

NO: R203

COUNCIL DATE: September 17, 2018

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**REGULAR COUNCIL**

**TO: Mayor & Council**

**DATE: September 13, 2018**

**FROM: General Manager, Parks, Recreation & Culture**

**FILE: 0512-01**

**SUBJECT: Province of BC Clean Growth Intentions Papers – City of Surrey Response**

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**RECOMMENDATION**

The Parks, Recreation & Culture Department recommends that Council:

1. Receive this report for information; and
2. Direct staff to prepare a response to the B.C. Minister of Environment and Climate Change Strategy regarding the Clean Growth Strategy Intentions Papers, based on the content of this report.

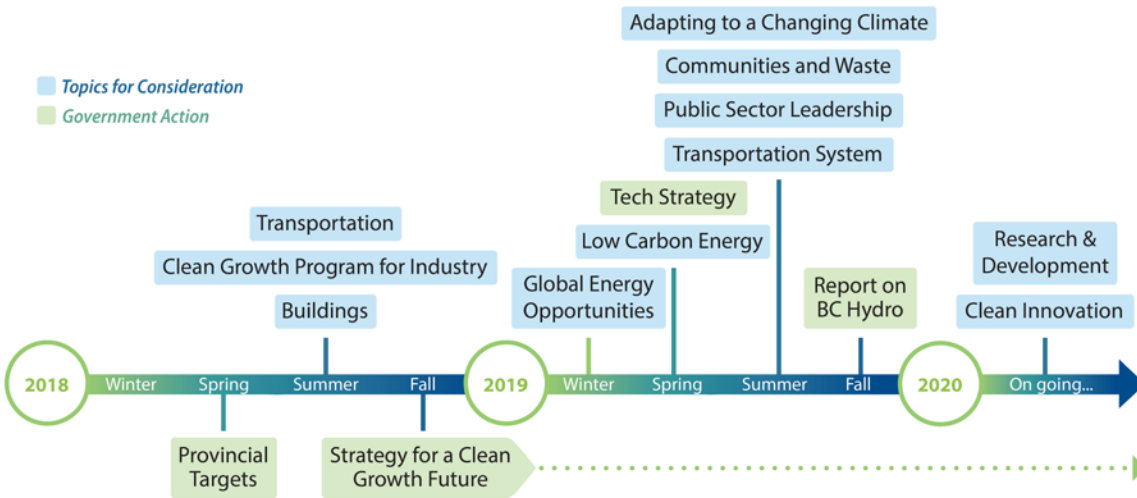
**INTENT**

The purpose of this report is to provide Council with background on the Clean Growth Intentions Papers released by the Province in July 2018, and seek direction to prepare the City's response to the Province.

**BACKGROUND**

In July 2018, the Province formally initiated engagement to support the development of a long-term Clean Growth Strategy. The Clean Growth Strategy is intended to combine action on climate change with work underway on the Province's energy roadmap to drive sustainable economic growth with cleaner energy and fewer greenhouse gas (GHG) emissions. The Province intends to integrate the resulting strategy with the Province's Economic Development Strategy, #BCTech Strategy, and work done by the Emerging Economy Task Force. Alongside other stakeholders and the general public, the City has been asked to provide feedback on three initial Clean Growth Intentions Papers: Clean Transportation; Clean, Efficient Buildings; and, A Clean Growth Program for Industry. Figure 1 presents the planned development process for the Clean Growth Strategy.

## Building a clean growth future for B.C.



**Figure 1** Overview of the Province’s planned Clean Growth Strategy development process, with expected future engagement opportunities in blue. (Source: Towards a Clean Growth Future for B.C.: Introduction, 2018)

The City has established climate change mitigation and adaptation as a critical long-term priority, and has set a year 2050 GHG reduction target of an 80% reduction in GHG emissions per capita relative to 2007. Achieving this target will require significant GHG reductions from buildings, transportation, industry, and waste. As recognized in the City’s 2013 Community Energy and Emissions Plan, achieving the City’s GHG target requires efforts beyond the control of the City, including policies issued under the authority of the provincial and federal governments, as well as actions taken by utilities and private industry.

Therefore, the City’s success in reducing community-wide GHG emissions will depend, in part, on the actions taken by the Province. This is particularly true for transportation and existing buildings (as opposed to new construction), two of the City’s largest GHG emissions sources.

### DISCUSSION

Staff have reviewed the three Clean Growth Intentions Papers and recommend providing the following feedback to the Province, in the form a written response to the Minister of Environment and Climate Change Strategy. Consultation for the feedback was done jointly with Engineering and Planning Departments at the City. Feedback is organized under the name of the relevant intentions paper, which are attached at the end of this report.

### Towards a Clean Growth Future for B.C.: Introduction (Appendix “I”)

Staff recommend the Province develop and share a governance framework to provide greater clarity on proposed plans and potential impacts on climate action. With the information currently provided, it is difficult to determine how the Province plans to develop and start implementation on the Clean Growth Strategy, and the expected role of local governments. The governance framework should address roles, timelines, stakeholder engagement opportunities, key stakeholder implementation roles, regular collaboration, and strategy development, as well as processes for ongoing review and revision. A greater understanding of these items will provide local governments and other important stakeholders with a greater understanding of how to consider specific issues and allocate resources to a successful Province-wide strategy.

Staff also recommend to support an emphasis on local governments as partners in the Province's Clean Growth Strategy. The Province can use this opportunity to reinvigorate the BC Climate Action Charter, and to steward local government leadership into a consistent framework that identifies complementary actions that local governments can take on climate and energy. Beyond these items, staff support the Province's proposals to direct carbon tax revenues to climate change mitigation initiatives, minimize carbon leakage through industry policy and programs, and provide a comprehensive training plan to ensure skills keep pace with the growth of BC's low-carbon economy and clean tech sectors.

### **Clean Transportation (Appendix "II")**

Clean Growth Intentions Paper for Clean Transportation describes a number of actions for cleaner vehicles and cleaner fuels that should be supported. Moving forward through this process, staff recommend that these actions be considered alongside a greater focus on the importance of transit, active transportation, and other non-single occupancy vehicle solutions to reduce emissions. The City of Surrey will experience significant population growth in the coming decades. From a transportation perspective, there are many challenges and opportunities for a city that is expected to welcome an additional 300,000 residents over 30 years, and integrated land use and transportation solutions will be foundational. Although Surrey expects to see more growth than most BC local governments, the integration of land use and transportation planning and policy to achieve deep GHG reductions is just as important for other communities across the Province. From the City's standpoint, integrated land use and transportation planning, policy, and programs should be priority items to ensure communities are sustainable, connected, and efficient. This is also an area where municipalities can play a valuable partnership and implementation role.

### Zero-Emission Vehicle (ZEV) Mandate

Staff Recommendation: Support

A ZEV mandate requires automakers to supply a minimum percentage of zero emission vehicles for the light duty vehicle market. As in California and elsewhere, studies indicate that ZEVs are critical for the Province to achieve its 2050 GHG target. This is certainly the case in Surrey, where more than half of GHG emissions can be traced back to transportation. With limited influence over passenger vehicle supply and adoption, Surrey will rely heavily on the Province to shift passenger vehicles to ZEVs, a critical part of the City's strategy to achieve deep GHG reductions. A ZEV mandate distributes some of the transition costs and efforts to industry, thereby increasing the effectiveness of any other ZEV policy or program.

In designing the ZEV mandate, the City encourages the Province to develop a credit system that ensures sufficient ZEVs are supplied to BC customers to sufficiently reduce GHG emissions. In particular, the credit system should properly value true ZEVs (i.e. battery and hydrogen fuel cell electric vehicles where the fuel is produced from zero-emission sources) versus more transitional ZEVs (e.g. plug-in hybrid electric vehicles). Through long-term modelling, the Province can determine the minimum percentage of ZEVs needed to reach the 2030 and 2050 GHG targets, and work backwards to determine annual credit requirements.

Staff support the notion to couple the ZEV mandate with a ban on Internal Combustion Engine (ICE) vehicles, but recommend targeting 2035. This earlier time horizon will ensure there is a full vehicle lifespan between the ICE ban and 2050 GHG target, thereby increasing the likelihood of achieving the necessary GHG reductions. An ICE ban alongside the ZEV Mandate would send clear signals to the automotive industry by providing adequate time to plan their distribution strategies for selling sufficient ZEVs in BC.

#### Ensuring Hydrogen Fuel is Zero Emissions

Staff Recommendation: Tentative Support

Hydrogen-fuelled passenger and commercial vehicles could play a role in reducing GHG emissions from transportation, but only if hydrogen fuel is produced from zero- or near zero-emission sources. Although hydrogen can be produced by using electricity to split water molecules, this pathway is more expensive and most hydrogen is produced from natural gas. Where hydrogen-fuelled vehicles are seen as part of the transportation solution, staff recommend that the City urge the Province to focus resources on developing local, zero-emission hydrogen fuel. Without zero-emission hydrogen fuel, available and affordable for transportation activities, efforts to increase the adoption of hydrogen vehicles may not ultimately lead to significant GHG reductions. Given the state of technology development in this space, the Province should focus first-and-foremost on battery electric vehicles, and monitor developments in hydrogen for potential breakthroughs outside of the Province.

#### ZEV Incentives

Staff Recommendation: Support

Staff support the proposal to provide continued and new financial and non-financial incentives until ZEVs make up at least 5% of all new light-duty vehicles. In practice, the proposed phase-out threshold of 5% of new vehicle sales should be further researched and adapted as demand and the market grow. Setting a minimum phase-out threshold now, however, will help provide certainty to industry, local governments, and consumers regarding government ZEV support. This should be set to at least 5%. The phase-out threshold should apply to both financial and non-financial incentives, but incentives should necessarily be phased out at the same time; Surrey recommends research and program analysis throughout implementation to determine the best approach.

In terms of specific incentives, staff support the Province's proposals. Alongside the existing rebate and the BC SCRAP-IT program incentive, a PST exemption would make ZEVs more affordable for middle class consumers. For non-financial incentives, staff recommend focusing on highly visible and desirable items, both to make vehicles more attractive to those that otherwise might not consider them, and to increase ZEV awareness amongst the general public.

#### Expanding Public Electric Vehicle (EV) Charging Infrastructure

Staff Recommendation: Support

Staff support the Province's intent to continue investing in public EV charging infrastructure. Charging infrastructure is critical to overcoming real and perceived barriers to EV adoption, particularly range anxiety and perceived technology risk.

The City of Surrey has made significant improvements to public charging availability within the City to meet current demand and in anticipation of continuously growing EV ownership in Surrey. Public charging usage in Surrey has increased approximately 900% since 2013, and with currently 20 publically-accessible chargers installed, the number of chargers is expected to grow to as many as 53 by the end of 2018.

#### Supporting Home EV Charging

Staff Recommendation: Support

Although public charging infrastructure plays a key role in the transition to ZEVs, studies show more than 80% of all charging occurs at home. The many individuals without access to home charging therefore face a significant barrier to adopting a battery-electric vehicle. To support EV adoption, the City should encourage the Province to focus resources on overcoming existing barriers to charging in existing homes. More specifically, policy, guidance, and red-tape reduction should target multi-unit residential buildings (MURBs) and residents without garages equipped for charging.

#### Increase Low Carbon Fuel Standard (LCFS) Requirement

Staff Recommendation: Support

Staff support increasing the requirement for fuel suppliers to decrease the carbon intensity of fuels they supply. However, staff recommend increasing it to 20% by 2030 and, later, reducing it to 15% if the policy is deemed technologically nonviable, infeasible, or not necessary to hit the GHG reduction target. At least one local modelling study suggests the Province will have a difficult time achieving its GHG reduction target even with a 20% LCFS. Setting a 20% requirement now helps ensure industry starts out focused on a greater reduction in fuel GHG intensity. Should the policy be nonviable, infeasible, or unnecessary, government and industry resources can be shifted to alternative, higher impact items in the 2020s.

#### Support for Active Transportation and Transit

Staff Recommendation: Support

Although the Paper makes good suggestions supporting moving towards using cleaner vehicles, we should not lose sight that passenger vehicles contribute to congestion and a large proportion of the population cannot afford a zero-emission vehicle. The City should encourage the Province to prioritize actions related to integrating transit and land use planning, and to explore further strategies for helping communities achieve mode shares dominated by transit and active transportation. A substantial increase is required in Provincial cost-share funding for active transportation. Currently, Surrey has a 70-year backlog on sidewalk improvement requests at current funding levels. Cyclists are almost eight times likely to be injured per trip in Surrey than Vancouver. Dramatic safety improvements are needed to support both pedestrian and cyclists and this would have other significant benefits to public health outcomes. Furthermore, the Province needs to determine what role ride-hailing could play in reducing overall transportation GHGs, and develop a policy framework to bring this additional option into the transportation system. Staff recommend each of these items be considered in the development of future Intentions Papers and the Clean Growth Strategy.

## **Clean, Efficient Buildings (Appendix “III”)**

The recommendations provided in the Clean, Efficient Buildings paper include several key mechanisms required to sufficiently reduce GHG emissions from the Province’s building stock to achieve the 2050 GHG target. Staff support these efforts in general and recommend a continued focus on overlapping social and economic priorities. Further, the City should encourage the Province to seek and develop opportunities to simultaneously address climate change adaptation and other important safety issues, such as overheating and seismic safety. Supporting multiple, overlapping objectives may yield more and more cost-effective opportunities to reduce building emissions.

### Building Energy Labelling

Staff Recommendation: Support

The City expects building energy labelling to be a key mechanism to driving changes in homeowner behaviour and homebuyer decision-making in support of reducing energy consumption and GHG emissions. On July 2018, Council formally adopted a home energy labelling requirement for new eligible Part 9 residential buildings (Corporate Report R179; 2018). Beyond influencing consumer decision making, the labelling requirement will help the City build a database of new building energy systems and performance. This will allow City staff to evaluate the effectiveness of Surrey’s Step Code approach and make adjustments over time. In the future, the City plans to investigate how a labelling requirement could be expanded to include existing buildings as well. Existing building data would be invaluable in designing targeted, cost-effective building retrofit strategies and programs. A home energy labelling requirement would be more effective and cost-effective, and less administratively burdensome for industry and government as a whole, so staff are supportive of this Provincial consideration. Staff recommend the Province review the City of Portland’s home energy labelling requirement for lessons on how to do this successfully.

In terms of regulatory design, staff recommend focusing on residential buildings for which a label can already be produced (e.g. EnerGuide Label). In addition to a requirement for new buildings, the labelling requirement should be triggered at the time of sale (and perhaps rental). The label should then be disclosed with other key home information via the Multiple Listing Service (MLS). Portland, Oregon, recently enacted a Home Energy Labelling Law that includes both these trigger and disclosure requirements whereby homeowners must pay for an energy assessment at the time of sale and make the results publically available to prospective buyers via MLS. This approach can allow for the costs of energy and emissions-related upgrades to be included in mortgage financing, potentially lowering an upfront cost barrier for homebuyers and generating more energy performance retrofits initiated by homeowners, rather than through government programs.

### Building Energy Benchmarking

Although not mentioned in the intention papers, the City should strongly urge the Province to establish a building energy benchmarking requirement for eligible Part 3 buildings (both commercial and residential), as the City of Surrey did in July 2018. Building energy benchmarking will be a critical tool in achieving sufficient GHG reductions from the existing building stock. In recent years, building energy benchmarking regulation has been adopted by local and state governments across the US and is of rising interest to Canadian jurisdictions.

Staff analyzed the impacts of a benchmarking regulation for the City of Surrey and suggest that a building energy benchmarking regulation would likely result in 4,400 to 10,400 tonnes of CO<sub>2</sub> reductions per year, and over \$2.5 million a year in energy bill savings for the community. Furthermore, access to building energy benchmarking data would allow municipalities (and the Province and utilities) to make more informed decisions with regards to policies and programs to promote energy and emissions reductions within their communities. Data from a building energy benchmarking regulation is expected to benefit the City of Surrey's water conservation, district energy, and economic development initiatives as well. Although Surrey's current requirement only applies to new buildings, the City plans to investigate extending this to existing buildings over time.

#### Existing Building Data Management System

With data collected via potential labelling and benchmarking requirements, although not mentioned in the intention papers, staff recommend establishing a data management system that centralizes all available data. This system should be available to the Province, local governments, and utilities, to ensure these critical stakeholders are not held back by a lack of valuable data.

#### Existing Building Code

Staff Recommendation: Support

Staff support the development of an Existing Building Code in alignment with the Federal Code expected in 2022, and recommend that the Province seek to address climate change adaptation through this Code, in addition to energy use and GHG reductions. In particular, the City is concerned about overheating risks and a growing need for space cooling. Assessments by Provincial staff show that current temperatures are already higher than what the Code requires the buildings to be designed for, indicating growing risks of overheating and increased demand for inefficient, off-the-shelf air conditioning units. Most new buildings, and many existing buildings, will still exist in 2050, when temperatures are projected to be significantly higher. This mismatch may pose serious health risks and, with inefficient air conditioning units, significantly increase the portion of household budget spent on energy. Simultaneously tackling climate change mitigation and adaptation in the Existing Building Code will likely lead to better, more cost-effective outcomes overall.

#### Financial Incentives for Existing Buildings

Staff Recommendation: Support

Broadening the scope and level of financial incentives for existing homes is critical to promote the growth of the annual building retrofit rate required to reach both the City's and Province's 2050 GHG reduction target. The Province is currently taking steps to expand and target the portfolio of incentives to decarbonize space heating and cooling through an upcoming temporary increase in heat pump incentives. When fuelled by natural gas, space heating is typically one of a building's top GHG emissions sources. The City should applaud the Province for incentivizing heat pumps, a highly efficient space heating and cooling technology powered by the Province's low-emission electricity grid. Domestic hot water is typically the other top source of a building's GHG emissions, and can also be addressed through electricity-powered heat pumps or boilers. Moving forward, the City encourages the Province to continue expanding and delivering incentives and programs that decarbonize these critical building systems.

## Regulating Carbon Intensity

### Staff Recommendation: Support

The City should strongly urge the Province to update the building regulatory framework to directly target the GHG intensity of the building stock. The current framework, including the Energy Step Code, focuses solely on energy. It thus does not guarantee GHG emissions reductions from new buildings, even at higher Steps. Furthermore, the energy-only focus does not recognize the decarbonization benefits provided by networked solutions, such as low-carbon district energy. As time progresses and development continues, the Province and local governments may find that the GHG intensity of new buildings is too high to achieve long-term GHG targets. If GHG targets are then to be achieved, governments may need to make costly investments to retrofit these relatively new building energy systems.

The City should support regulatory requirements for low- and zero-emission buildings as well as the tying of incentives to GHG emissions reductions. Staff concur that further consultation is required to determine the appropriate ways in which to do this and the City should indicate its interested in being part of those consultations. Further, the City should encourage the Province to consider introducing an alternate compliance pathway for buildings connecting to low-carbon district energy within the Energy Step Code.

## Training and Certification

### Staff Recommendation: Support

The capacity of the local building industry will be a primary determinant in the speed at which the Province can move towards affordable, efficient, low-emission buildings. Staff acknowledge the ongoing work being done by the Province, BC Housing, and others to deliver training and education programs in support of the Energy Step Code, and encourage the Province to continue these programs for several years. From the City's ongoing engagement with industry, utilities, and other local governments, priority audiences in short-term Step Code success include builders, airtightness testers, construction trades, and building inspectors.

Moving forward, the City expects existing buildings to be the most difficult sector in which to achieve sufficient GHG emissions reductions to meet both the City's and Province's 2050 GHG targets. Experiences in other jurisdictions indicate that both training and administrative efforts can help simplify the retrofit process for both industry and building/homeowners. As such, staff support the further development of the concept of a Certified Retrofit Professional, and the associated normalization of work and expectations in this growing sector.

## **A Clean Growth Program for Industry (Appendix "IV")**

The recommendations proposed in this paper will set guidelines and incentives to shift major industrial emitters to more energy efficient, low-emission operations. Surrey is home to a large industrial area that does not include any major industrial emitters. Staff agree that the major industrial emitters should be the primary initial focus for GHG emissions reductions, but the City can encourage the Province to extend their focus in the future to include other industrial facilities that could contribute to needed GHG reductions from this sector. Furthermore, in developing the strategy to reduce GHG emissions from industry, the City can recommend that the Province conduct initial assessments to evaluate the following technical viability and investment feasibility of current solutions, along with industry organizations' willingness-to-change.



In doing so, the Province can better determine how to allocate resources and whether more cost-effective GHG reductions might be achieved through a focus on non-major emitters as well.

## **SUSTAINABILITY CONSIDERATIONS**

Completing the City's response to the Province's Clean Growth Intentions Papers, based on the content of this report, supports the following Desired Outcomes (DO) and Strategic Directions (SD) of the Sustainability Charter 2.0:

- Built Environment & Neighbourhoods DO 2: Surrey is well-connected within the city and to the rest of the region by fast and efficient public transit and active transportation for all ages and abilities.
- Built Environment & Neighbourhoods DO 9: All aspects of planning, design and construction include climate change impacts, GHG mitigation, adaptation, and resiliency strategies.
- Buildings and Sites DO 13: Buildings are healthy and energy resource efficient.
- Infrastructure DO 7: Per capita emissions are low and align with global, national and provincial GHG reduction targets.
- Infrastructure SD 5: Work collaboratively with diverse stakeholders to lower GHGs and improve air quality.
- Buildings and Sites SD 13: Continue to support low-carbon district energy networks.
- Buildings and Sites SD 14: Promote and strengthen high quality design and healthier, more energy efficient buildings in public and private development.

## **CONCLUSION**

With the Province's launch of the Clean Growth Strategy in Fall 2018, all local governments and industry stakeholders have the opportunity to shape BC towards the Province's goals for climate action, clean energy and sustainable economic growth. This report outlines feedback on the initial three BC Clean Growth Intentions Papers, which can form the basis of a City of Surrey response to the BC Minister of Environment and Climate Change Strategy.

Based on the above discussion, the Parks, Recreation & Culture Department recommend that Council direct staff to prepare a response to the B.C. Minister of Environment and Climate Change Strategy regarding the Clean Growth Strategy Intention Papers, based on the content of this report.

Laurie Cavan,  
General Manager,  
Parks, Recreation & Culture

Appendix "I" - Towards a Clean Growth Future - Introduction  
Appendix "II" - Intentions Paper - Clean Transportation  
Appendix "III" - Intentions Paper - Clean, Efficient Buildings  
Appendix "IV" - Intentions Paper - A Clean Growth Program for Industry

# TOWARDS A CLEAN GROWTH FUTURE FOR B.C.

Introduction

# BUILDING A CLEAN GROWTH FUTURE FOR B.C.

Climate leadership means building a strong, sustainable, and innovative economy that works for now, for the future and for people. Clean growth will improve our quality of life – today and for generations to come. It promotes ideas and approaches that can generate greater prosperity and an economy that works for more people while at the same time providing climate change solutions.

Already, global markets are shifting as people demand better solutions. The shift to clean growth is moving to the forefront of government and business decision-making as more and more people begin to see the evidence that actions to cut greenhouse gas (GHG) emissions can be win-win. And B.C. is renewing its commitment to stimulating long-term, sustainable economic prosperity throughout the province by making the most of our low carbon energy and driving down emissions.

We're working for a future where clean energy powers our homes, businesses and vehicles; where we use energy more efficiently; where B.C. consistently attracts new investment; where we have a wider range of job opportunities; where our natural resource industries have the smallest possible environmental footprint; where we work in full partnership with Indigenous peoples; where our clean exports make a difference in the lives of millions; and where we all enjoy cleaner air and a healthier natural environment – important for public health as well as the economy.

To guide this work, we are developing a long-term clean growth strategy for release in the fall of 2018 and inviting British Columbians to share their ideas.

The strategy will be a living document, continually updated and expanded as new opportunities arise. It will build on B.C.'s strong foundation – our legacy hydro assets, our abundant clean resources, our broad based carbon tax and experienced sectors across our economy that understand that their best competitive advantage is to do things better than anywhere else in the world. Our strategy will begin laying out a framework for a clean growth future and a pathway to meeting our emission reduction targets.

Initially, actions will focus on transportation, buildings and B.C.'s Clean Growth Program for Industry. The province is also developing plans to reduce methane emissions in the oil and gas sector and promote the further electrification of industries. Consultations on other topics, such as communities, global energy opportunities, low carbon energy and adapting to a changing climate will begin in 2019 – as we move forward with actions already identified and start to see their benefits. Across

## 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.

all sectors, the strategy will emphasize the critical importance of clean energy, providing better access for industries, transportation systems and communities, and the unique role our resource industries can play in turning that success into global leadership.

In short, our clean growth strategy will integrate the province's goals for climate action, clean energy and sustainable prosperity, recognizing that 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 solutions, technologies and expertise and create a global brand and be recognized for our efforts and creativity.

Not too long ago, some people would have dismissed this idea, believing that GHG emission reductions would only come at the expense of economic growth. Real world experience has proven quite the opposite. For example, Sweden, Denmark, the UK, and California have reduced their emissions significantly while realizing solid economic growth. And we've seen the same trend here in B.C., since the province introduced North America's first comprehensive carbon tax.

Between 2007 and 2015, our net greenhouse gas emissions declined by 4.7%; at the same time, our GDP grew by 16% – demonstrating that climate solutions and clean growth can go hand in hand.

As our population and economy grow, the need for climate action will only intensify. That's why the government set new 2030 and 2040 targets for GHG emissions in May 2018. Compared to 2007 levels, we're now aiming for reductions of:

- ▶ 40% by 2030,
- ▶ 60% by 2040, and
- ▶ 80% by 2050.

Thanks largely to the legacy of BC Hydro, our province is already a world leading *producer* of renewable power. However 60% of the energy we *consume* across our economy is still fossil-fuel based. This means B.C. must increase the use of lower carbon fuels, including electricity, in key sectors of our economy to achieve these targets – shifting away from fossil fuels by increasing the use of clean, renewable electricity energy sources for transportation, industry, and housing.

Worldwide, more and more jurisdictions are taking similar action, generating new demand for clean energy, technologies, products and services. Analysts expect the global market to be worth more than C\$2.5 trillion by 2022.<sup>1</sup>

British Columbia is well-positioned to take advantage of these opportunities. We have a wealth of human talent, innovation and ambition. We have abundant low-carbon natural resources, including clean electricity; national and international leaders in clean technology; forward-looking climate and energy policies; and a strong, diverse economy.

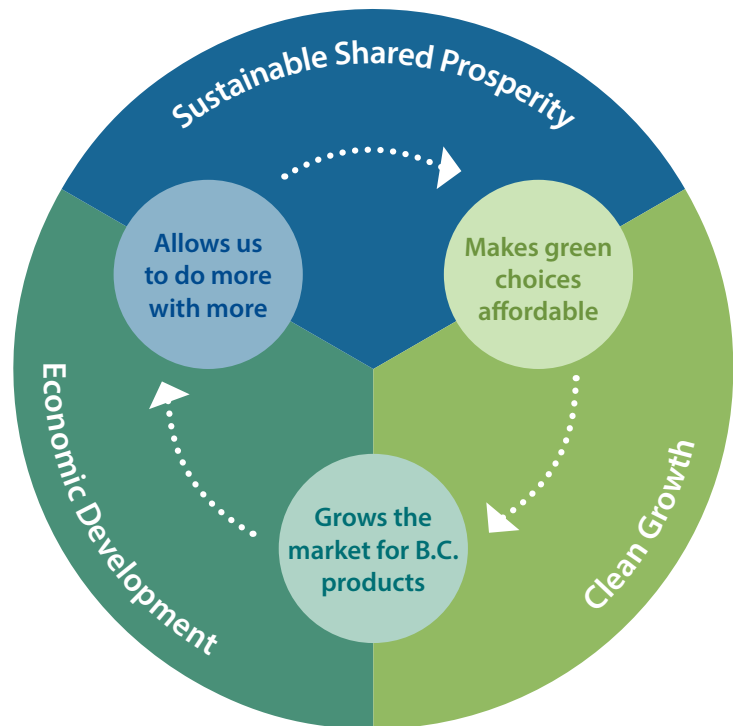
## Growth of the Clean Economy

- ▶ C\$2.5T: Estimated global cleantech market by 2022.<sup>1</sup>
- ▶ C\$105B: Estimated size of the energy efficient vehicle market by 2020.<sup>2</sup>
- ▶ C\$303B: Estimated global investment in energy efficiency in 2016.<sup>3</sup>
- ▶ C\$72B: Projected global market for water treatment technologies by 2020.<sup>4</sup>

These competitive advantages can:

- ▶ help businesses and industries harness the potential of clean growth,
- ▶ support the transition to a low carbon economy,
- ▶ improve our quality of life with lower energy costs and healthier communities, and
- ▶ make B.C. a global leader in exporting cleaner natural resources and products.

This in turn will drive innovation, economic opportunities and future job growth, making green choices more affordable while ensuring B.C. meets its commitments on greenhouse gas reductions and is able to adapt to a changing climate.



## Imagining the Future

What will a clean growth future look like? Over time, we imagine a province where all British Columbians:

- ▶ use energy more efficiently,
- ▶ use clean energy to power homes, workplaces and vehicles; and industries have access to transportation systems that run on cleaner fuels,
- ▶ move easily between home, work and other destinations,
- ▶ live in healthier, more comfortable and energy efficient homes,
- ▶ live in communities with cleaner air, more resilient infrastructure and more resilient ecosystems,
- ▶ have new job opportunities as we leverage technology and innovation to expand trade,
- ▶ produce, brand and export the cleanest natural resources and value-added products to support sustainable development around the world, and
- ▶ benefit from industries that embrace clean growth and serve as the engines of economic prosperity.

Getting there will mean making changes over time, including using lower carbon fuels and finding new ways to reduce the carbon footprint of natural resource industries.

Adapting to a changing climate will also mean adjusting things like community planning, highway construction and tree species selection, based on scientific knowledge about what lies ahead. B.C. will also need a comprehensive training plan to help ensure that skills keep pace with the growth of our new low-carbon economy.

Government will lead by example, meeting the highest standards and demonstrating new clean technologies in its own buildings, fleets and transportation infrastructure. B.C.'s public service has been carbon neutral across its operations since 2010.

# PROCESS AND PUBLIC CONSULTATION

Government will seek public input this summer with the release of three intentions papers:

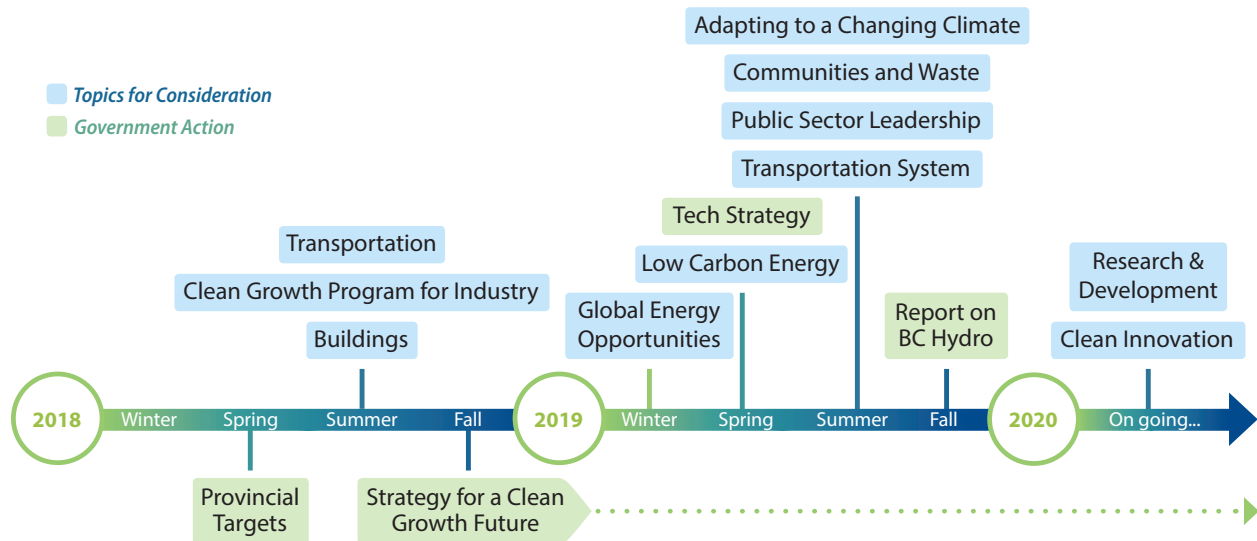
- ▶ Clean Transportation,
- ▶ Clean, Efficient Buildings, and
- ▶ A Clean Growth Program for Industry.

Feedback on the papers and your ideas for a clean growth future will help to shape the strategy, which will be released in the fall of 2018. It will begin laying out a framework for clean growth and a pathway to meeting our emission reduction targets. It will also include early actions in transportation, buildings and industry.

As we begin to implement the strategy, we will continue to seek public input in areas such as waste, low carbon energy, global energy opportunities and adapting to a changing climate, as illustrated below. More consultations in areas such as research and development and clean innovation will follow in the future. This approach will allow us to continually update and expand the strategy as new ideas are presented and more opportunities arise.

We will 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.

## Building a clean growth future for B.C.



*We encourage everyone to take part in these and upcoming engagement opportunities.*

*Visit [EngageBC](#) to learn more.*

# PRIORITY AREAS FOR CONSULTATION IN SUMMER 2018

## Clean Transportation

A central element of clean growth is changing the way we move people and goods. Almost 40% of climate pollution in B.C. is from the transportation sector, so taking action here has great potential to deliver lasting results.

We already have technologies supporting low- and zero-emission transportation for both personal and heavy-duty uses. We're investing in urban transit. And we're seeing good results from initiatives such as the B.C. Low Carbon Fuel Standard, and the Clean Energy Vehicle program. The transportation intentions paper proposes further measures to build on these programs.

## Clean, Efficient Buildings

Research and development, training, incentives and updated regulations are all tools that government can use to foster clean growth in the building sector. This could include support for retrofitting existing buildings, training key professionals and increasing energy-efficiency requirements. Training in this sector could be the starting point for a comprehensive training strategy that spans the range of sectors involved in clean growth. Over the coming years, government will also develop new funding and programs to cut emissions from residential, commercial and public sector buildings.

## A Clean Growth Program for Industry

Clean growth can happen in every sector of our economy. Our traditional industries have been on a cleaner path for years, reducing the carbon intensity of their operations through efficiencies, technology improvements, electrification and retrofitting. Rio Tinto, which operates an aluminum smelter in Kitimat, is among the partners working to commercialize carbon free smelting. Electrification continues to grow in the natural gas industry. And concrete plants in Canada are using new technology to reduce their product's carbon footprint.

Our traditional industries are also key for a cleaner future. For example, Canada is home to 14 of the 19 minerals needed for building solar panels and natural gas will fuel much of the developing world for decades to come.

B.C.'s carbon tax has encouraged cleaner choices since its introduction in 2008, but not all jurisdictions have a price on carbon. To help level the playing field, the Clean Growth Program for Industry will direct a portion of carbon tax revenues from industry to support greenhouse gas emission reductions, innovation and clean growth while reducing "carbon leakage" (where production moves from a jurisdiction with stringent climate policies to a jurisdiction with weak or no climate policy).

## More Measures

The papers released today are the first step in getting your feedback as we build our strategy for a clean growth future. More measures to leverage our climate leadership and clean energy advantages will be proposed in the future.

By integrating our work on economic, climate and energy issues – and engaging with British Columbians as we do so – we will maximize the benefits for all and reduce emissions further across all economic sectors.

## Endnotes

- 1 Canadian Clean Technology Industry Report, Analytica Advisors, 2016
- 2 The Energy Efficiency Market Report, International Energy Agency, 2014
- 3 The Energy Efficiency Market Report, International Energy Agency, 2017
- 4 Water and Wastewater Treatment Technologies: Global Markets, Research and Markets, 2016



# Intentions Paper

# **CLEAN**

# **TRANSPORTATION**

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 support cleaner transportation 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 TRANSPORTATION

Whether it's getting the kids to school or getting goods to market, transportation is part of daily life. B.C. has taken many steps to make it cleaner, from investing in transit and regulating cleaner fuels to providing incentives for zero emission vehicles. These actions are making a difference but we still have lots of work to do. With a fast-growing population and economy, emissions from transportation are rising – up 1% since 2007.

The good news is that our actions on climate change have positioned B.C. as a leader in clean transportation, with a world-renowned hydrogen and fuel cell industry, and growing investments in low carbon fuels and battery applications such as hybrid electric ferries.

As our economy continues to grow, so too will our transportation needs. To encourage emission reductions and clean growth in this sector, the province is proposing a range of actions in three areas:

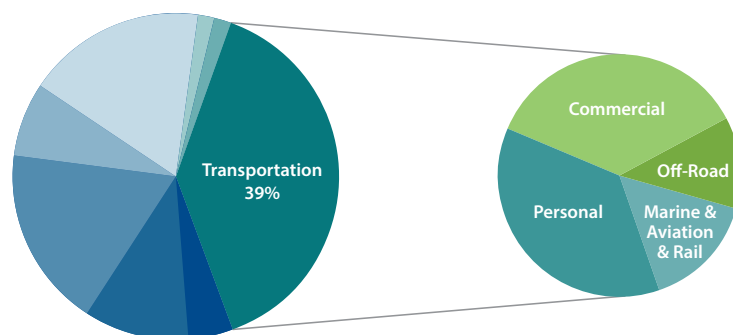
- ▶ Cleaner vehicles,
- ▶ Cleaner fuels, and
- ▶ Cleaner transportation systems.

Ultimately, we envision a province where almost all vehicles have no emissions; where smart infrastructure allows us to move quickly and easily between work, home and other destinations; where we have more and cleaner transportation options; and where British Columbians are finding new solutions we can market to the rest of the world. That may be in the future, but the actions proposed in this paper are real steps in the right direction. British Columbians are already benefiting from good jobs in clean transportation technologies and lower fuel costs when driving electric vehicles.

*How can the province best support continued moves in these directions? We want your feedback on the proposals outlined in the next section.*

### Reducing B.C. Transportation Emissions

Transportation accounts for 39% of B.C.'s greenhouse gas emissions, or 25 million tonnes per year of carbon pollution. B.C. is committed to reducing GHG emissions steadily, over the next few decades.



# 3. PROPOSALS FOR CLEAN TRANSPORTATION

## 3.1 Support for Cleaner Vehicles

Zero emission vehicles (ZEVs) are becoming increasingly common as more and more drivers discover their benefits. Fuel costs are up to 80% lower, compared to conventional vehicles. And greenhouse gas emissions are reduced substantially.

Zero emission vehicles include plug-in hybrids, battery electric vehicles, and those powered by hydrogen fuel cells. As these clean technologies improve, ZEVs are becoming more reliable and affordable, especially in a province with abundant clean and competitively priced electricity.

To continue building consumer acceptance, B.C. is focusing on several areas:

- ▶ vehicle purchase price and consumer awareness,
- ▶ charging and refuelling stations, and
- ▶ market capacity to meet demand.

To help address the first two issues, B.C. has introduced the Clean Energy Vehicle (CEV) Program, which offers incentives to offset the costs of zero emission vehicles. It also supports the expansion of charging and refueling infrastructure as well as education and economic development initiatives. As of June 2018, the program has supported:

- ▶ over 10,000 new zero emission vehicles on the road, including direct incentives for over 7,000 vehicles,
- ▶ over 1,300 residential and public charging stations including 64 DC fast charging stations, and
- ▶ the first of five planned hydrogen fueling stations.

### Potential Action for Cleaner Vehicles

- ▶ Incentives for purchase of zero emission and specialty use vehicles
- ▶ New supply requirement for ZEVs
- ▶ Supports for ZEV infrastructure:
  - more charging and fueling stations
  - preferential parking and access
  - enabling charging stations in buildings

### Leading Jurisdictions

Like B.C., Norway is rich in clean, renewable hydroelectricity. And now, more than half of new vehicle sales in Norway (52% in 2017) are electric or hybrids, thanks to an innovative combination of substantial tax reductions and other incentives on ZEVs.

California is the North American leader in ZEV adoption, and has a combination of ZEV supply requirements on automakers and extensive consumer programs that include investments in incentives, infrastructure and public awareness that, combined, result in more vehicle choice for consumers at lower overall costs. This has also stimulated jobs and economic growth in a cleaner automotive sector in California.

To build on this momentum, the province is proposing to:

### **Increase investments in zero emission vehicles**

- ▶ Under this proposal, incentives could continue under the CEV Program until ZEVs make up 5% of all new light-duty vehicle sales. Light duty vehicles include SUVs, light trucks and passenger vehicles under 4500 kg. Once the 5% target is reached, incentives would be phased out. The price gap between ZEVs and gasoline vehicles is anticipated to close in the mid-2020s.
- ▶ Zero emission vehicles already have access to high occupancy vehicle lanes regardless of the number of passengers in the car. Additional non-financial incentives, such as preferential parking and access, could be considered.
- ▶ The province could continue to support our growing charging and refuelling infrastructure allowing zero emission vehicles to travel throughout B.C. safely and conveniently.
- ▶ The province could take measures to encourage charging station installations at businesses and other buildings, helping to expand our clean vehicle infrastructure.
- ▶ The province could consider incentives such as a PST exemption on zero emission vehicles.
- ▶ The Specialty Use Vehicle Incentive Program, which supports the purchase of clean heavy duty vehicles, buses, transport trucks, motorcycles and heavy equipment, could be expanded. It could also support electric charging and hydrogen fuelling infrastructure at ports, service yards and truck stops.

### **Gas and Diesel Engines Being Phased Out**

Seven countries have either announced a future ban of the sale of new gasoline and diesel cars, or targeted 100% of vehicle sales to be clean energy vehicles.

- ▶ Ireland, Netherlands, Germany and India by 2030
- ▶ Scotland by 2032
- ▶ France and UK by 2040

Shell, one of the world's biggest oil and gas companies, has backed calls for the UK to bring forward its 2040 ban on new gas and diesel car sales, noting it would provide clarity and make it easier for companies like Shell to make investment decisions and also shift consumer attitudes.

The Clean Energy Ministerial, of which Canada is a member, has endorsed a 30% target by 2030. Some regions such as Quebec, California, and China also have zero emission vehicle requirements. In fact, 10 other states have signed on to the California mandate, such that 30% of the U.S. market is now subject to the ZEV mandate.

## Introduce a zero emission vehicle mandate

B.C.'s CEV Program is helping to increase demand for zero emission vehicles. Under the proposed ZEV mandate – similar to Quebec's and 30% of the US vehicle market – B.C. would require that automakers supply zero emission vehicles for the light duty vehicle market. This would help meet increasing demand while providing more choices for clean transportation.

Starting in 2019, B.C.'s proposed supply requirement for ZEVs would require automakers to report on their sales.

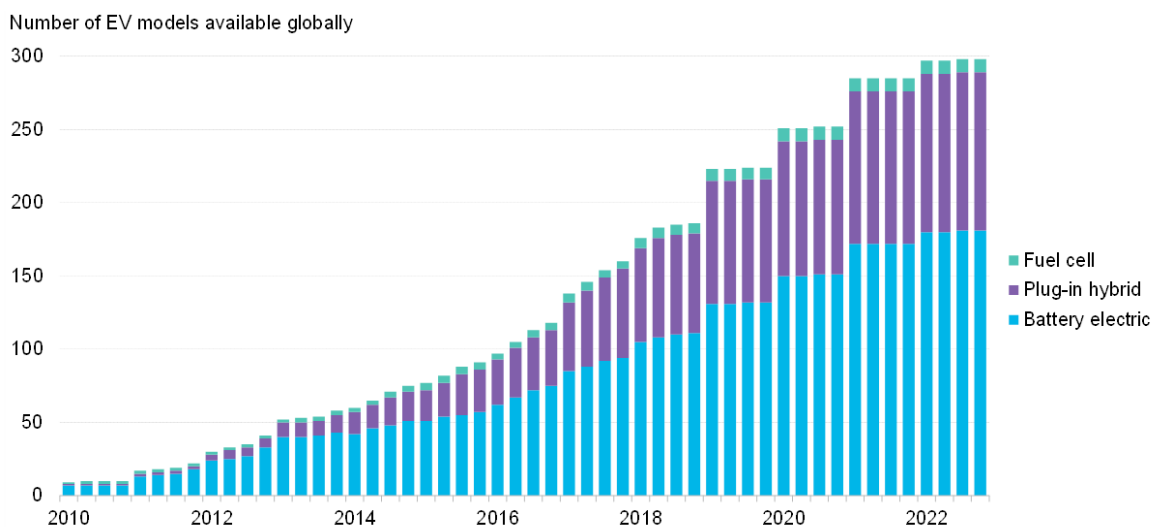
Then in 2020, automakers would have to meet targets for new vehicle sales. These could increase annually, reaching at least 10% in 2025 and 30% in 2030, as ZEVs become increasingly common and affordable, and convenient charging options become more available.

By 2040, B.C. could ban the sale of new gasoline and diesel light duty vehicles.

### The Number of EV Models is Rising

Zero emission vehicles are rising to the top of B.C. drivers' wish lists as every year they offer more choices, longer range and better value.

Take battery electric vehicles as an example: the number of models with longer range and affordable prices has grown exponentially. More than 30 options are available in B.C., ranging from small cars to SUVs, and the proposals in this paper are designed to support an even wider range of affordable clean choices for consumers.



Source: Bloomberg New Energy Finance, Marklines, press releases from automakers

0 April 10, 2018

Bloomberg  
New Energy Finance

## 3.2 Support for Cleaner Fuels

Using lower-carbon fuels in our vehicles is one of the easiest ways to make transportation cleaner. For consumers, it is literally effortless: you fill your tank the same way you always have, but generate less carbon pollution.

B.C.'s Low Carbon Fuel Standard, which ensures a supply of cleaner fuels, has been in place since 2008, encouraging suppliers to use methods such as blending renewable with traditional petroleum-based sources to lower carbon intensity.

Under current regulations, by 2020, fuel suppliers must decrease the average carbon intensity of their fuels by 10%, compared to 2010 levels. As part of our clean growth strategy, the province is proposing to increase that requirement to 15% by 2030. The government could consider raising it further to 20% when they review the standard again in 2020.

A number of actions could be taken between 2020 and 2030 to support this change in the Low Carbon Fuel Standard. These include:

- ▶ tax exemptions for blends of renewable fuels,
- ▶ support in developing the commercial production of renewable and low carbon fuels in the province,
- ▶ programs for industry and fuel suppliers to promote investments in infrastructure such as renewable fuel blender pumps and storage tanks, and
- ▶ a centre of excellence for biofuels that leverages the work of the BC Bioenergy Network.

In the long term, we can produce more low-carbon fuels in B.C. and advance related clean tech industries. Commercial-scale production of clean fuels will require continued investment and research, with a renewed focus on clean synthetic fuels and converting organic materials such as forest and agricultural residues into renewable crude oil and natural gas that can be processed in B.C.

### Potential Action for Cleaner Fuels

- ▶ Increased Low Carbon Fuel Standard
- ▶ Tax exemptions for renewable blends
- ▶ Support for commercial production
- ▶ Programs to promote investment in fuelling infrastructure
- ▶ Centre of excellence for biofuels

### Long Range Signals Drive Change

Fuel suppliers in B.C. are adjusting to the Low Carbon Fuel Standard and making investments in their infrastructure.

For example, Parkland Refining is making investments in its Burnaby refinery allowing it to process renewable, organic feedstock along with traditional crude. This will create gasoline and diesel that meet quality standards while lowering the carbon intensity of all the refinery's products.

### 3.3 Cleaner Transportation Systems

In addition to supporting the use of cleaner fuels and cleaner vehicles, B.C. is developing a plan to reduce emissions from transportation systems. It's complex work, spanning our interconnected network of streets, highways, ports, railways, airports, ferries, sidewalks, bike lanes, transit routes and more.

Because this work is so far-reaching, the province is taking time to gather more data, analyze results and engage with stakeholders before proposing specific actions. Following are some options to be considered further:

- ▶ Expanding and exploring ways to make vehicle use more efficient, such as vehicle co-ops, carpooling supports like our park and rides, and autonomous vehicles.
- ▶ Continuing investments in transit to help reduce emissions and congestion, including support for transit projects in the Lower Mainland and more transit friendly communities throughout B.C.
- ▶ Investing in clean transportation infrastructure that is inter-connected, providing easy access to cleaner options and reducing demand for vehicles. This would involve partnering with other levels of government on areas such as community design and land use, walking, cycling, and transit. It would also involve development of demand-management programs, which focus on finding ways to reduce traffic overall, so people ultimately drive less.
- ▶ Integrating transportation and land use planning for interconnected infrastructure, transit and cycling.
- ▶ Working with local and federal governments to ensure infrastructure is located, designed and maintained to withstand extreme weather. This reduces the potential risk and costs from things like flooding, disruption of work and services – all of which affect our economy.
- ▶ Working with partners to explore innovative design and technology for ferries, such as electric ferries.

#### Potential Action for Cleaner Transportation Systems

- ▶ Supports for increased carpooling, vehicle co-ops and the like
- ▶ Continued investments in transit
- ▶ Integrating transportation and land use planning for interconnected infrastructure, transit and cycling
- ▶ Supports for electric and/or electric hybrid ferries
- ▶ Increased use of clean electricity and technologies in our ports
- ▶ Cleaner and more efficient shipping corridors (e.g. shift to railways, LNG in larger marine vessels)

#### California's Plan for Clean Shipping

California has a Sustainable Freight Action Plan to help ensure it achieves its aggressive 2030 targets, including improving freight system efficiency by 25%, deploying over 100,000 vehicles and equipment that produce zero emissions, and working on pilot projects for advanced technology corridors at border ports and truck corridors. The plan helps to reduce emissions and enhance infrastructure to create efficient and reliable systems for clean growth.



- ▶ Electrifying our ports for heavy-duty cargo equipment and shore power, and using low-carbon technologies for heavy-duty marine applications.
- ▶ Working with utilities to increase incentives to stimulate investments for zero emission heavy duty vehicles as well as infrastructure for lower carbon fuels, such as electricity, hydrogen, renewable natural gas, and LNG to fuel large marine vessels.
- ▶ Examining ways to shift modes of transportation, such as moving more goods by rail. This could be done through policies such as targets, incentives and regulations.
- ▶ Working with stakeholders to make trade and shipping cleaner and more efficient in B.C.

The next series of proposals for transport will address cleaner transportation systems in detail.

### 3.4 Expected Outcomes

The actions considered in this paper would help make B.C.'s transportation sector cleaner and more efficient, while improving air quality and reducing traffic congestion.

The actions also support job opportunities in areas such as public transit, clean vehicle technologies, and alternative fuelling and charging stations while encouraging the development of renewable fuels – all of which B.C. can leverage to meet growing global demand.

In addition, clean energy vehicles cost less to drive. Currently, fuel costs are approximately one-eighth of those for conventional vehicles.

### Victoria's First Electric Transit Bus

BC Transit's first electric bus went into service in Victoria this summer, taking the corporation one step closer to its goal of low carbon fleets. While it's getting people where they need to go, the bus will also be generating data in partnership with BC Hydro and the University of Victoria Sustainability Lab. Along with providing hands-on experience for BC Transit, this pilot project will help decision-makers assess the state of electric bus technologies and their emission reduction potential. BC Hydro's work will focus on potential impacts on the power grid.

Zero-emission bus technologies include battery-electric and fuel cell electric. The former relies on power from the grid while the latter has its power supply onboard, converting hydrogen to electricity. Both have great potential to reduce GHG emissions from transportation and both are naturals for British Columbia: We have clean, renewable energy flowing into our grid, and a world leading cluster of hydrogen and fuel cell companies supporting clean growth and jobs.

### Growth Opportunities in ZEV Market

B.C. is recognized worldwide for its strength in clean tech research and development. With specialized expertise in fuel cell technology, electric battery components and controls, and smart grid infrastructure, we can play a key role in the growing market for zero emission vehicles.

With approximately 200 B.C. companies and organizations active in the ZEV sector, the province is attracting strong investment interest from major auto manufacturers and infrastructure developers as well as serving a growing domestic market. Opportunities exist across the ZEV supply chain, from raw materials to consumer products and transferable technologies and services.

## 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.

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# Intentions Paper

# **CLEAN, EFFICIENT BUILDINGS**

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## 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.

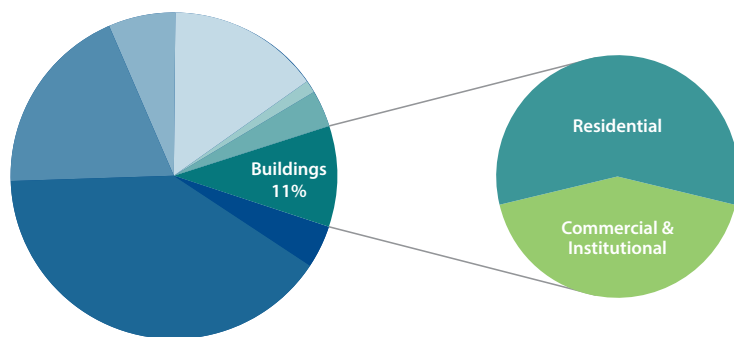
***What specific steps can the province take to encourage more clean, efficient buildings? We want your feedback on five proposed actions outlined in the next section.***

### 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.*

# Intentions Paper

# **A CLEAN GROWTH PROGRAM FOR INDUSTRY**

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 a Clean Growth Program for Industry.

## 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. A CLEAN GROWTH PROGRAM FOR INDUSTRY

B.C.'s industrial sector is deepening its commitment to reducing the sector's environmental and carbon footprint, recognizing that being the cleanest is its best competitive advantage. We can grow our traditional industries and position them for greater success by building on our strengths, including B.C.'s:

- ▶ legacy hydropower infrastructure,
- ▶ wealth of other renewable energy options,
- ▶ stringent regulatory frameworks,
- ▶ partnerships with Indigenous peoples and communities, and
- ▶ commitment to climate leadership.

Opportunities today are extraordinary. The world economy continues to expand, people need more modern energy solutions and a growing list of countries is committing to cleaner air and lower GHG emissions. This is the time to help our industries grow and make them even cleaner, positioning our energy and products as engines of sustainable prosperity.

The clean growth strategy will include a range of tools to help make this vision a reality, from increased access to clean energy to new market opportunities; from our own government development programs to partnering with Canada; from our domestic vision to global leadership.

The first step is this paper, seeking feedback on the Clean Growth Program for Industry announced in Budget 2018. The program partially addresses the competitive impacts of increasing the carbon tax with new incentives and a new fund to offset the cost of making operations cleaner.

The province is also developing plans to reduce methane emissions in the oil and gas sector and promote the further electrification of industries.

Additional actions could be proposed in later consultations as the clean growth strategy continues to evolve. For example, future topics include technology, clean innovation, global energy opportunities and low carbon energy, all of which can play important roles in making our industries cleaner.

## 2.1 Clean Growth Program for Industry

The Clean Growth Program for Industry directs a portion of B.C.'s carbon tax paid by industry into incentives that encourage them to transition to cleaner operations and reduce emissions. It is designed for regulated large industrial operations, such as:

- ▶ pulp and paper mills,
- ▶ natural gas operations and refineries, and
- ▶ large mines

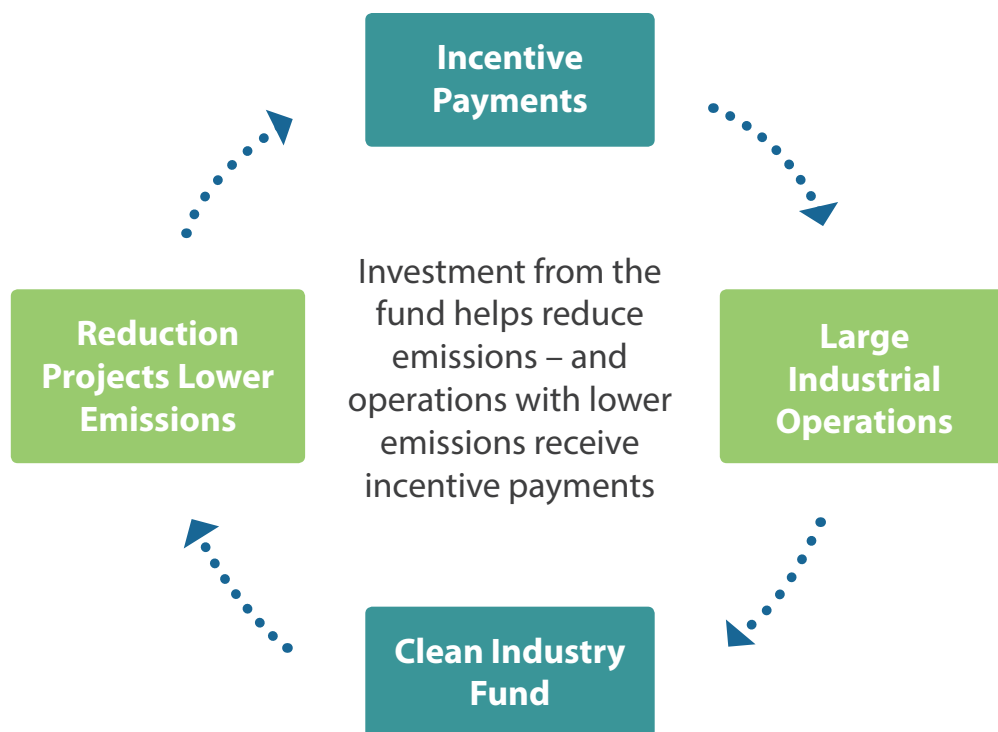
that emit over 10,000 tonnes of GHG emissions per year.

The program is funded by the incremental carbon tax above \$30 per tonne as paid by industry. In 2018, B.C.'s \$30 carbon tax rate was raised to \$35 per tonne, and it is set to increase by \$5 every year until 2021. As the price of carbon rises, the Clean Growth Program will allow industries to receive incentives based on some or all of the carbon tax they pay above \$30 a tonne, depending on their emission levels and reductions.

The program includes two initiatives:

- ▶ an **Industrial Incentive** that reduces carbon-tax costs for industrial operations that meet world-leading emissions benchmarks, and
- ▶ a **Clean Industry Fund** that invests some revenue from industrial carbon taxes directly into emission reduction projects, making traditional industries cleaner and stronger.

These initiatives are closely linked and work together. Each is described in further detail in the sections that follow.





## 2.2 Industrial Incentive

The Industrial Incentive will help B.C. industries thrive in the global market while becoming world leaders in clean growth and emission reduction technologies. It will also help to prevent *carbon leakage* – the movement of industry that competes internationally to places where there’s little or no price on carbon pollution.

It is structured so that the cleaner the industrial operation<sup>1</sup>, the larger their incentive.

Applicants for the incentive will be assessed using two evidence-based benchmarks:

- ▶ An **eligibility benchmark** will determine if the facility or industrial operation receives an incentive. It will be based on reported emissions associated with each operation’s unit of production – referred to as their emissions intensity. For example, a lumber mill might have an eligibility benchmark based on emissions per board foot produced.
- ▶ A **performance benchmark** will determine the amount of incentive an industrial operation receives. This benchmark is based on the emissions intensity of similar products made at the cleanest facilities around the world. The closer a B.C. operation gets to matching that performance benchmark, the larger their incentive will be – potentially reducing their carbon tax costs to the minimum of \$30/tonne.

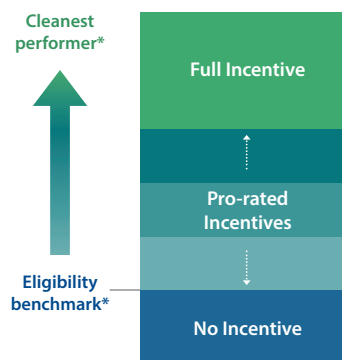
## Leading Climate Action

- ▶ In 2015, independent research estimated that B.C.’s carbon price had helped reduce our fuel consumption and emissions by up to 15%, compared to what they would have been without it.<sup>2</sup>
- ▶ Over 40 national and 25 sub-national jurisdictions have put a price on carbon as of 2017. This number has doubled in the past decade.
- ▶ The federal government has announced a national carbon price that will start at \$10/tonne in 2018, rising to \$50 by 2022.
- ▶ China has taken its first step towards launching an emission trading system (ETS), expected to be the largest carbon pricing initiative in the world.
- ▶ The UK and Sweden as well as Alberta have implemented actions to phase out their coal-fired generation plants.

### B.C.’s Industrial Incentive and How it Works

B.C.’s carbon tax will increase each year by \$5 per tonne of carbon pollution until it reaches \$50 in 2021. To encourage emission reductions, industrial operations in B.C. will have the opportunity to receive an incentive tied to carbon tax revenue. For example, an eligible operation that meets the highest emissions performance benchmark by 2021 would receive the full incentive. This would be equal to \$20 of the \$50 per tonne paid in 2021.

Industrial Incentive Based on Emissions Intensity



\*Benchmark to be revised and updated periodically

1 “Industrial operation” means one or more facilities with activities that generate greenhouse gas emissions under B.C.’s *Greenhouse Gas Industrial Reporting and Control Act*.

2 British Columbia’s Revenue-Neutral Carbon Tax: A Review of the Latest “Grand Experiment” in *Environmental Policy*, Murray and Rivers, 2015.

## 2.3 Clean Industry Fund

The Clean Industry Fund will support investments that reduce greenhouse gas emissions from large industrial operations.

The Fund is designed to work alongside the Industrial Incentive to help B.C.'s industrial operations, such as oil and gas, forestry, mining and smelting, transition to a low-carbon economy. Industrial operations that report their emissions under the Industrial Incentive program will be eligible to apply to the Clean Industry Fund.

Initial investments from the Fund will help facilities implement emissions reduction projects where additional funding is needed to justify the business case. The focus will be on implementing readily-available technology, but the Fund may look to diversify over time, supporting the continued growth of emerging technologies from B.C.'s clean tech sector.

The Fund will be established using the incremental carbon tax revenue from industry that remains after the Industrial Incentives have been provided. It will also be designed to leverage additional investments from facilities and partners, such as industry associations and other government funding programs.

The Fund is expected to issue an Expression of Interest in 2018 and a call for applications in 2019. Initial application requirements will include:

- ▶ a detailed project plan that outlines the technologies or improved processes the facility wants to implement and the amount of emissions they expect to reduce, and
- ▶ a business case for the project with financial details that outline the need for funding support and justify the request for funding.

Government is also considering other Fund parameters, such as:

- ▶ whether multiple facilities or groups of companies can apply for funding of a single project that could reduce emissions across locations,
- ▶ how the Fund can best promote the use of B.C. technology solutions, and the clean tech sector, or
- ▶ whether the Fund is open to all project types or should be subject to specific criteria.

## B.C. Scores High in Clean Tech

The Global Cleantech 100 is a list of companies with the highest potential to make the most significant market impact within a 5-10 year timeframe – according to players in the market. Thirteen Canadian companies made the list in 2018. Seven were from B.C.

That's no surprise as B.C. is home to over 35% of Canada's cleantech firms, employing nearly 14,000 people – including more than 8,500 in B.C. – and generating revenue of \$1.8 billion in 2016.

Along with creating jobs and new innovations, the sector is supporting B.C. industries to become increasingly competitive in the growing clean economy.

## 2.4 Expected Outcomes

The Clean Growth Program for Industry will help our economy thrive, create a clean industry brand for B.C. and help our traditional industries compete in a global market where consumers are demanding cleaner solutions.

The program also provides new opportunities and a larger market for cleantech companies in B.C., as they work alongside industry to increase efficiency and demonstrate cleantech advantages to global markets.

Reimbursing a portion of the carbon tax to industry based on emissions levels will encourage resource efficiency and clean innovation, reducing energy costs and GHG emissions. As our economy diversifies, so will our workforce, ensuring British Columbians continue to have good jobs well into the future.

Ultimately, the Clean Growth for Industry Program will encourage innovation, help our clean technology sector deliver climate solutions to the world and drive clean growth.

### Digitizing Mining – A Made-in-B.C. Solution

MineSense is a B.C.-based company providing real-time, sensor-based ore data and sorting solutions for large-scale mines. These allow users to easily and accurately identify ore in designated waste and waste in designated good ore – improving productivity, saving time and reducing GHG emissions by making overall operations more efficient.

Mitsubishi Corporation recently invested \$4 million US in the company, citing its unique technology and its potential to add significant value to the global mining industry. MineSense continues to expand its reach into key mining regions worldwide.

## Key Considerations

As the Clean Growth Program for Industry is being designed, we are seeking public input on the best ways to implement it. Key areas under consideration include:

- ▶ Ensuring that all industrial operations are able to take advantage of the incentives to help become the cleanest in the world. This could be achieved by allowing facilities that emit less than 10,000 tonnes of emissions annually to opt in, as long as they meet the same emission reporting requirements as larger industries.
- ▶ Ensuring the Industrial Incentive does not weaken the signal from our carbon price to reduce emissions. This could be achieved by continuing to update the performance benchmark – for example, every five years – as the cleanest facilities in the world become even cleaner.
- ▶ Finding the right balance for Clean Industry Fund investments between low-cost projects that reduce emissions now, and long-term clean growth solutions that could have a larger impact in the future.
- ▶ Identifying strategic industrial investments for the Fund to complement those made by existing technology funds. This will provide greater opportunities for the clean technology market in B.C.

## 3. PROVIDING INPUT

### What do you think?

We are seeking your input regarding the Clean Growth Program for Industry.

- ▶ Email written submissions to: [clean.growth@gov.bc.ca](mailto:clean.growth@gov.bc.ca)
- ▶ This intentions paper will be available for comment until August 24, 2018.
- ▶ Written submissions will be posted publicly.

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