

# Intentions Paper

# **CLEAN, EFFICIENT BUILDINGS**

Building a clean growth future for B.C.



# 1. TOWARDS A CLEAN GROWTH FUTURE

B.C. is developing a long-term clean growth strategy for release in the fall and inviting British Columbians to share their ideas.

It's part of the government's commitment to stimulating sustainable growth and jobs using our clean energy to power our economy while driving down greenhouse gas (GHG) emissions. The same innovations that reduce our emissions and improve our quality of life can help us capture a larger share of the global market for clean energy, technologies, products and expertise.

The strategy will be a living document, continually updated and expanded as new opportunities arise. The document released this fall will lay out a framework for clean growth and a pathway to meeting our GHG emission reduction targets.

As we begin to implement the strategy in the coming years, we will continue to seek public input on priority areas as outlined in *Towards a clean growth future for B.C. – Introduction*. This will help us update and expand the strategy as new ideas are presented and more opportunities arise.

We will also continue to collaborate with the federal government through the Pan Canadian Framework on Clean Growth and Climate Change. We will work in full partnership with Indigenous communities. And we will continue to receive advice from the Climate Solutions and Clean Growth Advisory Council.

We are seeking public input as we move towards a clean growth future for B.C., with the release of intentions papers for transportation, buildings and industry.

In this paper, we're looking for your thoughts and feedback on potential actions to encourage more clean, efficient buildings across the province.

## What is B.C.'s strategy for a clean growth future?

It will bring together our action on climate change and work underway on our energy roadmap to drive sustainable economic growth with cleaner energy and fewer emissions.

It will be integrated with the province's:

- ▶ Economic Development Strategy
- ▶ #BCTech Strategy
- ▶ Emerging Economy Task Force

It will set out our vision for a clean growth future and a pathway to our GHG targets.

***We encourage everyone to take part in these and upcoming engagement opportunities. Visit [EngageBC](#) to learn more.***

## 2. CLEAN, EFFICIENT BUILDINGS

Part of the reality of living in Canada is spending most of our time indoors. Our homes, schools, businesses and other buildings protect us from the elements. They can also play a key role in the fight against climate change. Every new building and every renovation provides an opportunity to innovate, and to capture the energy-saving benefits of cleaner, more efficient approaches. And every effort to build, retrofit and upgrade building technologies is an opportunity for good-paying, increasingly skilled jobs in communities throughout B.C.

For example, when fire damaged the staff housing complex for R.W. Large Memorial Hospital in Bella Bella, the Vancouver Coastal Health Authority rebuilt it to Passive House standards – currently the most rigorous voluntary energy-based standards for building design and construction. A passive house uses up to 90% less energy than conventional buildings for heating and cooling, and it is just one of many cleaner, more efficient approaches to building design and construction.

The province encourages these approaches through a combination of research and development support, training resources, financial incentives, and updates to efficiency codes and standards.

Home and business owners also play a role in making our buildings cleaner and more efficient. That can mean choosing high-efficiency heating systems; improving insulation, windows and doors; and ultimately living in net zero energy ready buildings – all of which help save energy.

The building sector offers significant opportunities to advance climate action and economic priorities. We can transform the building market by making energy efficiency and low-carbon building solutions more available, accepted, and affordable – creating more clean economy jobs in the process.

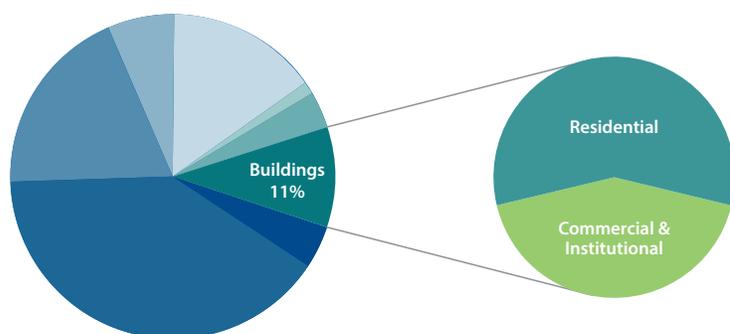
***What specific steps can the province take to encourage more clean, efficient buildings? We want your feedback on five proposed actions outlined in the next section.***

### Net Zero Energy Ready Buildings

A net zero energy ready building uses high efficiency equipment, enhanced building envelopes, and solar orientation to consume only as much energy as it can produce from on-site generation such as through solar panels.

#### Reducing B.C. Buildings Emissions

Buildings account for 11% of B.C.'s greenhouse gas emissions, or 7 million tonnes of carbon pollution per year. B.C. is committed to reducing GHG emissions steadily over the next few decades.



## 3. PROPOSALS FOR CLEAN, EFFICIENT BUILDINGS

We all have a stake in the health of our buildings and their impacts on the environment and our quality of life. And many of us, including consumers, can play a role in advancing clean growth in this sector. The following proposals are designed to work together to further increase energy efficiency and the use of cleaner fuels, and, over time, eliminate the least energy efficient practices and technologies from the market.

### 3.1 Energy Labelling Requirement

Most of us wouldn't buy a car without knowing how much fuel it uses. Why not have the same information available for homes and other buildings? The province is considering an energy efficiency labelling requirement, allowing prospective buyers and tenants to:

- ▶ compare the energy performance of buildings and homes,
- ▶ understand the full costs of renting in cases where utilities are not included, and
- ▶ consider the value of investing in energy-efficiency improvements.

Under this proposal, buildings would undergo an assessment and be given an energy efficiency rating, which would be disclosed when the property was listed for sale or rent. The approach would use standard energy assessment tools, striking a balance between accuracy and cost. A labelling requirement would also:

- ▶ encourage owners to invest in energy efficiency, and
- ▶ provide data that could be used to estimate the efficiency of existing buildings and support future program design.

#### Potential Actions to Encourage Clean, Efficient Buildings in B.C.

- 1 Energy efficiency labelling information
- 2 Incentives tied to energy efficiency and building improvements
- 3 Stronger codes and standards over time
- 4 Support for low-carbon innovation
- 5 Additional training to build capacity

#### Energy Labelling in Scotland

In Scotland, there is a requirement to provide an Energy Performance Certificate (EPC) to potential buyers or tenants whenever a property is built, sold or rented. More than 50% of Scottish homes now have an EPC, which has helped government target energy efficiency programs where they are needed most.

For example, a program was designed to support low-income households by analyzing energy use data in combination with housing characteristics and socio-demographic data. This helped identify who was most vulnerable, most in need of housing upgrades, and least capable of financing these upgrades.

## 3.2 Financial Incentives

Retrofits make buildings more efficient, helping to save energy and reduce GHG emissions. However, they often require upfront costs, which can be a barrier to making needed upgrades.

To help households, businesses and the public sector offset the costs of energy-saving and emission-reducing retrofits, the province is developing a new incentive program to complement existing utility programs. Under this program, building owners could receive incentives to install the most efficient gas-fired heating equipment, switch to an air-source heat pump, or improve the building's envelope, for example, by adding insulation or replacing windows.

Other options the province could consider include:

- ▶ expanded rebates for energy efficiency improvements,
- ▶ further incentives tied to building energy performance,
- ▶ low-interest financing options for building improvements, such as on-bill financing, and
- ▶ community-focused incentives.

## 3.3 Stronger Codes and Standards

One of the most effective ways for government to advance clean and efficient buildings is through the evolution of codes and standards. For example, while the B.C. Building Code applies to all new construction in the province, since 2017, local governments have had the option of adopting the voluntary B.C. Energy Step Code (ESC).

The ESC sets energy performance targets for new buildings, provides a technical roadmap for users and supports continuous improvements to the B.C. Building Code. The highest step of the ESC for any building type is "net zero energy ready," which is up to 80% more efficient than the current base B.C. Building Code.

### Advancing Energy Savings

Financial incentives play a key role in driving energy efficiency improvements.

For example, in 2017, BC Hydro and FortisBC collectively spent over \$125 million on energy efficiency initiatives, saving enough electricity to power 70,000 B.C. households and enough natural gas to heat approximately 6,000 homes annually.

## New Building Code commitments

By 2032, the highest standards of the Energy Step Code will apply to most new construction in B.C. In other words, the ESC will move from being a voluntary standard, applicable only in some municipalities, to being the minimum standard for all of British Columbia. This approach aligns with the national building strategy.

To support this transition, government is proposing to increase the energy efficiency requirements in the B.C. Building Code in 2022 and 2027. This will provide more certainty as industry, building owners and communities focus on cleaner growth.

Compared to the current base B.C. Building Code, new homes would have to be:

- ▶ 20% more energy efficient by 2022, and
- ▶ 40% more energy efficient by 2027.

The government is also considering expanding the ESC to other building types such as institutional buildings, in collaboration with stakeholders.

## New code for existing buildings by 2024

The federal government plans to introduce a model code for alterations to existing buildings in 2022. Provincial codes will be developed to meet the federal standards and align with a range of other priorities, including energy efficiency, earthquake safety, and occupant health and safety. The province will conduct research and consult with stakeholders on a plan to adopt the model code within two years of the national publication (i.e. by 2024). We will also work with local governments on options for early adoption.

## Increased energy efficiency standards for equipment (2020-2035)

B.C.'s Energy Efficiency Standards Regulation applies to new or replacement devices that use, control or affect the use of energy. In 2018, government updated standards for lighting, air source heat pumps and gas fireplaces. Additional standards are now being considered to align with the goals of the federal government and other leading jurisdictions as follows:

- ▶ high efficiency boiler standards (condensing technology) and residential window standards (30% more efficient) by 2022,
- ▶ high efficiency water heating standards (condensing technology) by 2025, and
- ▶ highest efficiency space and water heating standards (heat pump technology), and residential window standards (55% more efficient) by 2035.

## B.C. Communities Adopting the Energy Step Code

Local governments are already using the Energy Step Code to make the buildings in their communities progressively cleaner and more efficient.

To date, at least 28 local governments have begun consultations, while others have introduced bylaws or policies that reference the new code.

For example:

- ▶ The City of North Vancouver adopted the Step Code in a city-wide building bylaw in 2017.
- ▶ Victoria approved adoption of the Step Code in 2018.

## Reducing GHG emission intensity

The actions outlined earlier would reduce emissions by increasing energy efficiency. Another approach is to focus on emissions intensity, which means setting targets at a building, site or community level.

As part of the clean growth strategy, the province will work with stakeholders to determine which tools may be effective in reducing GHG emissions intensity at site-specific and community levels. These could include options such as:

- ▶ enabling local governments to regulate emissions intensity through targets, in policy or bylaw,
- ▶ tying emissions intensity targets to incentive programs offered by utilities or the province, and/or
- ▶ developing voluntary codes and standards, similar to the Energy Step Code, to regulate GHG emissions directly in the Building Code.

This approach requires flexibility, as emissions vary site-by-site and community-by-community.

## New measures for electric vehicle charging stations

To support the Clean Energy Vehicle Program, which offers incentives to offset the cost of zero emission vehicles, the province could take measures that encourage businesses and other building owners to install and operate electric vehicle charging stations, helping to expand our clean vehicle infrastructure.

## Regulating Emissions Intensity in Buildings

Some jurisdictions, such as the City of Vancouver through its Zero Emission Building Plan, have adopted policies and regulations that place limits on the GHG emission intensity of new buildings.

There are also programs such as Passive House Canada and Canada Green Building Council's Zero Carbon Building Standard that place limits on average emissions associated with a building or community.

### 3.4 Low Carbon Buildings Innovation Program

Reducing emissions from buildings requires cost-effective, high performance solutions that are readily available in the market. These include advanced building designs and construction methods, as well as ultra-efficient building components.

For example, the Innovative Clean Energy (ICE) Fund is providing incentives for new designs and manufacturing processes that will lead to cost-effective, marketable, high performance windows being built in B.C.

To encourage and advance more projects that make buildings cleaner and more efficient, the province is considering a Low Carbon Buildings Innovation Program for manufacturers, developers and builders. This would include annual competitive calls in three categories:

- ▶ **Research** – building solutions that show promise but may require further innovation before being commercialized, such as vacuum insulated wall panels and windows, or natural gas heat pumps,
- ▶ **Commercialization** – building solutions that have been tested and are ready to be scaled up for wider application such as high-performance prefabricated external insulation systems, and
- ▶ **Demonstration** – building solutions currently available in the marketplace that require demonstration to build industry capacity and public acceptance, such as net-zero energy ready construction.

The program would drive market transformation by stimulating the development of innovative, low-carbon building solutions and demonstrating their benefits, which would increase the demand for these solutions.

#### Innovation Across Borders

Energiesprong originated in the Netherlands as a government-funded innovation program. It has accelerated the retrofit of social housing stock across that country using innovative external insulation techniques, resulting in over 5,000 net-zero energy homes to date. Through economies of scale, the cost of these retrofits have come down by more than 50%.

Independent Energiesprong teams are now expanding their energy efficient refurbishments to France, the UK, Germany and New York State. Approximately 3,000 net zero energy retrofits are currently being completed by Energiesprong teams every year.

### 3.5 Training and Certification

A key goal of our clean growth strategy is helping workers make the most of emerging opportunities in the growing low-carbon economy. As building-related codes and standards continue to evolve, the province could provide targeted training in areas such as:

- ▶ energy-efficiency retrofitting, and
- ▶ Energy Step Code for new construction.

#### Energy efficiency retrofitting

To help ensure the quality of retrofits in British Columbia, the province is considering working with industry to expand training opportunities and establish an accreditation for Certified Retrofit Professionals. This would both increase our capacity for clean growth and enhance consumer confidence in retrofits. It would cover key trades and services, including professionals in heating, ventilation and air conditioning, as well as windows and insulation.

#### ESC training

As the Energy Step Code is adopted more widely, the province could also provide further funding for ESC training, targeted to professionals such as:

- ▶ builders
- ▶ air tightness testers
- ▶ construction trades
- ▶ architects
- ▶ engineers
- ▶ energy modellers
- ▶ building inspectors

These actions would help ensure that B.C. captures both the economic and environmental benefits of clean growth in the building sector.

#### Training B.C.'s Builders

The province's Energy Step Code training has helped industry develop its capacity for clean, efficient buildings. Over the past three years, B.C. has sponsored High Performance Builder Training Courses including: ENERGY STAR for New Homes; R-2000, Canadian Home Builders Association's Net Zero Energy home, and Passive House training.

In the Lower Mainland, BCIT has partnered with BC Housing and BC Hydro to develop a High Performance Building Lab to provide hands-on training in zero emission buildings. The Home Performance Stakeholder Council, which comprises key players in the retrofit industry, is helping to build capacity for "deep retrofits," which can lead to energy savings of 30% or more.

#### Building more clean jobs

The building sector is one of B.C.'s largest employers – with a workforce of over 210,000 British Columbians. Growth in green building offers great opportunities for increasingly skilled and diverse jobs across the province.

The sector employs professionals in a number of disciplines, including building trades, architects, building scientists, and building envelope engineers. New job opportunities also extend across the economy to areas such as clean technology, smart controls, educational institutions, and the manufacturing of energy efficient components such as high performance windows and engineered wood products.

### 3.6 Expected Outcomes

The actions proposed in this intention paper would help us achieve a future with clean, highly efficient buildings. Over time, we can reduce the environmental impact of existing buildings while making new ones as efficient as possible.

This transformation would generate clean growth, expanding opportunities in construction and beyond. For example:

- ▶ Promoting innovation will help to drive the development of new solutions – supporting jobs in research, engineering and trades.
- ▶ Providing incentives will allow more people to adopt those solutions – helping people save energy while supporting jobs in areas such as manufacturing and retrofitting in communities across the province.
- ▶ Training and accreditation will further build capacity and help establish trust with consumers.
- ▶ Improved codes and standards will help to eliminate the least efficient practices and products from the market.
- ▶ More efficient buildings will drive long term energy savings and GHG reductions throughout B.C.

## 4. PROVIDING INPUT

### What do you think?

Join in our online discussion at [engage.gov.bc.ca/cleangrowthfuture](https://engage.gov.bc.ca/cleangrowthfuture). The consultation is open until August 24, 2018.

Organizations and individuals who wish to send in additional information can email submissions to [clean.growth@gov.bc.ca](mailto:clean.growth@gov.bc.ca).

Written submissions will be posted publicly, and online comments will be summarized in a final report.

*We encourage everyone to take part in these and upcoming engagement opportunities. Visit [EngageBC](#) to learn more.*