Nanaimo's land use policies and targets into BC Hydro's distribution capital planning process.

OPTIONS

1. That the Governance and Priorities Committee recommend that Council direct Staff to prepare the necessary "Building Bylaw 2016 No. 7224" amendments in order to:
    a) adopt the Provincial Zero Carbon Step Code and require that all building permit applications meet the Measure-only Level (EL-1) upon bylaw adoption;
    b) require all Part 3 and Part 9 applicable building types and occupancies meet the Zero Carbon Performance Level (EL-4) of the Zero Carbon Step Code by 2024-JUL-01; and,
    c) require all applicable Part 3 building types and occupancies meet the Step 3 of the Energy Step Code by 2026-JAN-01.

        - The advantages of this option: By adopting the Zero Carbon Performance Level early and accelerating to Step 3 for Part 3 buildings, the City can significantly reduce GHG emissions from new buildings after 2026 while minimizing the impact on both capital and utility costs of new development. The 2024 ZCSC implementation timeline is in alignment with leading municipalities such as Saanich, Victoria, and Central Saanich, creating cross-regional consistency and building a critical mass for market transformation on Vancouver Island. The 2026 ESC timeline will likely not affect large development projects currently in early design stage, but is still one year ahead of the provincial timeline. Allowing more time to determine the implementation schedule of the upper energy steps for the remaining building types will support the City's collaboration with the building industry to be prepared for upcoming changes and help mitigate unintended consequences.

        - The disadvantages of this option: While the proposed option will reduce GHG emissions in new buildings and improve efficiency in Part 3 (large and complex) buildings, it does not address overall building performance and comfort in Part 9 (homes and small) buildings. Decarbonizing heating systems without advancing efficiency requirements for homes could result in increased utility bills for some homeowners and tenants. In the short-term,

there may be a small influx of Building Permit applications ahead of the Step Code implementation that may result in processing delays.

- Financial Implications: Building and Permitting Staff note the proposed pathway will have a minimal impact on Staff capacity over the long term and will not result in the need for additional Staff or funding.

2. That the Governance and Priorities Committee recommend that Council direct Staff to prepare the necessary "Building Bylaw 2016 No. 7224" amendments in order to:
   a) adopt the Provincial Zero Carbon Step Code and require all building permit applications to meet the Measure-only Level upon bylaw adoption;
   b) require all Part 3 and Part 9 applicable building types and occupancies to meet the Zero Carbon Performance Level (EL-4) of the Zero Carbon Step Code six months after bylaw adoption; and,
   c) require all Part 9 buildings to meet Step 5, all Part 3 residential buildings to meet Step 4, and commercial buildings to meet Step 3 of the BC Energy Step Code by 2025-NOV-01.

   - The advantages of this option: Advancing the BC Energy Step Code in conjunction with the adoption of Zero Carbon Performance Level as early as possible will likely lower energy bills for residents, reduce electrical load, increase resilience, and provide certainty for industry in addition to the emissions reductions. Establishing a single date for reaching the top levels of the ESC and ZCSC respectively reduces potential confusion and administrative burden.

   - The disadvantages of this option: The proposed changes could result in increased construction costs for some buildings. While the expected cost impact of implementing the Zero Carbon Performance Level is minimal, the cost premium and learning curve for implementing the top step of the Energy Step Code may be greater. Some of the cost premium may be passed on to homeowners and tenants. Adjusting to new building design approaches and construction techniques in a short timeframe can put a strain on industry capacity. In the short-term, there may be a significant influx of Building Permit applications ahead of the Step Code implementation that may result in processing delays.

   - Financial Implications: The proposed pathway is not anticipated to have any significant financial impact for the City of Nanaimo directly.

3. That the Governance and Priorities Committee recommend that Council direct Staff to follow the provincial implementation timelines for Zero Carbon Step Code and the upper steps of the Energy Step Code:

   - The advantages of this option: This approach will allow more time for builders and developers who are less experienced with high performance buildings to gain necessary skills and capacity. New financing mechanism and incentives may become available to help strengthen the business case of low-carbon, high-efficiency building development.

- The disadvantages of this option: Without the early adoption of the ZCSC, new construction could add up to 3,800 tonnes of GHG emissions by 2030 and up to 24,800 tonnes by 2050 and continue to increase Nanaimo's community emissions annually by more than 1,000 tonnes of GHG emissions even after EL-4 is implemented province wide in 2030. It may be challenging and expensive to eliminate these emissions through retrofits in order to achieve Nanaimo's climate targets. This approach is not consistent with Council's direction to accelerate Step Code implementation.

- Financial Implications: There are no financial implications.

SUMMARY POINTS

- On 2023-MAY-01, the Province of BC introduced the Zero Carbon Step Code to regulate greenhouse gas emissions in new buildings.
- Staff are recommending Council adopt the Zero Carbon Step Code and require all applicable building permit applications to meet the Measure-only Level upon bylaw adoption and the Zero Carbon Performance Level by 2024-JUL-01.
- Staff are also recommending Council require Part 3 Buildings to meet Step 3 of the Energy Step Code by 2026-JAN-01.

ATTACHMENTS:

ATTACHMENT A: Link to "Net Zero Code Adoption: Report and Recommendations for the City of Nanaimo"
ATTACHMENT B: Industry Survey Responses
ATTACHMENT C: Equity Stakeholder Interviews
ATTACHMENT D: Link to "Industry Email Responses to Proposed Pathway" (To be distributed on Addendum)
ATTACHMENT E: BC Hydro's Local Governments Electrification Bulletin June 2023
ATTACHMENT F: List of other Local Governments Taking Actions on Step Code

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ATTACHMENT A

Link to “Net Zero Code Adoption: Report and Recommendations for the City of Nanaimo”: https://www.nanaimo.ca/docs/social-culture-environment/sustainability/attachment-a--city-of-nanaimo-net-zero-code-adoption-report-_introba_-final.pdf/

ATTACHMENT B

Summary of Industry Survey Responses: Regional District of Nanaimo

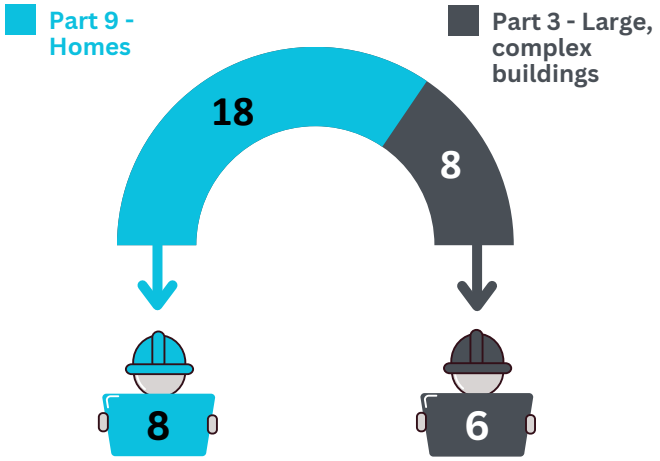
Regional Strategy for Net Zero Buildings and Localized Energy Generation

26 Survey Responses Recorded

- **7** Home Builders
- **4** Developers
- **4** Consultants
- **3** Contractors
- **2** Energy Advisors
- **1** Energy Modeller

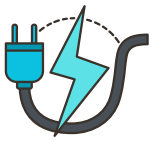
Most respondents **strongly agreed** with the following statement: **"There is a need to improve both energy efficiency and reduce carbon emissions in new buildings."**

Type of Buildings Respondents Primarily Worked On



8 respondents have **experience** building or designing to **Step 5** of the Step Code for **Part 9 Buildings**

6 respondents have **experience** building or designing to **Step 4** of the Step Code for **Part 3 Buildings**



Top responses to the **benefits** of building to higher levels of the ***BC Energy Step Code*** were:

1. Increased comfort for occupants
2. Lower carbon footprint
3. Lower utility bills and healthier and safer buildings

Common **challenges** of building to higher levels of the ***BC Energy Step Code*** were:

1. Costs of design and construction
2. Home/building owners do not understand or value energy efficiency
3. Lack of industry capacity

Common **challenges** of designing/constructing buildings with **electric heating and water systems** were:

1. Home owner preference does not align with electrification
2. Requiring upgrades to electrical services
3. Home owners do not understand or value low carbon space heating and hot water systems

Top responses when asked what **supports** would help to implement higher levels of the ***BC Energy Step Code*** were:

1. Financial incentives to offset additional costs
2. Permit fast-tracking
3. Training and education for industry

Additional challenges are: **city bylaws or design guidelines conflict with or constrain** the achievement of energy-efficient buildings.

The **City of Nanaimo** was the most common response when asked which municipality guidelines constrain the achievement of energy-efficient buildings.

It is preferred that **all local governments in the RDN** have the **same requirements** for energy efficiency even if it means having to meet **higher levels** of Energy Step Code **across the region.**

Industry Survey Responses

Regional Strategy for Net Zero Buildings and Localized Energy Generation

Summary of Responses

- There were **26 total** responses.
    - Most respondents surveyed were **home builders** (7 responses).

- The **most common area of work** was the RDN Electoral Areas (21), followed by the City of Nanaimo (19).
    - Many also work outside of the RDN but on Vancouver Island (18).

- Most of the respondents design or construct **Part 9 buildings** (18 responses).

- Most respondents **had experience** with building to Level 3 or higher of the BC Step Code for **Part 9 Buildings.**
    - Only 4 respondents had **no experience** with Level 3 or higher;
    - 8 respondents had Step 5 experience;
    - 11 had Step 4 experience;
    - 10 had Step 3 experience.

- The **experience with building to Level 3 or higher** of the Step Code for Part 3 buildings had a similar breakdown:
    - Only 1 respondent had no experience with Level 3 or higher;
    - 6 respondents had Step 4 experience;
    - 7 respondents had Step 3 experience;
    - 5 respondents had Step 2 experience.

- **Most respondents strongly agreed** with the following statement: “There is a need to improve both energy efficiency and reduce carbon emissions in new buildings.”

- **Top responses** to the **benefits of building to higher levels** of the Energy Step Code were:
    - 19: “Increased comfort for occupants”;
    - 18: “Lower carbon footprint”;
    - 18: “Lower utility bills”;
    - 18: “Healthier and safer buildings”.

- **Top responses** regarding the following **challenges of designing or constructing to higher Step Code** levels were:
    - 20: “Cost – Costs of design and construction are higher for energy efficient buildings”.
    - 15: “Awareness and Understanding – Home/building owners do not understand or value energy efficiency”.

    - 13: “Industry capacity – Local contractors, consultants or other service providers with the skills necessary to build to higher levels are unavailable”.

- T**he City of Nanaimo was the most common response** when asked which City bylaws or design guidelines conflict with or constrain the achievement of energy efficient buildings.

- The **top 3 responses** when asked **what supports would help** to implement higher levels of the BC Energy Step code were:
    - (16) Financial incentives to offset additional costs
    - (13) Permit fast-tracking
    - (12) Training and education for industry on technologies and processes for building energy-efficient buildings

- Most respondents had experience with electric-based systems in Part 9 buildings with **heat pumps for space heating being the most common.**
    - For **Part 3 buildings**, however, half of respondents did not have any experience with electric-based systems

- When asked what they saw as the **primary benefits of building an electrified building** (Zero Carbon Step Code), respondents chose **“lower carbon footprint”** (20 times) as the most common option followed by “healthier and safer buildings” (13 times).

- When asked what the **challenges were when designing/constructing buildings electric heating and water systems** the most common response was **“home/building owner preference does not align with electrification”** (16 times) closely followed by **“requiring upgrades to electrical services”** (14 times).

- When asked **what supports are needed to implement the Zero Carbon Step Code**, the top 3 responses were:
    - (12) Financial incentives to offset additional costs
    - (11) Education for industry on Zero Carbon Step Code requirements
    - (11) Awareness building for homeowners

- When asked how important consistent requirements for energy efficient and low carbon buildings were across local governments, the most common response was that it was **preferred that all local governments in the RDN have the same requirements for energy efficiency** even if it mean having to meet higher levels of Energy Step Code across the region.
    - There was only **half as much support** for the same regulations of the **Zero Carbon Step Code across the RDN.**

- Most respondents worked for **small companies** (19 respondents).

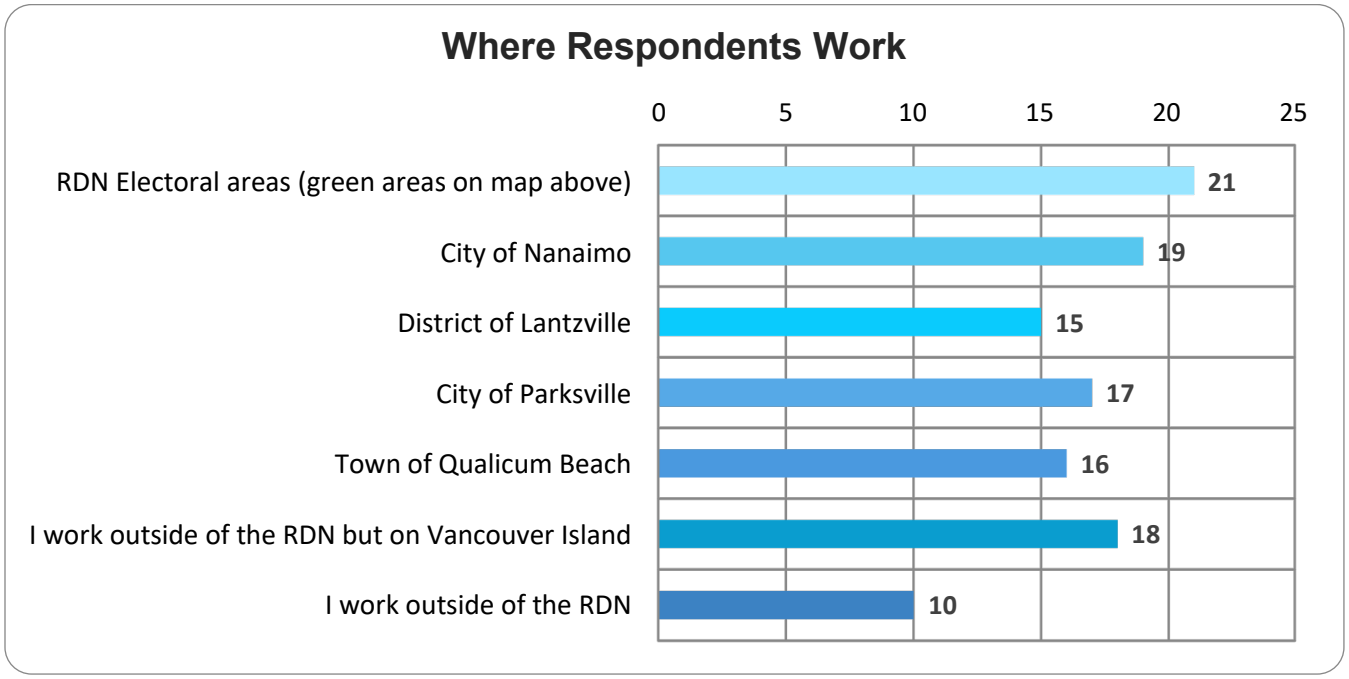
Question 1) Which sector do you work in?

Which sector do you work in?	
Home Builder	7
Developer	4
Energy advisor	2
Energy modeller	1
Contractor	3
Consultant	4
Other (please specify)	5

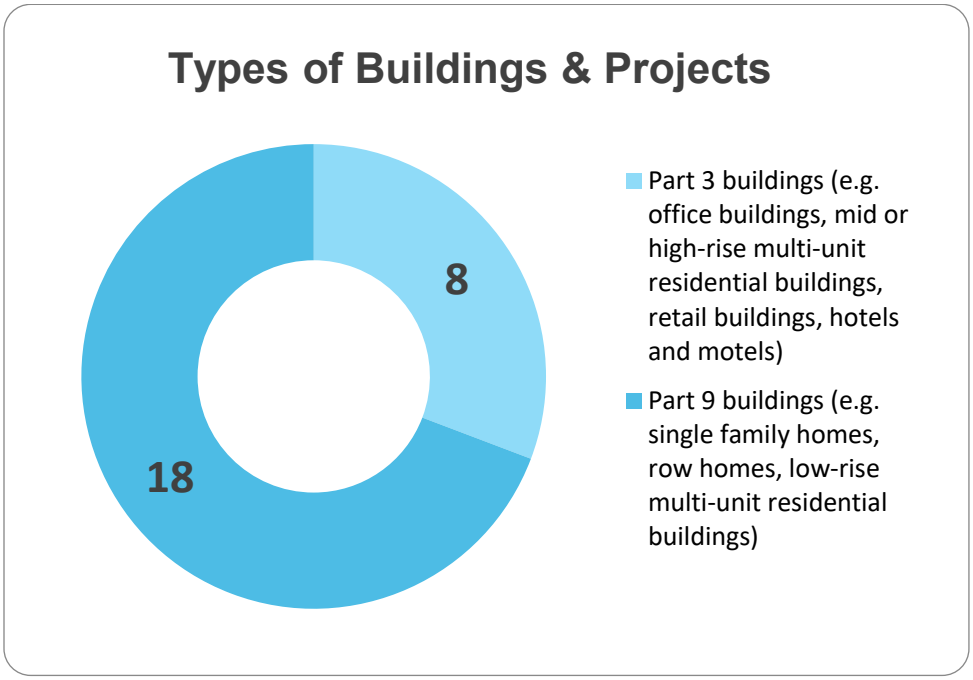
"Other" responses:

- Architect/Designer, 1
- Energy Advisor and Building Designer, 1
- CAD Design Technician, 1
- Utility Sector, 1
- Product supplier/installer, 1

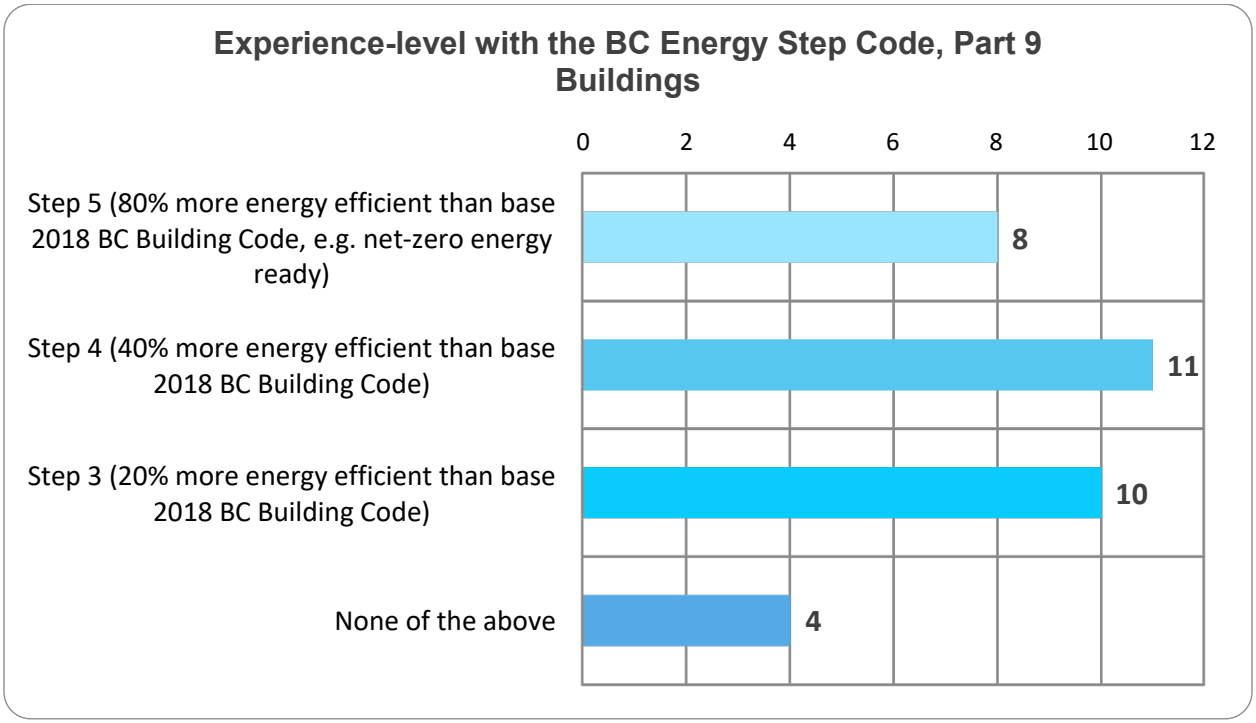
Question 2) Which area or municipality/municipalities in the Regional District of Nanaimo (RDN) do you work in? [check all that apply].



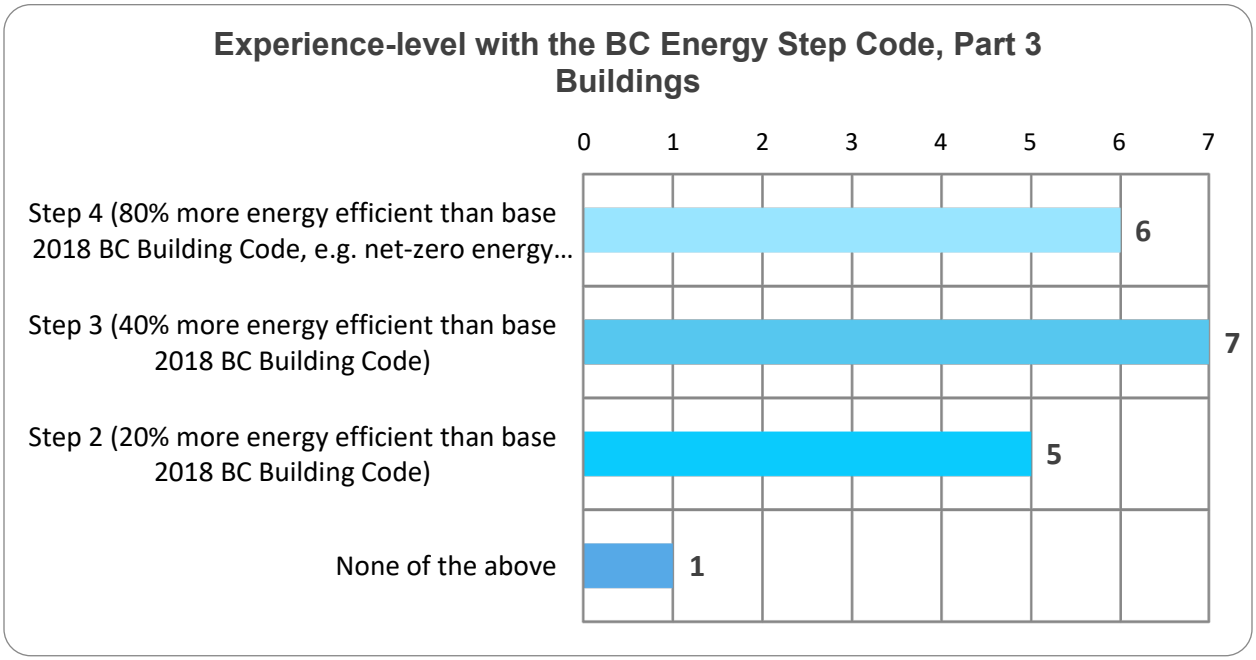
Question 3) What type(s) of building design and construction projects do you primarily work on? [select one]



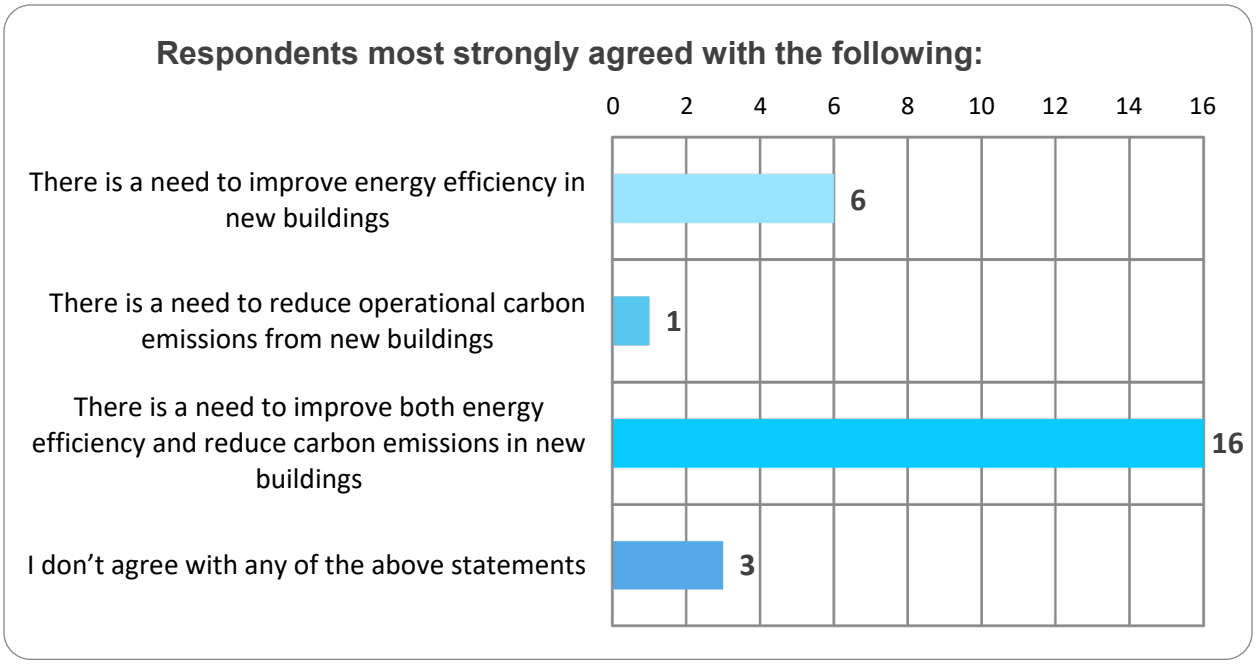
Question 4) Do you have experience designing/building to higher levels of the BC Energy Step Code for Part 9 buildings (e.g. single-family homes, row homes, and small multi-unit residential buildings)? [check all that apply]



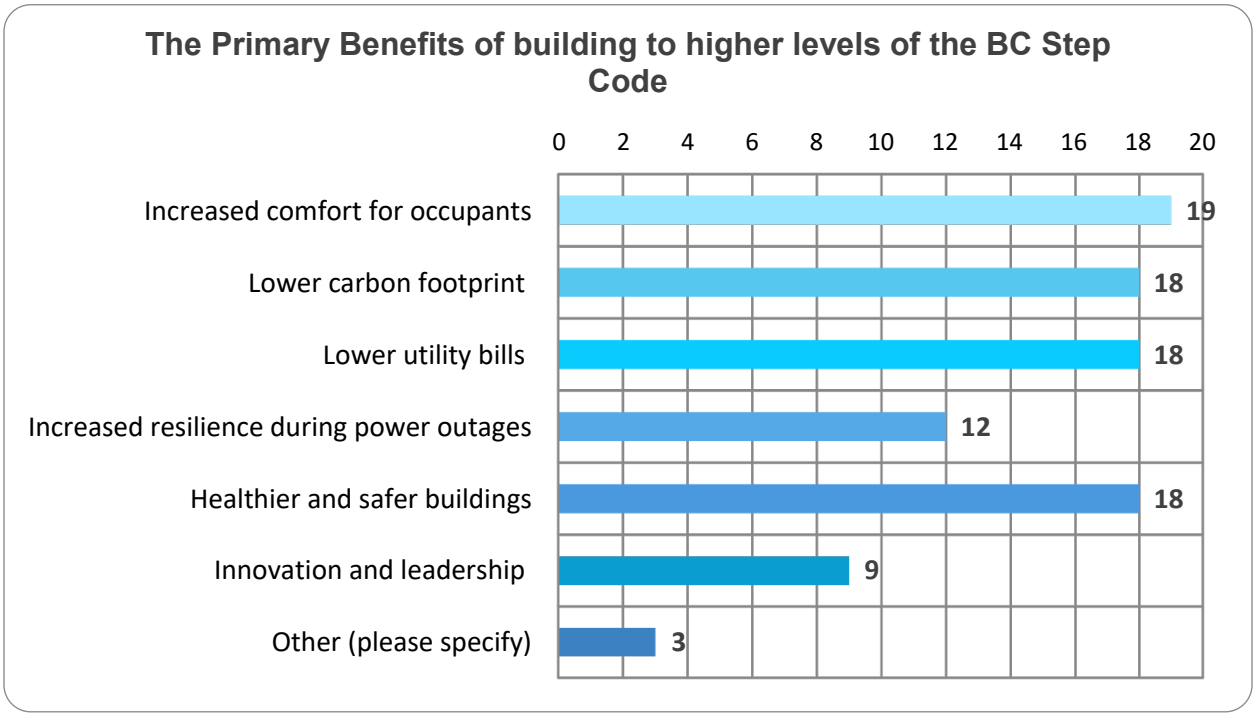
Question 5) Do you have experience designing/building to higher levels of the BC Energy Step Code for Part 3 buildings (e.g. office buildings, large multi-unit residential buildings, retail, and hotels)? [check all that apply]



Question 6) Which of the following statements do you most strongly agree with? [select one]?

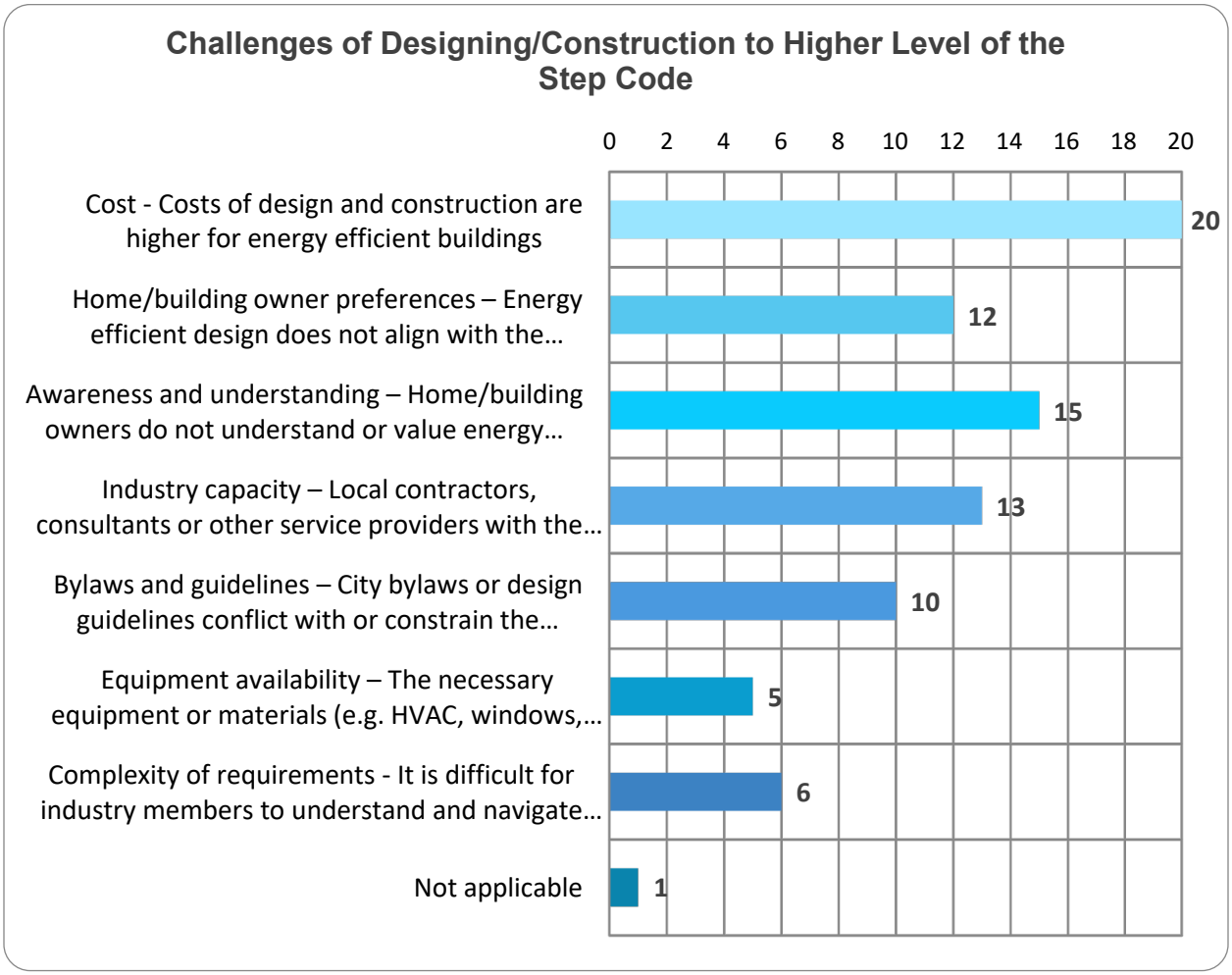


Question 7) What do you see as the primary benefits of building to higher levels of the BC Energy Step Code? [check all that apply]

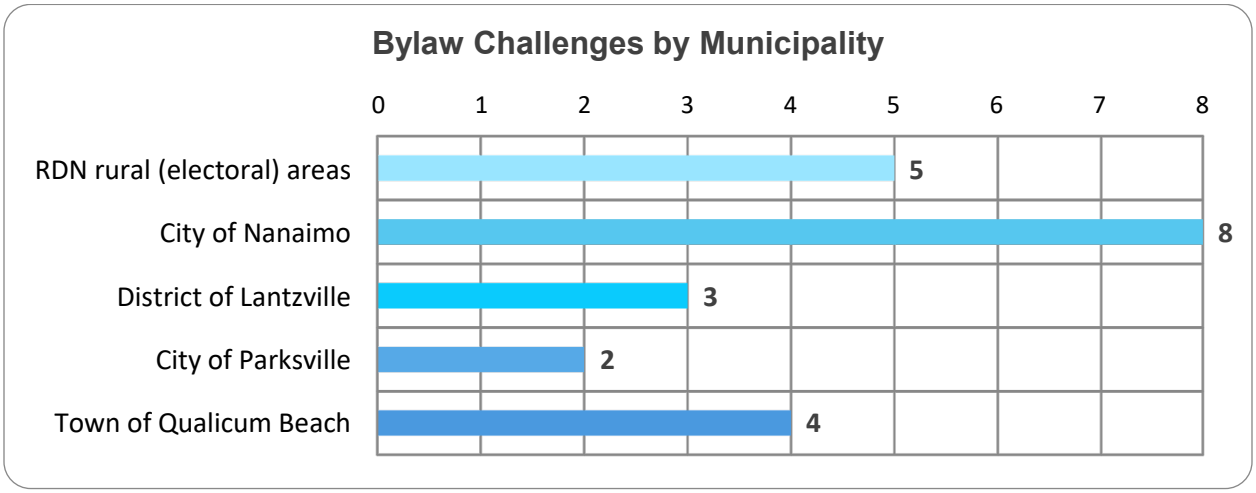


Other: "Worthwhile path to mitigate against accelerating global warming."

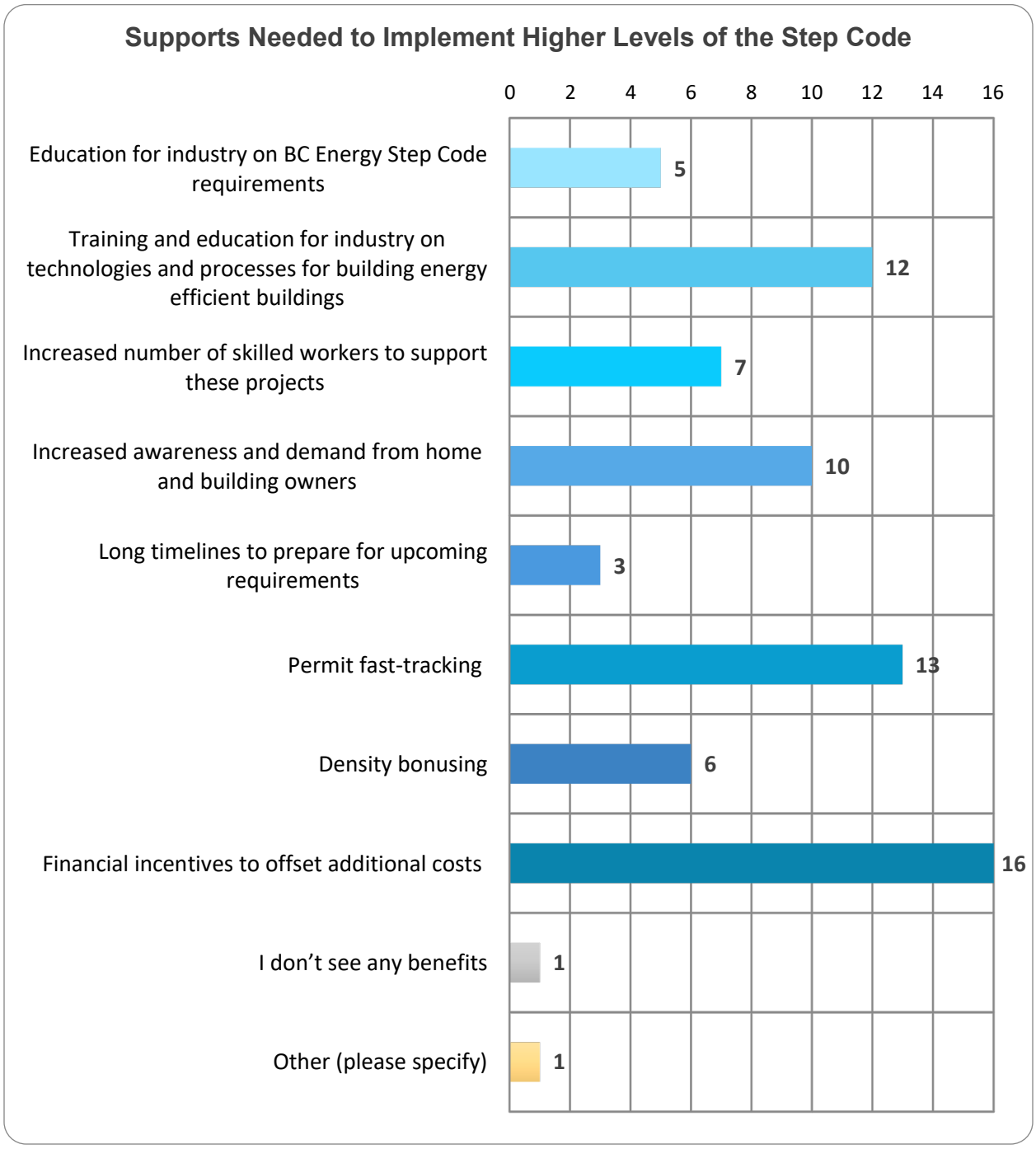
Question 8) What challenges designing/constructing to higher levels of BC Energy Step Code have you experienced (or would you expect to experience)? [check all that apply]



Question 9) If you chose "Bylaws and guidelines" in the question above, which municipality are you referring to?

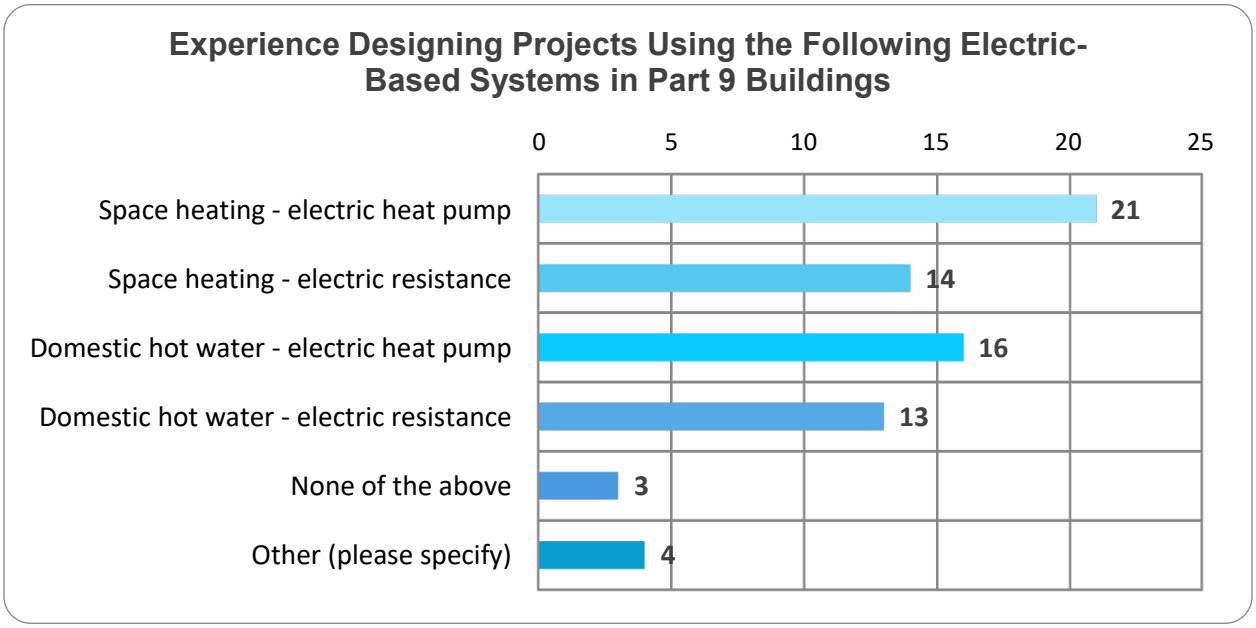


Question 10) What type of support would help you or your peers implement higher levels of the BC Energy Step Code? [select your top three choices]



Other: "Better training for plan checkers and building inspectors."

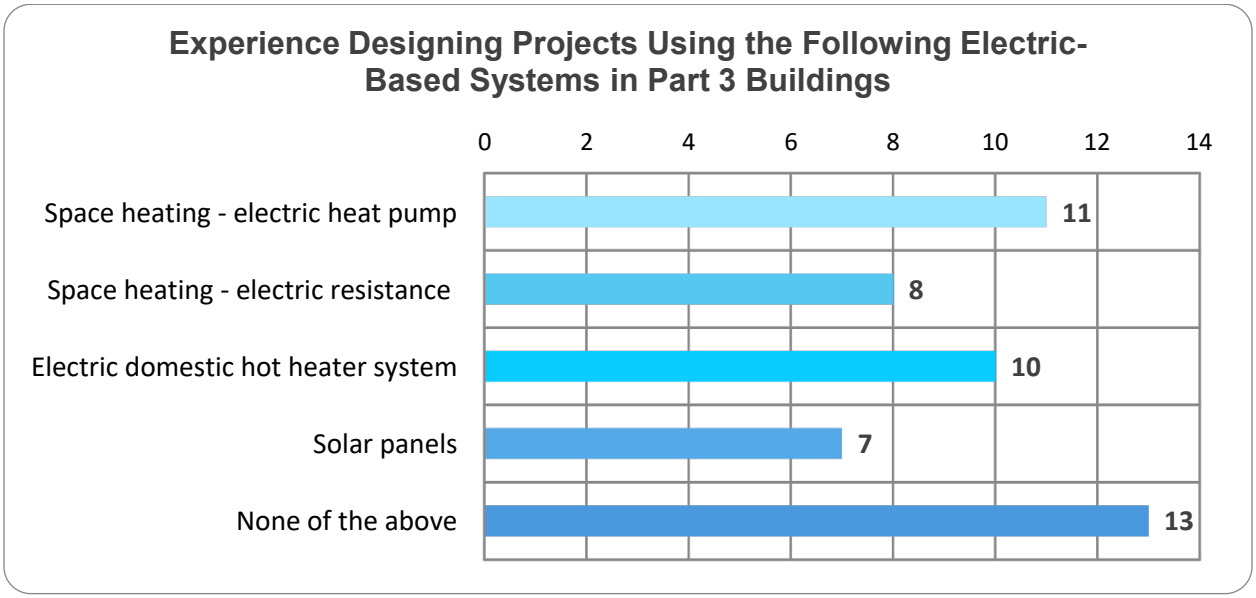
Question 11) Do you have experience designing/building projects that use the following electric-based systems in Part 9 buildings? [check all that apply]



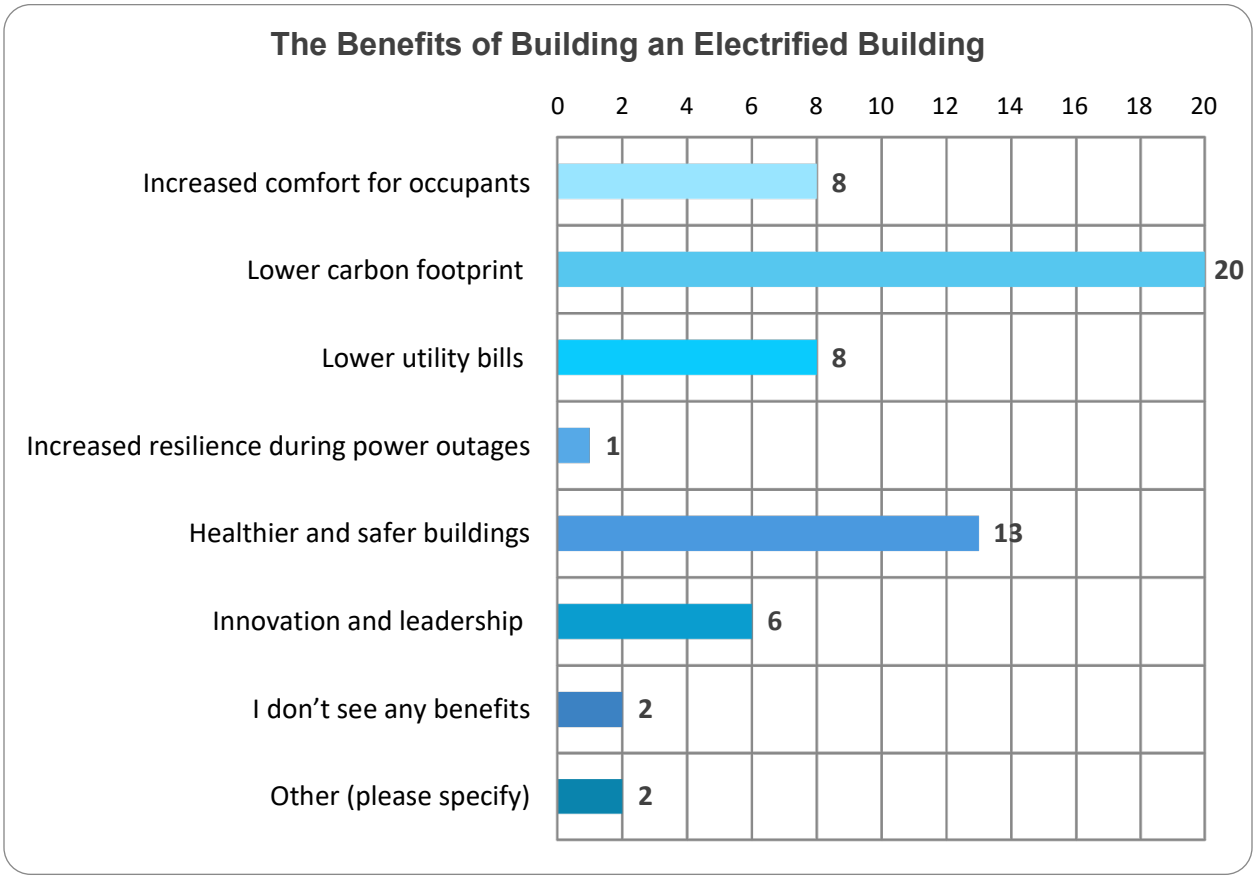
Other:

- Geothermal, grid-tied PV, inverter back-up power
- Air to water heat pump for radiant in-floor heating
- Geothermal and solar

Question 12) Do you have experience designing/building projects that use the following electric-based systems in Part 3 buildings? [check all that apply]



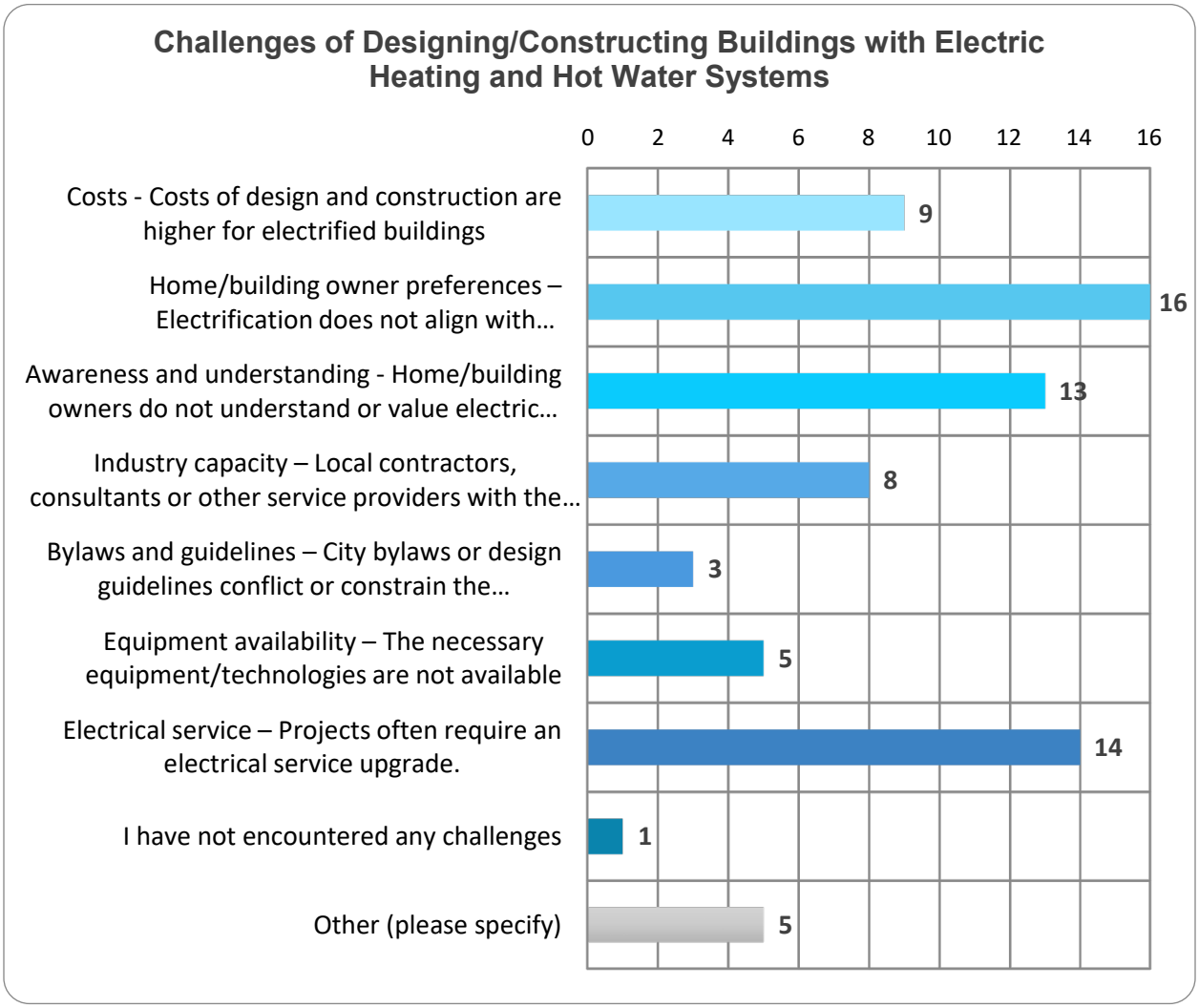
Question 13) What do you see as the primary benefits of building an electrified building (i.e. Zero Carbon Step Code)? [check all that apply]



Other:

- "Most effective single way to reduce operational carbon impacts of buildings"

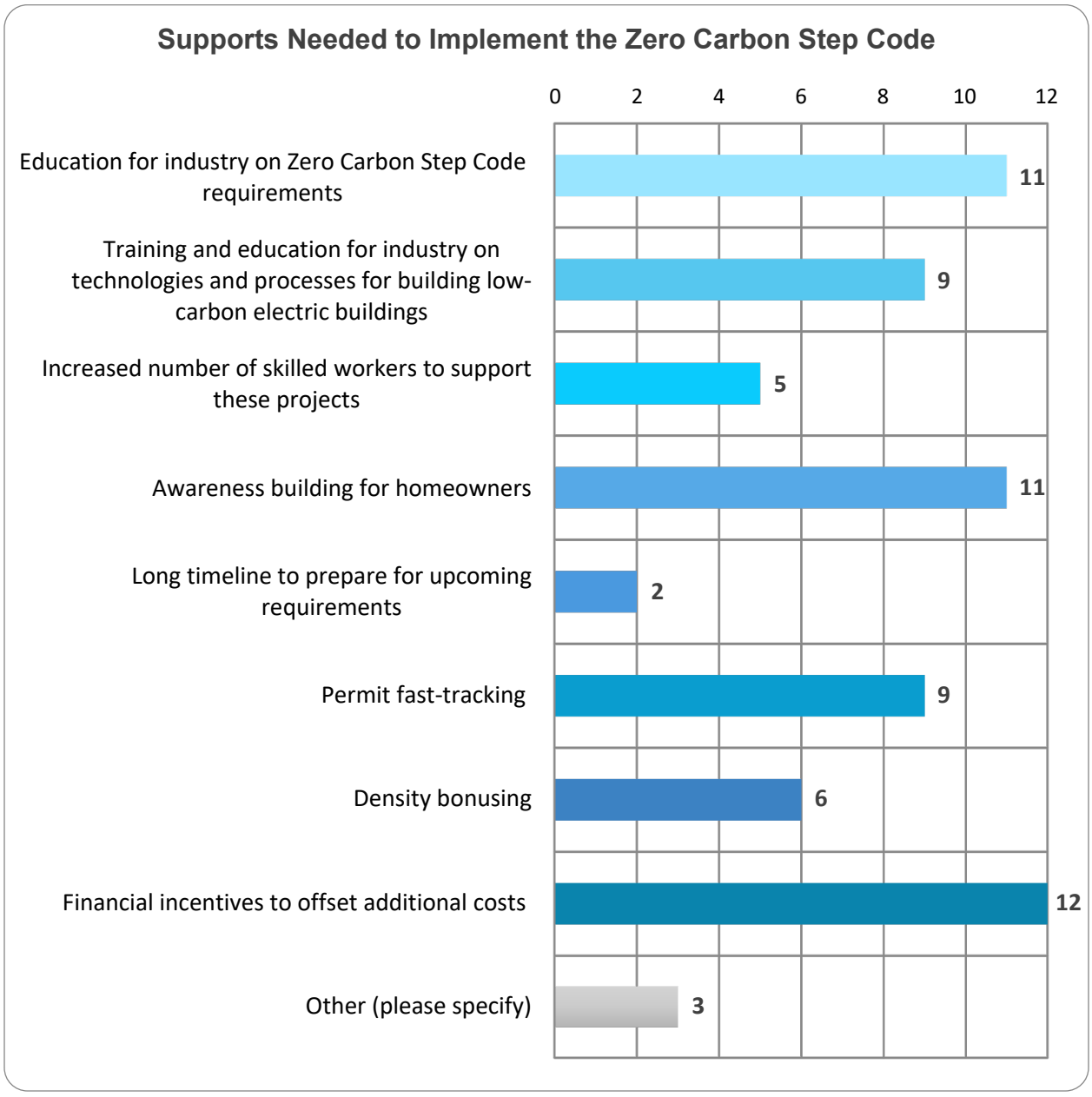
Question 14) What challenges designing/constructing designing/constructing buildings with electric heating and hot water systems have you experienced (or would you expect to experience)?



Other:

- “Increased electrical grid load, susceptibility to power outages and downed power lines, melted sea floor power transmission cables from mainland, higher utilities bills, reduced natural gas usage"
- "BC Hydro is not prepared for this!"
- "Lack of island power generating sources, reliance on power transmission from mainland via sea floor cables"
- "Lack of 'buy-in" (awareness) on the part of much of the development industry and ignorance and lack of buy-in on the part of elected officials, and ignorance (lack of training, education, buy-in) on the part of local government staff"
- "Disinformation caused by Fortis. Their advertising would lead people to believe that NG (methane) is a clean fuel and that they capture all of it from dumps."

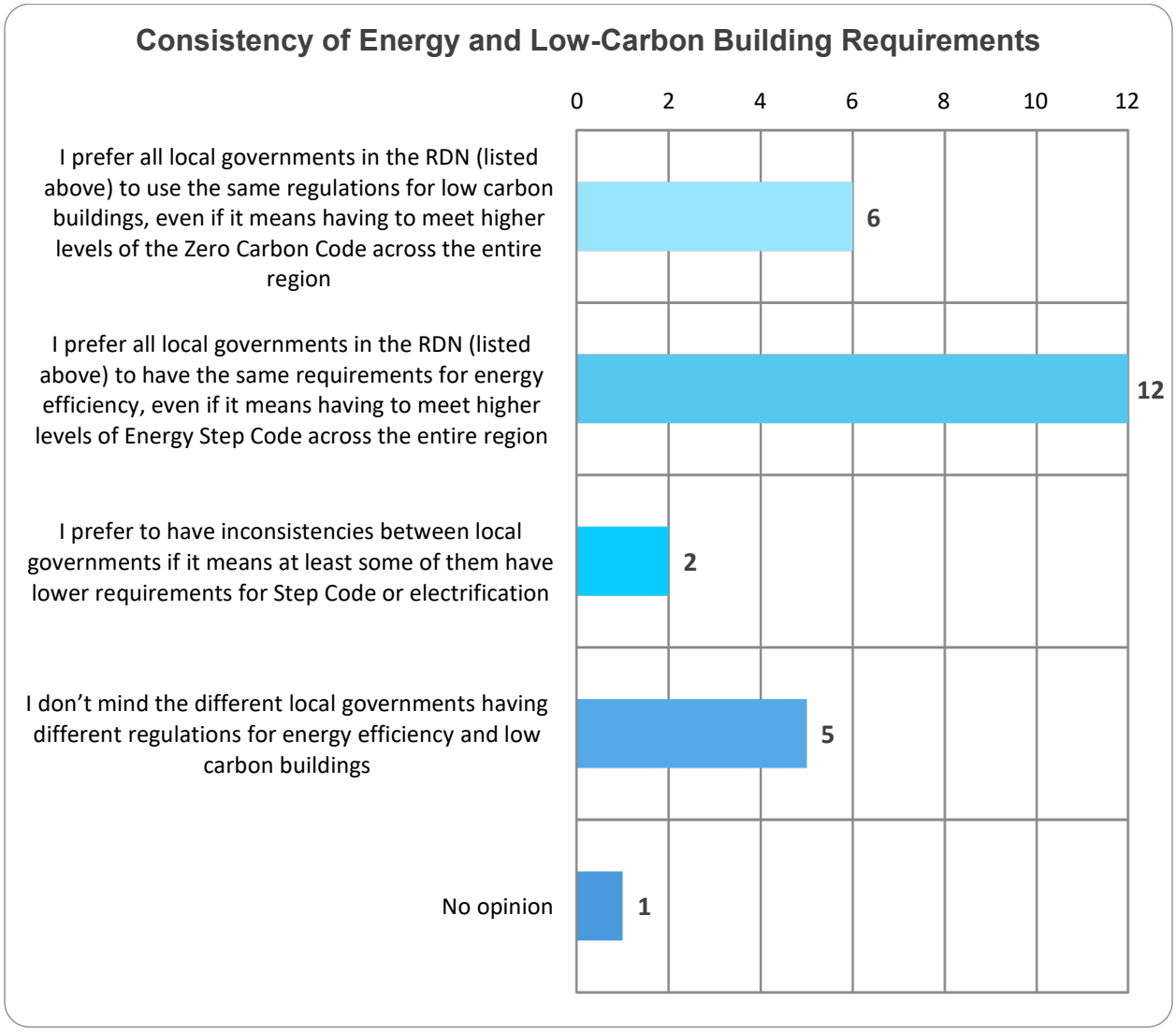
Question 15) What type of support would help you or your peers implement the Zero Carbon Step Code? [select your top three choices]



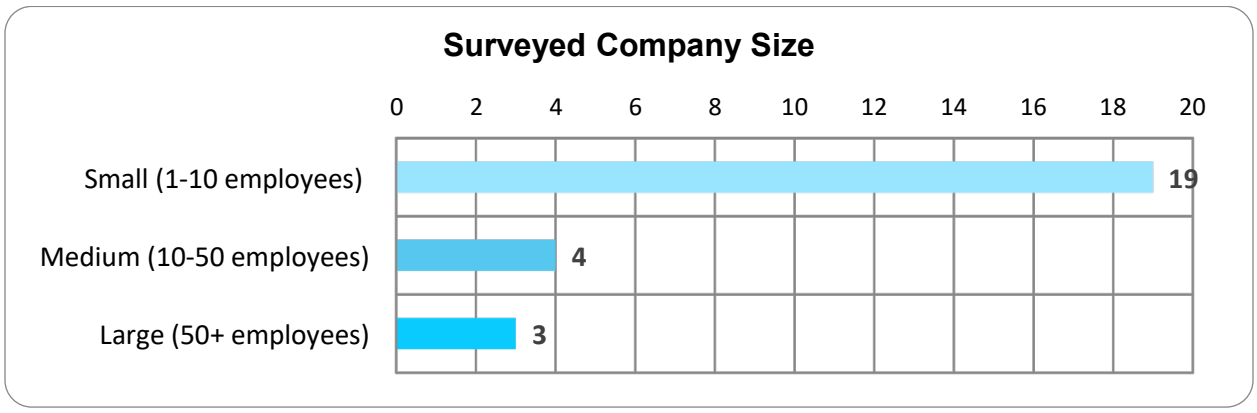
Other:

- "Better training for plan checkers and building inspectors"
- "While installing electric systems and solar panels is a great way ahead, builders and owners really need to understand that conservation of energy is the key. Building better building envelopes that are better insulated and air tight is key. Installing a high performance system in a building that leaks energy makes little sense. Build the envelope as best as possible and even a crappy old heating system will use less energy than a new heating system in an inefficient building."

Question 16) How important is it to you to have consistent requirements for energy efficiency and low carbon buildings across local governments in the Regional District of Nanaimo, including the City of Nanaimo, District of Lantzville, Town of Qualicum Beach and the RDN Electoral Areas?



Question 17) What is the size of the company you work for?



Q 18) Is there any other feedback or comments you would like to provide?

Theme: Guidance and incentives needed

"It is imperative that the Province of BC refines and upgrades the Zero Carbon Step Code to address embodied carbon and to this end BC Housing to publish guidance documents for local governments on "development policies that target embodied carbon in both new construction and building retrofit and renovation."

"Providing incentives is key. The step code was designed in conjunction with industry and the timelines meet what industry can deliver on while meeting our provincial carbon reduction requirements. The key is not to arbitrarily accelerate things because it makes local politicians feel good"

Theme: Consistency of requirements across local governments

"Consistent requirements (including submission requirements) across all municipalities would help reduce incomplete permit applications"

“The entire RDN needs to be at the same level. This simplifies it for the industry so that they don't have to look up different requirements for different neighborhoods. Builders/developers will build in areas with more lenient rules. Don't give them that opportunity. Focus on the building envelope. Conserving energy should be the priority over more efficient systems. Systems can be improved later. The walls wont be opened up for 40 or 50 years.”

Theme: Building envelope and lot sizes

“We need to focus on the building envelope. If we build it correctly, then consumed energy becomes less of a talking point because we will be using less of it. Mechanicals can for the most part be easily upgraded or converted at a later date. You don’t get many opportunities to upgrade the building envelope so we might as well do it correctly the first time. Increasing awareness and education of homeowners is key. We need them to understand and to ask for buildings to be built better. Energy labeling should be mandatory and be used as a selling feature. Driving demand will steer the industry in the right direction. Airsealing and compartmentalization of buildings has drastic effects on efficiency and comfort. Build tighter (with proper ventilation) should be a priority. Technologies such as aerosolized caulking make sealing very easy.”

“Local Government rules need to change to make development of more energy efficient homes: - smaller lots and smaller setbacks and allowable increased lot coverage -> homes can be simpler in design for efficiency and have less rear yard/front yards and exterior side/flanking setbacks to fit same sized home on smaller parcel - Design Panel scope reduced (energy efficiency and cost reduction over aesthetics) - eliminate perimeter wall height requirements (straight wall more efficient over walls with corners and cantilevers and stepbacks) - Passive Shading systems allowable as encroachments into south facing setbacks (except sides) - larger roof overhangs, shade sails, etc. - must start getting uptake on solar panels on houses (Calgary's electrical provider, Enmax, was providing grid tied solar panels to building and home owners to install on their roofs - maybe this could be setup through a regional crown corporation-ish structure) - local government incentives from green roofs and green walls - incentivize builders to include full in-ground basements where grades allow in single family homes, duplexes, multiplexes and townhouses (underground living space is naturally insulated) - need incentives to

offsets rock excavating costs. A review of all local government owned buildings and parcels is needed for feasibility of solar and wind power generation Strongly suggest local government work with first nations and provincial government to look at tidal power generation, wind power and solar power on the island on a large scale."

Theme: Permitting times/requirements

"1.) If the goal posts could be the same each and every time. Different staff within the same building department will request different items. This causes time lost increasing the costs. A streamlined system with heavy penalties for builders Bending/ Breaking the rules is required. 2.)Why are Builders allowed to falsify paperwork and building permits and get a slap on the wrist. This is bad for the industry and should not be allowed within our building departments. Building License and Business License should be suspended. Blaming a staff member does not excuse the fraud. We are professionals we can't improve this industry without accountability."

"Permit times need to be faster and more consistent throughout the year despite staff holidays. We waited for 22 weeks for a permit last year and that is very detrimental to our business for a lot of reasons. It isn't exclusive to the RDN but most regional districts timelines are far too long and virtually no accountability to any timeframe. The company that falsified
building permits and constructed multiple homes without a permit should not be allowed to apply or receive building permits. The claim that one rogue employee did that is laughable to say the least. The owner as part of BC Housing home warranty requirements cannot pass off the "general manager" role and claim they had no idea they were doing that. They are either
completely inept as an owner and in violation of BC Housing rules around people in charge of the company or they are complicit in the actions. Either way them still being able to carry on as usual is a complete slap in the face to the rest of the local industry and further risk to the community for yet another abuse. A quick BC courts record search of said company shows they have had upwards of 20 pending and past legal actions against them. This is not the behavior of a valued community business nor one the industry should support in any way."

"Permit wait times are way too long Builders breaking rules (like falsifying permits, should not be able to build)."

Theme: Electrification and hydro capacity

Promoting an electrification only approach to decarbonization for housing will likely have higher cost implications, and energy reliability challenges for both industry and homeowners. Renewable Natural Gas (RNG) should be considered by all municipalities as a low carbon energy option for new homes as it provides homeowners energy choice, resiliency, affordability, and comfort. RNG has the lowest emission factor of any energy delivered in the Province (0.29 CO_2e kg/GJ), including BC Hydro (3.0 CO_2e kg/GJ) and Fortis electricity (0.72 CO_2e kg/GJ). This is because with Renewable Natural Gas (RNG) production, methane from organic waste that otherwise would have escaped into the atmosphere is captured and used to produce RNG. The Province publishes the emissions factors including the methodology for determining the emission factors of all fuels which you can access at
https://www2.gov.bc.ca/assets/gov/environment/climatechange/cng/methodology/2018-pso-methodology.pdf

“Some of the questions are pretty leading. There also needs to be discussions with BC Hydro regarding capacity if homes are all electric, including vehicles. Many homeowners want gas fireplaces which is not addressed. Most oceanview properties in the RDN are north facing so therefore homeowners want large north facing windows which are not very energy efficient even with triple pane windows. Another form of housing that should be promoted is modular homes. These homes are land efficient and are generally rectangular in nature making it much simpler to to obtain higher energy efficiency. They are also a more affordable form of housing. District energy in higher density areas is another point that needs further discussion.”

“I participated in the panel. One concern I have is that in BC there is talk, and this came up in the panel, about having air conditioning as a necessity... In the South of France where I am now just today a mechanical contractor complained to me that in Canada we do not care about the environment as there is 'air conditioning everywhere', In the south of France where it can hit high 30s in the summer new houses are not allowed to be constructed with air conditioning *the whole country. Even though a lot of the electricity is nuclear and renewable they recognize that air condition is on of the larger consumers of electricity. They treat the high temperatures by design and adaptation. Even though we have hydro in BC I think it is an enormous mistake to believe that we all will need AC. It is not that hot and when it is we need to change our habits...i.e. less thermal bridging, not wearing sweaters and jackets on a hot day. We should not push a solution that the world is worried about. If we are able to connect the electrical grid across the nation energy not used on cooling will be able to offset dirty production elsewhere. I really think we need to reject the notion that we have to plan for air conditioning. We should be planning how to continue to avoid it in a warming planet”

ATTACHMENT C
Equity Stakeholder Interviews

Participants

In order to address any unforeseen equity consequences of the proposed pathway, Staff identified the following non-profit housing providers:

- Canadian Mental Health Association (CMHA)
- Ballenas Housing Society
- M'akola Housing Society
- Connective (formally the John Howard Society)
- Habitat for Humanity
- BC Housing
- Island Crisis Care Society
- Pacifica Housing

These providers were invited to the Industry Stakeholder Workshop and Staff followed up with many of them for one on one interviews. Interviews were conducted with the following equity housing stakeholders.

- M'akola Housing Society
- Connective (formally the John Howard Society)
- Habitat for Humanity
- BC Housing

Representatives from Island Crisis Care Society attended the Industry Stakeholder workshop, but were not interviewed separately.

Existing Requirements

Equity stakeholders noted they are often already required to build to high energy-efficiency and emission standards due to BC Housing and Canadian Mortgage and Housing Corporation (CMHC) funding requirements.

BC Housing currently requires Step 4 for Part 9 buildings, Step 4 for Part 3 buildings up to 7 stories, and Step 3 for 7 stories and above. Part 3 buildings also have a 3 $kgCO_2e/m2$ greenhouse gas intensity (GHGi) limit, roughly equivalent to the Strong Carbon Performance step in the ZCSC. These regulations have been in place since April 2019.

CMHC requirements vary by funding stream and are generally related to National Energy Code for Buildings (NECB) as opposed to Step Code. Applicants usually need to provide both Step Code evidence (for BC Housing) and NECB modeling/compliance (for CMHC). One equity stakeholder raised a concern regarding with what they perceived as a disparity in these requirements with CMHC being generally more stringent and a lack of appropriate funding to support non-profits in meeting both requirements.

Challenges

Overall, the equity housing providers noted the following challenges related to increased energy efficiency and emissions standards for new buildings:

- Concern related to increased construction costs due to BC Energy Step Code requirements. Equity stakeholders were less concerned about cost increases related to the ZCSC and electricity requirements. Some equity stakeholders, such as M'Akola, are already building all-electric buildings and generally don't have any operational requirements where they'd need gas.
- Potential impacts on building permit approval timelines.
- Lack of expertise on the team. Equity stakeholders noted they would need to hire outside help to meet energy efficiency requirements, this was a particular concern for Habitat for Humanity who often rely on volunteer labour and in-house building expertise; whereas other equity builders already rely on outside building professionals (Connective, M'Akola) or have the capacity to train staff in-house (BC Housing).
- Energy efficiency focused design requirements impacting residents quality of life (e.g.: over heating, lack of balconies and window openings)
- Electrical capacity - BC Housing have encountered issues with electrical capacity at some sites too late in the game for the project to proceed with all-electric and had to switch to gas solutions. In response, they have changed their approach so that BC Hydro is engaged very early in the process to allow lead time for site upgrades.
- Utility costs/operational costs - equity stakeholders noted, with respect to monthly billing, natural gas is currently a more affordable energy source than electricity; however, BC Housing noted they expect the costs to even out within the next four to five years as natural gas costs increase. BC Housing also noted they are required to pay offset costs to maintain carbon neutrality which increases the cost of natural gas for them. Connective noted utility costs are marginal with respect to their overall operating costs.
- Commercial kitchen - BC Housing noted many of their buildings require a commercial kitchen. While they are starting to build electrical kitchens, clients often still prefer natural gas.
- Generally, equity stakeholders would prefer to put money into more units than into energy efficiency/carbon reduction if there's a choice –they don't anticipate that a change to code requirements would reduce the number of units they build as BC Housing provides the funding to meet whatever the local government code requirements are for the development

With respect to the construction cost implications, BC Housing noted they have been documenting their costs across different projects, including those built to different levels of Step Code and energy emission (GHGi) standards. They have observed that for Part 3 buildings Passive projects[1] have lowest build costs, followed by Step 4, and Step 3 builds are all over the map. BC Housing speculates the increased Part 3 building costs may be due to builders trying different things on the ground instead of taking a more careful design approach.

[1] Passive House is an international energy efficiency standard not included in the BC Energy Step Code but considered equivalent to slightly more stringent to the top steps of the Step Code.

Potential Supports

In order to help address the above noted challenges, equity stakeholders suggested the following supports be considered:

- Provide more subsidy for increased utility rates or see if BC Hydro can provide electricity at a lower rate for affordable housing.
- Grants and funding to match increased construction costs (suggest funding be targeted specifically to encourage integrated design and or specialist advice in design and construction stages).
- Education and information on overall cost impact of proposed changes to help non-profits with budgeting and applying for grants.
- Access to training opportunities and expert advice.
- Reduced or status-quo permitting timelines.

Benefits

In addition to the challenges listed above, the equity stakeholders noted some benefits with the proposed energy efficiency and emission requirements.

- Less maintenance concerns with electric baseboards and easier systems for residents to understand and control. Connective noted "if systems are simple, that suits our clients".
- Improved tenant comfort.
- Lower utility costs due to higher energy efficiency design in buildings.
- City regulations more aligned with BC Housing and CMHC requirements, by requiring all local buildings to meet these standards equity builders will no longer have to build to a higher standard then for profit developers.
- Improved indoor air quality by switching from gas to electric cooking.

Local Government Electrification Bulletin – June 2023

INTRODUCTION

BC Hydro is committed to supporting local governments with the adoption of climate and electrification policies in the new and existing buildings and transportation sector. Adopting the tiers of the Zero Carbon Step Code (ZCSC) is an important step to align new construction requirements with climate targets through the electrification of heating and hot water systems.

BC Hydro acknowledges that connecting new customers quickly and efficiently to our supply of low carbon electricity is a critical part of successful implementation of ZCSC in your communities. The intent of this document is to outline many of the initiatives underway at Hydro to support local governments with code adoption and to lay out how to work together more closely to ensure a successful transition away from fossil fuels.

BACKGROUND: OUR ROLE IN MEETING THE PROVINCE'S CLIMATE GOALS

A key driver of climate change is energy use, specifically the burning of fossil fuels. Electricity use currently represents less than 20% of the energy used in the province today, with 10% coming from biomass and the remaining 70% from fossil fuels. To meet climate goals, the electrification of industry, transportation and buildings is critical to enable BC to get off fossil fuels. Electrification means replacing technologies that are powered by fossil fuels like gasoline, diesel, and natural gas with high efficiency alternatives that use electricity.

The electricity BC Hydro generates is 98% clean and renewable, coming largely from hydro, and a small amount of biomass, wind, and solar. Over the past decade, we have been largely self-sufficient in electricity generation as a Province and we are monitoring new load demands so that we can bring new generation on in a timely manner as demand grows.

In fall 2021, Hydro released an Electrification Plan which outlines our intentions to invest over $260 million to advance electrification in the building, transportation, and industrial sectors to help meet the province's climate targets.

BC Hydro
Power smart

SUFFICIENT ENERGY SUPPLY

BC Hydro is required to regularly produce Integrated Resource Plans that lay out a strategy for how we will meet the demand for electricity over the next 20 years. Our most recent plan details the renewable energy sources that will supply the province given increasing levels of electrification of buildings and transportation in every region and will position BC Hydro to meet the potential electrification load associated with the Government of B.C.'s greenhouse gas emission reduction targets.

Currently BC Hydro operates over 30 hydroelectric plants in the province and in the coming years, we'll be adding another large hydroelectric facility to our system, which when it comes online will add enough supply to power nearly half a million homes or 1.7 million electric vehicles per year.

Today BC Hydro is in a surplus position for energy generation and expects to be until 2028. After 2028 we will need additional resources, that is why we recently announced an upcoming call for power that would add approximately 3,000 GWh of new clean and renewable energy to the grid as early as 2029. We also plan to expand our existing facilities to generate an additional 700 GWh of new power.

We expect to see more wind and solar added to our resource mix. B.C. has excellent potential for generating more clean electricity through wind and solar and they pair well with hydroelectric facilities that will continue to serve as the backbone of our system.

AFFORDABILITY

BC Hydro is a provincial Crown corporation owned by the government and people of British Columbia. It is both an energy generator and a distributor. Electricity rates are influenced by overall investment needed to meet the energy demand and regulated by the BC Utilities Commission (BCUC) whose mandate is to ensure ratepayers receive safe, reliable energy at fair rates.

We are focused on keeping rates affordable for our customers and we see an electrified future as an affordable future. Currently, BC Hydro's residential electricity rates are the second lowest in North America. These low rates are a result of long-term investments throughout the last century in clean electricity generation facilities and infrastructure. We are very fortunate to have not only a very clean grid but also one with affordable rates.

COST OF HOME HEATING AND COOLING

Newly constructed homes built to the top step of both the zero carbon step code and the energy step code can result in utility cost savings for residents. A provincial government reports demonstrates that as much as 25% in utility savings could be achieved in new homes that install heat pumps for space and hot water heating.[1]

COST OF NEW CONNECTIONS – CHANGING THE DISTRIBUTION EXTENSION POLICY

BC Hydro has work underway to improve the process of connecting new projects to the grid and eliminating some of the inequities in cost. Over the years, stakeholders have noted that high costs, cost unpredictability, inequities and free ridership are challenges with our current policy. We are currently in the process of reviewing our policy and plan to submit an application to the BCUC in the fall which includes various options for making connections more efficient and equitable. If approved, Hydro will no longer charge each customer their project specific extension cost and customers are instead assessed and charged a unitized extension fee based on the requested load.

ELECTRICAL DISTRIBUTION SYSTEM & PLANNING FOR THE FUTURE

UPDATES AND UPGRADES

The electrification of industry, buildings and transportation is going to require increased construction of new electrical infrastructure. In most areas Hydro has sufficient capacity to connect new customers in a reasonable timeframe. However, there are certain high growth areas where load is increasing faster than the time required to complete capital projects to add capacity.

[1] BC-Energy-Step-Code_Metrics-Report_2022-09-29-R1-Compressed.pdf (energystepcode.ca)

We are committed to addressing this issue to ensure this issue is quickly addressed to prevent connection delays and ensure smooth future connections. This is supported by an increase of $100 million to our distribution capital budget.

INTEGRATING LOCAL GOVERNMENT PLANS AND STRATEGIES INTO OUR PLANNING PROCESS

BC Hydro currently has a process to integrate growth patterns into our long-term planning for the distribution network. However, we acknowledge that climate leadership among municipalities means there is a need to better incorporate information from local government land use and growth strategies, and climate action and electrification policy, into our distribution capital planning process. We are currently working on a few pilots to develop and test a new approach.

WORKING TOGETHER TO BUILD MORE ELECTRICAL INFRASTRUCTURE

The ongoing electrification of buildings and transportation will require the building of more electrical infrastructure within local government boundaries. New sub-stations, underground feeders and transformers will be needed to accommodate this work. To do this in a timely fashion we have to work closely with the engineering and underground infrastructure teams within municipalities. Hydro looks forward to strengthening these relationships to facilitate the scaling up of electrical infrastructure and meet our collective climate goals.

STRENGTHENING THE GRID'S CLIMATE RESILIENCE

Recognizing the increase in severity and frequency of extreme weather events, we're continuing to work on our Climate Change Adaptation Plan that outlines actions to prevent, detect, manage, and respond to climate change. We know we need to change how we think about our infrastructure to better support communities as you experience the impacts of climate change. There is a lot of redundancy built into our grid; it is very robust. We have plans to ensure core critical infrastructure can continue functioning even after a severe climate event, such as a flood or wildfire, cuts them off from the grid.

CUSTOMER CONNECTION TIMELINES

In the last few years, we have seen a 17% increase in the size and volume of new connections requests – reflecting our customers drive towards electrification. This is putting some short-term pressure on our system and connection processes which we are working hard to address. We're committed to making connection timelines shorter by making changes to our policies and procedures, including hiring and training more staff, improving our end-to-end process and implementing a new customer intake process.

CONCLUSION

BC Hydro is committed to being a partner in the energy transition with local governments. As you are now aware, we have numerous initiatives underway to support local government climate and electrification policy adoption. However, we acknowledge the rapid pace of change needed to address climate changes and the need for ongoing communication with local government staff and elected officials to keep you aware of how our plans and initiatives will change in the future. BC Hydro is committed to finding new ways to collaborate and communicate including publishing more electrification bulletins like this in the future.

If you would like to discuss any of the content in this bulletin further, please reach out to **sustainablecommunities@bchydro.com**

ATTACHMENT F

Other Local Governments

Zero Carbon Step Code/Low Carbon Energy System

The following local governments have already enacted legislation to implement the Zero Carbon Step Code or a Low Carbon Energy System

Local Government	Part 9	Part 3
Zero Carbon Step Code		
City of Victoria	EL-4 (2023-NOV-01)	EL-4 (2024-JUL-01) 4 to 6 storey residential EL-4 (2024-NOV-01) all other Part 3 buildings
District of Saanich	EL-4 (2023-NOV-01)	EL-4 (2024-JUL-01) 4 to 6 storey residential EL-4 (2024-NOV-01) all other Part 3 buildings
District of Central Saanich	EL-4 (2023-NOV-01)	None
Resort Municipality of Whistler	EL-3 (2024-JAN-01)	EL-3 (2024-JAN-01)
Low Carbon Energy System[1][2]		
City of Richmond	LCES- EL-3 equivalent (2024-OCT-01)	
District of West Vancouver	LCES (2021-FEB-28)	LCES (2021-FEB-28)
City of North Vancouver	LCES (2021-JUL-01)	LCES (2021-JUL-01)

The following other local governments have indicated they have Council direction to take actions related to implementing the Zero Carbon Step Code[3]

1. City of Surrey (publically indicated they plan to implement a LCES and require the top step of the BC Energy Step Code by 2023/2024 for Part 3 buildings)
2. Township of Esquimalt
3. City of Burnaby
4. District of Squamish (Part 9)
5. Village of Pemberton (Part 9)

Staff in a number of other BC municipalities have advised they will most likely implement the Zero Carbon Code and are seeking Council direction to do so.

[1] A number of municipalities in the Lower Mainland enacted low carbon energy system (LCES) requirements before the adoption of the zero carbon step code (ZCSC), LCES requirements have similar emission limits the ZCSC.
[2] Many of these local governments permit builders to choose between a higher BC Energy Step Code step or the LCES requirement, the LCES requirement is shown here.
[3] Source: Community Energy Association

BC Energy Step Code

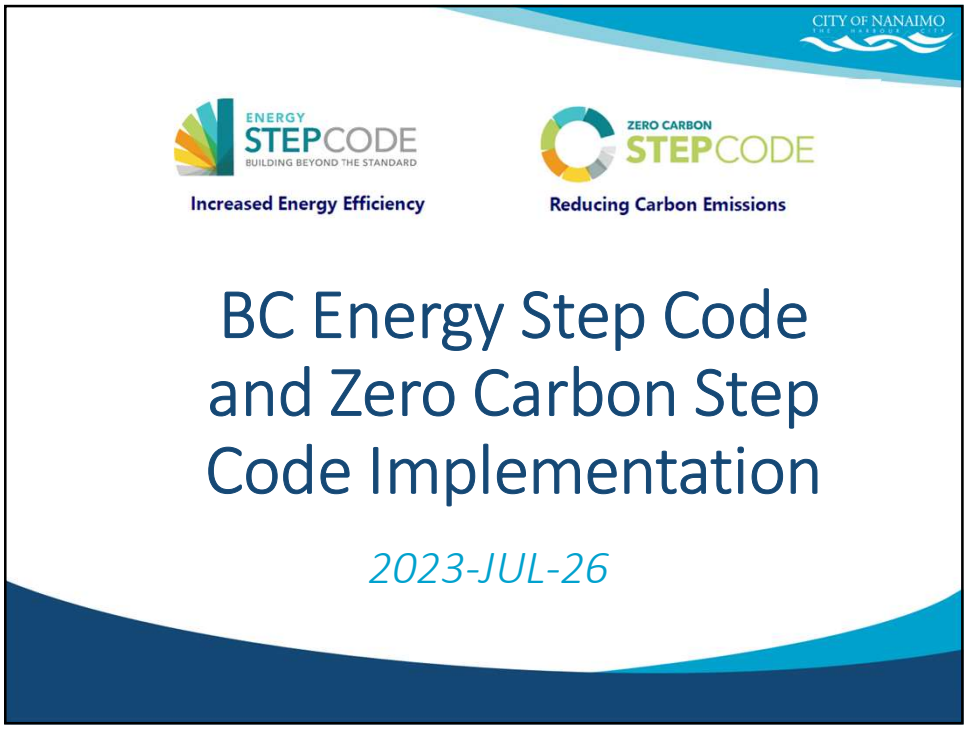
The following local governments have enacted legislation to require the builders to meet the upper Step Code Steps, Step 4 and 5 (Part 9) and Step 3 and 4 (Part 3), at building permit.

Local Government	**Part 9**	**Part 3**
Resort Municipality of Whistler	Step 4 (2024-JAN-01)	Step 3 (2024-JAN-01)
City of North Vancouver	Step 5 where no LCES system is presented (2021-JUL-01)	Step 3 (residential) - (2021-JUL-01)
District of Squamish	Step 4[4] (2021-JAN-01)	Step 4 (residential wood frame), Step 3 (commercial) - (2021-JAN-01)
Village of Pemberton	Step 4 (2021-JAN-01)	/
District of West Vancouver	Step or LCES (2021-FEB-28)	/
City of Port Moody	Step 4 (2025), Step 5 (2030)	Step 3 or Step 2 + LCES (2025), Step 4 or Step 3 + LCES (2030)
City of Port Coquitlam	Step 4 (2024-JAN-01)	Step 4 (residential wood frame), Step 3 (commercial) - 2024-JAN-01)
City of Kelowna	/	Step 3 (multi-unit residential) - 2021-JAN-01

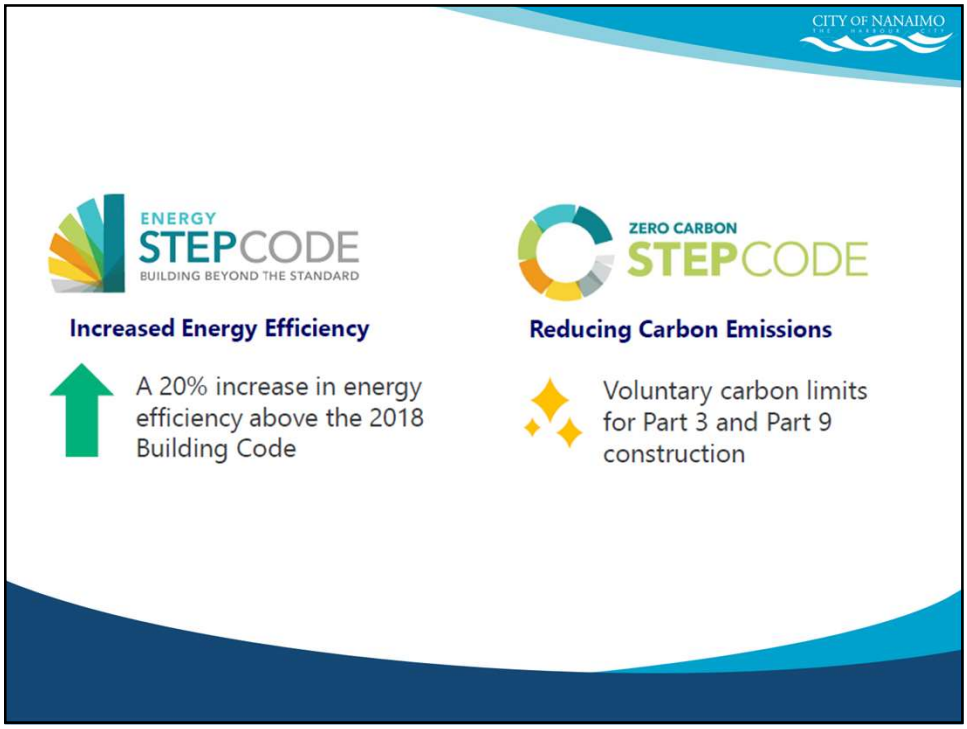
The following local governments have indicated they have Council direction to take actions related to implementing the upper steps of the BC Energy Step Code

1. City of Surrey (publically indicated they will require Step 5 for Part 9 buildings by 2025/26)
2. City of Richmond (Step 5 or a LCES plus Step 4 by 2025)

[4] Buildings under 1,000 square feet are exempt

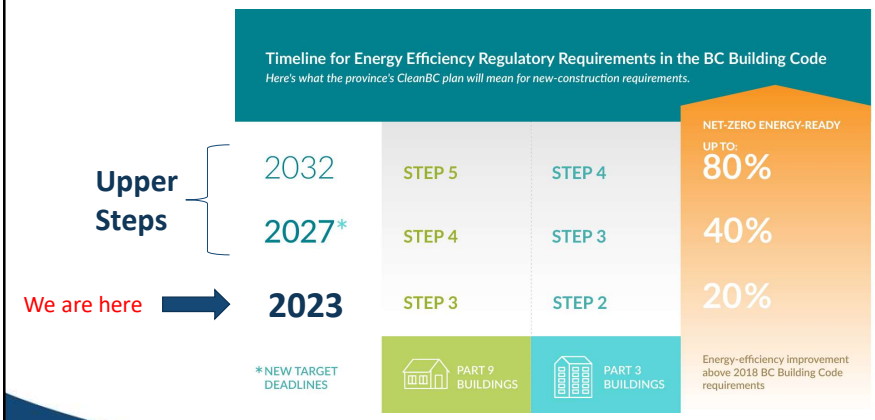

CITY OF NANAIMO
ENERGY STEPCODE
BUILDING BEYOND THE STANDARD
Increased Energy Efficiency
ZERO CARBON STEPCODE
Reducing Carbon Emissions
BC Energy Step Code and Zero Carbon Step Code Implementation
2023-JUL-26

1


CITY OF NANAIMO
ENERGY STEPCODE
BUILDING BEYOND THE STANDARD
Increased Energy Efficiency
A 20% increase in energy efficiency above the 2018 Building Code
ZERO CARBON STEPCODE
Reducing Carbon Emissions
Voluntary carbon limits for Part 3 and Part 9 construction

2

BC Energy Step Code



3

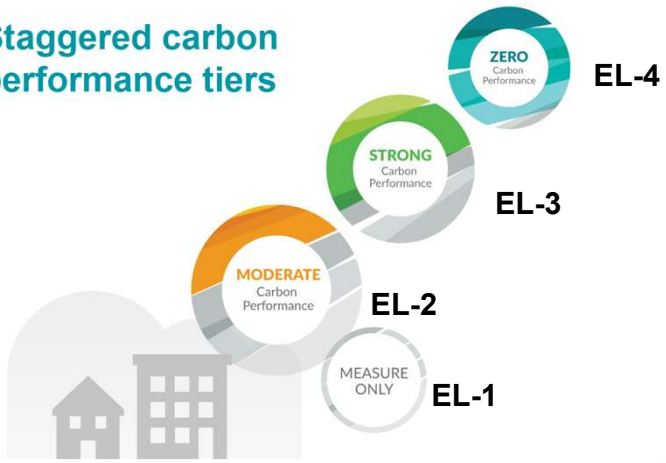
Nanaimo's Implementation Dates

	Effective Date	Building Types	BC Energy Step
	2020-APR-21	Part 3 and Part 9	Step 1
	2021-JAN-01	Part 9	Step 2
We are here	2022-JAN-01	Part 3	Step 2
	2022-JAN-01	Part 9	Step 3

4

Zero Carbon Step Code

Staggered carbon performance tiers



5

Many types of buildings can be regulated under the Zero Carbon Step Code

Part 9:
Smaller + simpler buildings, specifically…

Homes and smaller residential buildings

Part 3:
Larger and more complex buildings, including…

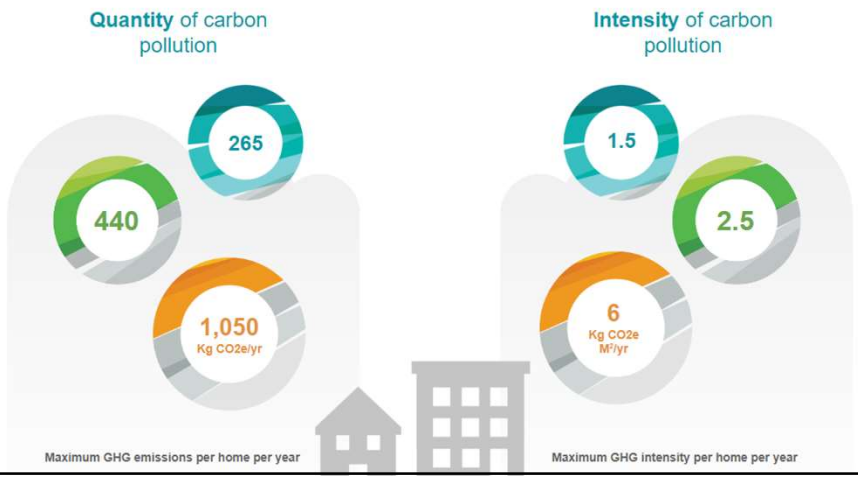
Offices | Condos + apartments | Financial institutions | Retail + grocery stores

6

Zero Carbon Step Code - Prescriptive Pathway (Part 9)

7

Zero Carbon Step Code - Performance Pathway (Part 9)



8

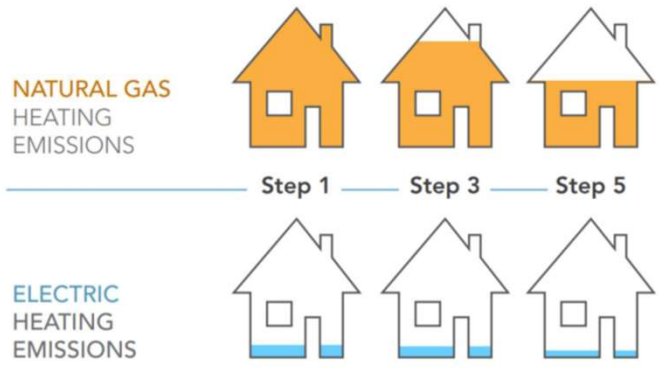
Provincial Timeline

		2023-MAY-01	2024	2027	2030	2032
BC Energy Step Code	Part 9	Step 3		Step 4		Step 5
	Part 3	Step 2		Step 3		Step 4
Zero Carbon Step Code		Introduced Optional Compliance Path	TBD	TBD	Zero Carbon Performance Level (EL-4)	

We are here

9

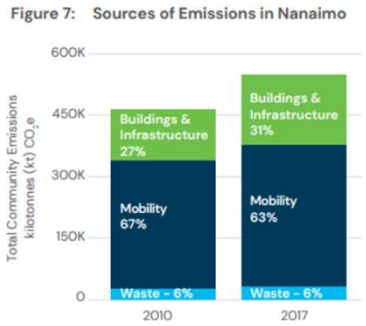
Why a Zero Carbon Code?



10

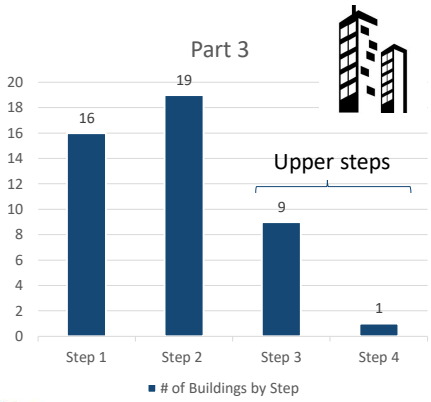
Why Zero Carbon Performance Level (EL-4)?

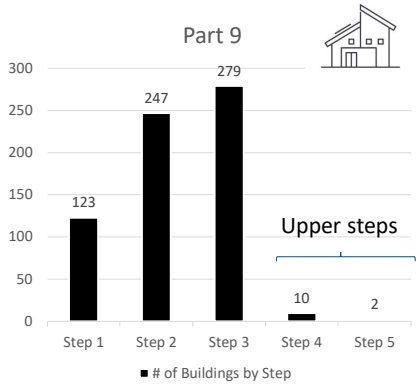
- Meet City's climate goals
- Buildings accounted for 31% of Nanaimo's emissions (2017)
- Net emissions reductions challenging to achieve while the City grows



11

BC Energy Step Code in Nanaimo

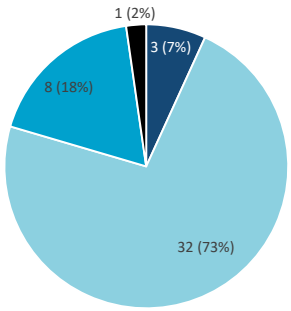


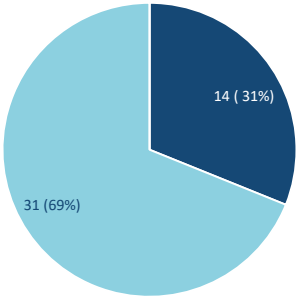


12

Space Heating vs. Hot Water Heating

Part 3



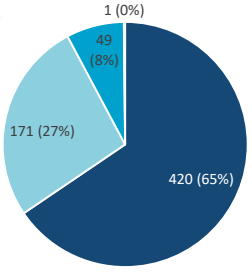


13

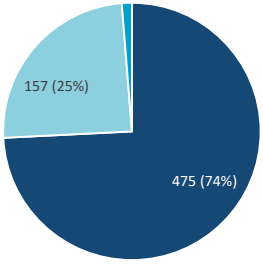
Space Heating vs. Hot Water Heating

Part 9

Part 9



Part 9



14

GHG Modeling

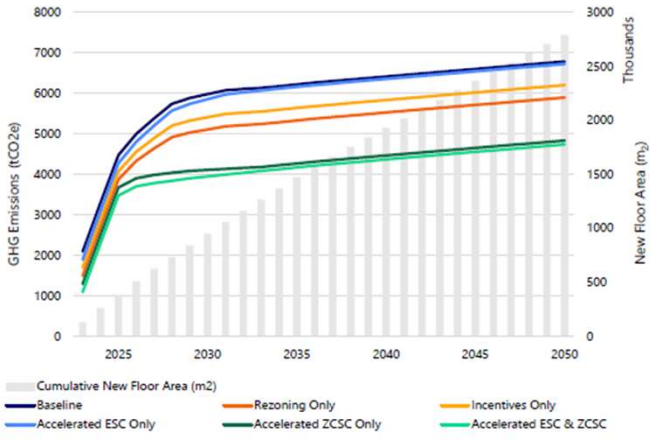


Figure 5: Annual GHG Emissions from Cumulative New Floor Area

(Note that lines are offset for legibility, full results are provided in Table 17)

15

Engagement

16

Engagement Results

- Support for emissions reductions and energy efficiency improvement
- Incremental step changes are challenging
- Fewer changes even if it means accelerating the timelines
- Desire for consistency among jurisdictions
- Need for homeowners awareness and education

17

Engagement Results

- Zero Carbon Step Code
  - Concerns about grid capacity and power reliability
  - Industry capacity or cost less of an issue
- Energy Step Code
  - Industry capacity – not ready for reaching the top step by 2025 but going to the next step possible
  - Cost – no financial incentive to build to the top step

18

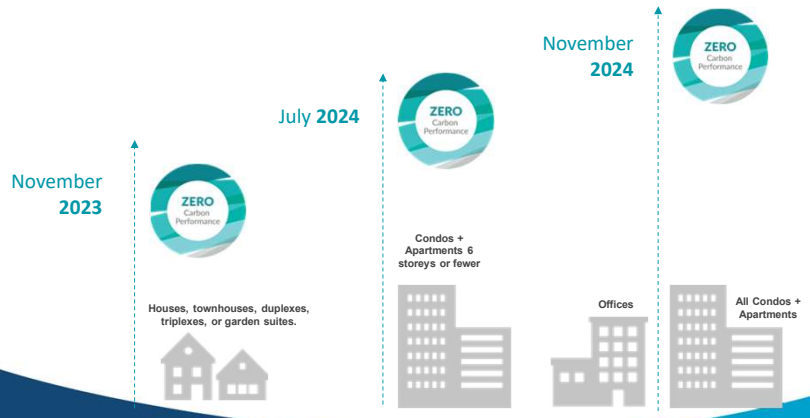
Cost Implications

- Top Level of Zero Carbon Step Code (ZCSC)
  - Capital cost increase minimal
  - Utility cost vary
  - Cost of future retrofits could be significant
- Top Step of Energy Step Code (ESC)
  - Capital cost increase higher
  - Lower utility cost

19

Other Local Governments

Implementation: District of Saanich + City of Victoria



20

Nanaimo Proposed Policy

Date	Building Types
Bylaw Adoption	Require all applicable Part 3 and Part 9 permit applications to meet Measure-only Level (EL-1) upon bylaw adoption
2024-JUL-01	Require all applicable Part 3 and Part 9 permit applications to meet Zero Carbon Performance Level (EL-4)
2026-JAN-01	Require all applicable Part 3 buildings to meet Step 3 of the Energy Step Code

21

Next Steps

- Bring the Building Bylaw amendments;
- Support education, training, and capacity building;
- Educate homeowners;
- Review and update policies and guidelines;
- Monitor emissions reductions in new construction;
- Promote low carbon energy systems; and
- Work with BC Hydro to conduct a grid capacity analysis.

22