Pacific Institute for Climate Solutions

Insights Series: CleanBC Review

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A Pivotal Moment for B.C. Climate Action

Overview of the PICS Insight Series: CleanBC

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Foreword

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our university-based network was groundbreaking and remains a core strength of the organization.

In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C. Drawing on academic expertise from across the province, the series is designed to inform the 2025 independent review of CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change.

When CleanBC was launched in 2018, climate action was a public and political priority. While concern about climate change remains widespread, it has increasingly been overshadowed by more immediate pressures, such as rising costs of living, strained public services, and growing geopolitical instability. Intensifying climate impacts exacerbate each of these challenges, which increases the complexity and opportunity for bold climate solutions. Now is not a time to retreat from ambition. Rather, it is a time for integrated solutions and public policy that unlock energy transformation, reduce climate risk, and increase prosperity at local, regional, and global scales.

The Insights Series highlights the deep connections between climate action and other top issues facing British Columbians: housing, affordability, economic competitiveness, Indigenous reconciliation, regional economic development, and fiscal efficiency.

B.C.'s climate leadership can be renewed—not by repeating the strategies of the past, but by evolving CleanBC to meet the realities of today.

Territory acknowledgement: At the University of Victoria, where the Pacific Institute for Climate Solutions (PICS) is hosted, we acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

PICS and its university network have campuses across the province known as British Columbia. We respect and acknowledge the many unceded traditional territories and Nations where PICS universities stand including: xʷməθkʷəy̓əm (Musqueam) • Sḵwx̱wú7mesh Úxwumixw (Squamish) • səl̓ilw̓ətaʔɬ (Tsleil-Waututh) • q̓íc̓əy̓ (Katzie) • kʷikʷəƛ̓əm (Kwikwetlem) • Qayqayt • Kwantlen • Semiahmoo • Tsawwassen • Stó:lō • Syilx (Okanagan) • Dakelh (Carrier) territory: Lheidli T'enneh, Lhtako, Nazko, Lhoosk'uz • ?Esdilagh, a Tsilhqot'in Nation • Dane-zaa territory: Doig River, Blueberry River, and Halfway River • Tsimshian territory: Kitsumkalum, Kitselas, Lax Kw'alaams, and Metlakatla • and Gitwinksihlkw, a Nisga'a Village.

Disclaimer: This paper was funded by the Pacific Institute for Climate Solutions (PICS). The views expressed in this paper are those of the author(s) and do not necessarily reflect the views or opinions of PICS.

British Columbia stands at a pivotal moment for climate policy., Households, businesses, and governments are facing mounting challenges from climate impacts and affordability pressures. *iStock*

Executive summary

British Columbia stands at a pivotal moment for climate policy. As a climate policy leader for Canada and North America, the Province has demonstrated bold climate action over the years, including introducing broad-based carbon pricing; advancing electrification in vehicles, industries, and buildings; and updating building codes.

> *"PICS has worked with leading researchers across the province to highlight the critical issues and context shaping the future of climate action."*

These actions have achieved measurable results: declining per capita emissions; stronger industrial standards; and accelerated adoption of clean technologies. Yet, despite this progress, B.C. is off-track to meet its 2030 climate targets. Meanwhile, households, businesses, and governments are facing mounting challenges from climate impacts, affordability pressures, and global economic uncertainty. Over the past year, both the Government of Canada and Government of British Columbia have rolled back key climate policies and allowed incentive programs to sunset, weakening momentum at a critical juncture.

In response to the Government of B.C.'s review of CleanBC, the Pacific Institute for Climate Solutions (PICS) has worked with leading researchers across the province to highlight the critical issues and context shaping the future of climate action.

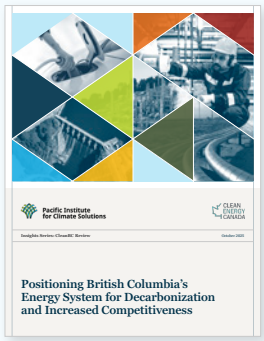
Paper 1

Paper 2

Paper 3

Paper 4

Paper 5



Paper 6

Paper 7

Paper 8

This Insights Series provides evidence-based analyses to inform that review, focusing on three dimensions central to B.C.'s future:

- rethinking climate policy in a complex and shifting world,
- investment, development, and competitiveness in the clean economy, and
- housing, affordability, and practical solutions for communities.

Renewing CleanBC is not only about reaching emission targets—it is about strengthening the province's economic competitiveness and advantage, reducing stresses on public services like health care and emergency management, and encouraging social cohesion in a time of accelerating change. Climate disasters have already cost B.C. billions of dollars, with wildfires, floods, and heat events reshaping lives, economies, and public services. These impacts are converging with other urgent pressures: high housing costs, strained health systems, and growing fiscal deficits. At the same time, Indigenous Nations are advancing climate leadership rooted in rights and stewardship, offering critical pathways for reconciliation and resilience.

B.C.'s clean electricity advantage provides a foundation for competitiveness in the global low-carbon economy and investments in new sectors, but fully realizing this potential requires changes to energy planning and policy. This path to a climate-aligned energy system should support First Nations rights, ownership, and equity participation. The rising cost of living is a significant barrier to the adoption of clean technologies by households, underscoring the need for policies that prioritize affordability while simultaneously cutting emissions.

The eight papers in this Insights Series address different aspects to reorienting the overall framework of B.C. climate policy. Four underlying themes stand out:

- **Cross-portfolio governance:** Link climate policy directly to economic development, energy, housing, health, and affordability initiatives.
- **Multi-level governance:** Tailor policies to regional contexts and strengthen partnerships between provincial, regional, and Indigenous orders of government.
- **Reframing climate action:** Pair emission targets with tangible markers of progress and emphasize the integrated benefits for other priorities.
- **Adaptive management:** Design flexible policies that can withstand shocks, build confidence, and prepare B.C. for tomorrow's economy.

Getting this right means CleanBC will not just reduce emissions, but also build resilience, improve affordability, and strengthen prosperity for generations to come.

British Columbians are concerned about pressing health, social, economic, and geopolitical issues that threaten immediate well-being. *iStock*

PICS and meeting the moment

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our network of researchers at B.C. universities was groundbreaking and remains a core strength of the organization. In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C.

> *"Effective climate policy must deliver not only emissions targets but also long-term economic, social, and environmental well-being.."*

Papers in this series provide critical context for shaping effective climate policy that meets this moment. These papers also demonstrate that PICS is here to support decision makers and British Columbians.

1. Why this Insight Series focuses on the future of CleanBC

Climate policy is constantly evolving. It began with a narrow emphasis on cutting emissions, then expanded in the 2010s to embrace clean growth, framing climate action as a driver of innovation and economic opportunities. As climate hazards increasingly affected the safety, health, and livelihoods of more people, focus evolved again to include adaptation and resilience. Today, effective climate policy must deliver not only emissions targets but also long-term economic, social, and environmental well-being.

Pedestrians watch as a forest fire flares up in the hills above Penticton in August 2021. *iStock*

CleanBC was widely recognized as one of the most ambitious emission reduction frameworks in North America when it was launched as the Province's flagship climate plan in 2018. Today, the question is: how do leaders build on the strength of CleanBC in a manner that addresses gaps in the original policy framework, maintains public support, and sets a bold agenda for provincial climate action? Strategies must cut greenhouse gas emissions and manage climate risks, capture economic opportunities that sustain livelihoods, and build the trust needed for lasting climate leadership in B.C. Integrated strategies are essential to navigating the future.

This Insights Series highlights the deep connections between taking climate action and other top issues facing British Columbians: housing, affordability, competitiveness, reconciliation, regional development, and fiscal efficiency. Renewed climate leadership depends on evolving CleanBC for today's realities, not repeating solutions designed for another era.

2. The context for climate policy in 2025

The realities of today are far from the world where CleanBC first took root. Beyond the challenge of decarbonizing a growing economy, governments face economic turbulence from volatile U.S. tariffs, rising public debt and deficits, and mounting strain on public services like health care and emergency management. Landmark decisions on Indigenous rights and title, alongside political and public acknowledgement of the obligations to Indigenous reconciliation and awareness of persistent inequalities, are reshaping priorities and decision making. Tariffs and trade policy dynamics are creating uncertainty for export-dependent resource communities and businesses, forcing them to reorient and diversify at a time when government capacity to invest is limited. At the household scale, individuals are grappling with economic hardship due to recent inflation, high housing and food costs, and weakening job security. Many of these pressures interact, amplify each other, and require a rethink of our approach to climate policy.

> *"With the right investments, B.C. can build a future that is safer, more affordable for families, and more secure in meeting people's needs."*

Efforts to decarbonize the economy and respond to more frequent climate disasters are colliding with economic and social challenges. Leaders face genuine fiscal constraints and competing priorities. How well today's policies provide integrated responses to pressing priorities will determine whether these pressures reach either a breaking or inflection point. With the right investments, B.C. can build a future that is safer, more affordable for families, and more secure in meeting people's needs.

A time of polycrisis and risks, compounded by climate impacts

Climate policy and action must consider integrated responses to the diverse, competing, and interconnected risks that create emergent harms to the ecological, political, social, and economic systems that underpin safety and security in the world. This convergence—often described as a "polycrisis"—is already shaping life in B.C. Key pressures include:

- Ongoing trade conflicts and erratic tariffs from B.C.'s largest trading partner, the United States, are disrupting markets and creating uncertainty for governments, businesses, communities, and households. (More than half of B.C.'s

goods exports in 2023 were to the U.S.) This uncertainty is weighing on consumers and businesses. Forest, energy, and mineral and metal resource exports are particularly exposed, while machinery and equipment, agriculture and food, and energy products are most affected imports.[1] The scale of these risks has pushed economic diversification, industry support, and major project development to the forefront of provincial and federal agendas.

» The Government of B.C. is projecting a record deficit as high as $12 billion in 2025/26, pushing the provincial debt to more than $155 billion and the debt-to-GDP ratio at 26.6 per cent this year.[2] In part, the shortfall reflects lost net revenue from the carbon tax ($2.06 billion), and higher-than-expected fire management costs ($613 million). Increased spending needs for climate change impacts are noted as among the risks to this economic outlook.

» Public services are under stress. For instance, B.C.'s health care system is contending with staffing shortages, aging infrastructure, an aging patient population, the toxic drug emergency, and lingering effects of COVID-19. Climate change exacerbates these burdens, multiplies pressures on a system with little flexibility to manage additional shocks, and disproportionately affects B.C.'s most vulnerable populations.[3] For example, wildfire seasons have been associated with a 4.6 per cent increase in respiratory emergency complaints at Vancouver emergency departments.[4] The 2021 heat dome in B.C. resulted in more than 600 deaths, causing cascading pressures on emergency services, ambulance dispatch, and acute care facilities.[3] Transportation blockages during floods and atmospheric rivers have delayed patient transfers and strained hospital logistics. Each event not only increases immediate demand but also increases risk of burnout among health care workers.

» Recent climate disasters have cost taxpayers and businesses billions of dollars. The unprecedented trio of extreme events in 2021—the heat dome, wildfires, and flooding—cost B.C.'s economy nearly $20 billion in damages and lost output, roughly six per cent of provincial GDP.[5, 6] Two years later, the worst wildfire season on record forced mass evacuations, shut down major highways and supply routes, and destroyed more than 460 homes and businesses with more than $720 million in insured losses.[7] Wildfire management that year cost the Government of B.C. $1.1 billion, about $400 million more than was budgeted.[8, 9] Spending on wildfire management continues to exceed planned budgets, with $851 million forecast 2025/26, $613 million more than had been budgeted.[2]

FIG 1: ECONOMIC COST OF B.C.'S RECENT CLIMATE DISASTERS

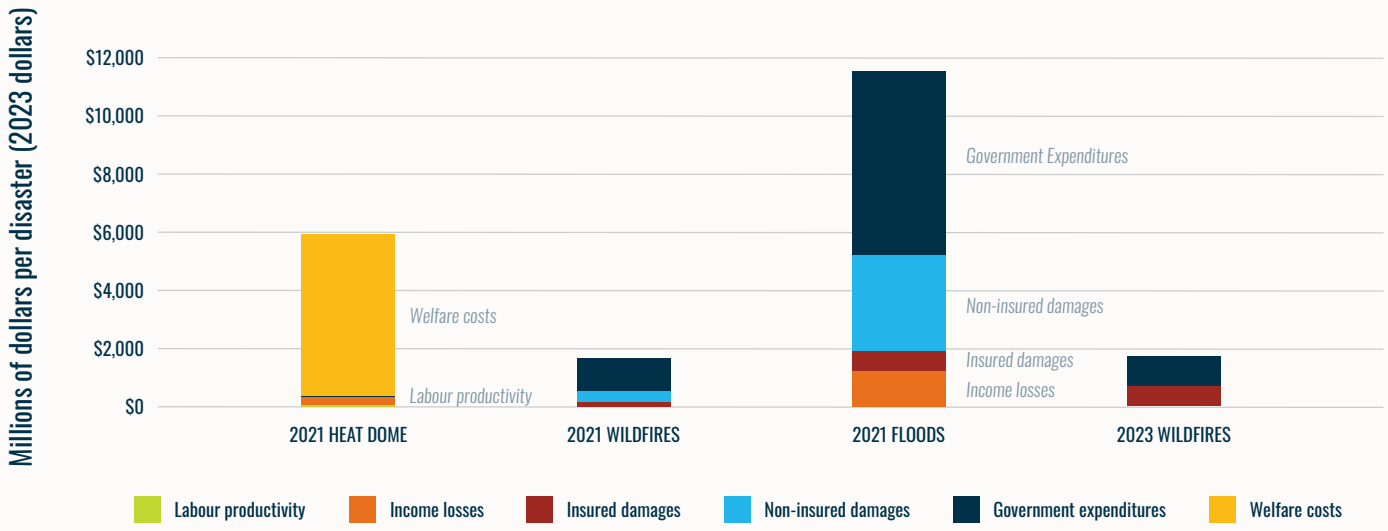


Figure 1. Data has been aggregated from Canadian Disaster Database;[10] Canadian Centre for Policy Alternatives;5 and the Canadian Climate Institute.[6]

Indigenous leadership, partnerships, and reconciliation

Indigenous Peoples in B.C. often experience climate change in ways that are more acute than settler populations. Many Indigenous communities face inadequate housing, infrastructure gaps, and poorer health outcomes compared to the provincial average. Emergency response and recovery systems have often sidelined Indigenous priorities and governance. Without stronger investment in prevention and resilience, the fiscal burden of disaster for Indigenous communities will only grow. Yet First Nations are climate leaders on multiple fronts, including with intergenerational knowledges of ecosystem and management, fire stewardship, and community resilience. Today, Nations are integral partners in B.C.'s clean energy transition. Indigenous leadership, partnerships, and opportunities for reconciliation are paramount for successful climate action in B.C.

- Indigenous self-determination and the inherent right to self-government, repeatedly confirmed in Canadian courts, have fundamentally shifted the context for decisions on how lands and resources within First Nations territories are being developed and controlled. This shift was re-enforced by the Government of British Columbia's Declaration on the Rights of Indigenous Peoples Act (DRIPA) in 2019. Concurrently, the Calls to Action of the Truth and Reconciliation Commission have elevated public and political acknowledgement of the responsibility to uphold the social, cultural, and economic well-being priorities of First Nations.

First Nations are climate leaders on multiple fronts. *iStock*

- Climate action requires supporting Indigenous authority in decision making and investing in action rooted in Indigenous values and First Nations rights within their territories. The First Nations Leadership Council (FNLC) developed the B.C. First Nations Climate Strategy and Action Plan as a direct response to CleanBC's inadequate inclusion of First Nations' perspectives, leadership, and considerations. The strategy takes a rights-based and collaborative approach to supporting climate response and preparedness, capacity and leadership, and land and water protection. It combines emission reduction and resilience building as shared pathways of implementation and is designed to uplift and support Nations that face disproportionate climate impacts.

- First Nations are taking leadership and ownership in the generation, transmission, and distribution of clean energy at both provincial and community scales. These initiatives support energy independence and energy security, reduce energy poverty, and create private investment and job creation in First Nation communities. Indigenous equity ownership has been central to the approval of recent large-scale renewable energy projects, advancing economic reconciliation alongside the expansion of affordable clean power supply to the benefit of the whole province.

> *"Climate action requires supporting Indigenous authority in decision making and investing in action rooted in Indigenous values and rights within their territories."*

A time of economic turbulence and transition

British Columbia's economy is experiencing turbulence and transition due to both global and local factors. Global pressures include shifting U.S. trade policies, broader geopolitical instability affecting markets and trade flows, and climate change impacts that disrupt lives, supply chains, and productive capital. Locally, high living costs and declining standards of living are constraining labour supply, one of several factors making the province less attractive for business investment. These pressures raise uncertainty for sectors that

have long anchored the provincial economy. At the same time, B.C. is entering a profound energy transition, as electrification policies drive a shift away from fossil fuels to meet domestic demand and achieve decarbonization targets.

- B.C.'s economy is deeply interconnected with global markets. Exports of agriculture, fisheries, and forestry products, minerals and metals, along with tourism, form a large share of provincial GDP, jobs, and employment income. This dependence makes communities and workers vulnerable to shifting U.S. trade policies and volatile commodity cycles. Meanwhile, the long-running softwood lumber dispute continues, with U.S. tariffs adding billions to the price of B.C.'s forestry exports, undercutting competitiveness.[11, 12]

- Climate extremes are disrupting supply chains and affecting timber, agriculture, and fisheries harvests. Livelihoods in resource-based rural communities are particularly affected. The forestry sector has been hit hard. Timber harvests fell to 38.9 million cubic metres in 2023—the lowest in at least 15 years—as logging operations were curtailed by fires, drought, the impacts of long-term mountain pine beetle infestation, and long-term fibre shortages.[13, 14] Mill closures followed, with hundreds of workers losing jobs that year.[14] The impacts of climate extremes are not limited to the resource sector. The tourism industry, for example, was estimated to have lost hundreds of millions of dollars due to wildfires in 2023—a roughly five per cent reduction in tourism GDP.[15, 16]

- B.C.'s clean, affordable power resources offer significant opportunities to strengthen resilience and competitiveness in the global clean economy. Electrifying end uses, such as heating and transportation, will enhance energy security by reducing reliance on imported fuels. With 97 per cent of its electricity generated from clean, renewable sources, the province already holds a structural advantage in attracting low-carbon industries and supporting existing ones to remain competitive in a world increasingly prioritizing low-carbon goods and services.[17] For example, in 2023 a global battery manufacturer announced plans to build a $1.05-billion electric vehicle battery plant in Maple Ridge. Western Canada's first such facility of this scale, it is expected to create about 450 jobs and showcase how clean, affordable power can draw large-scale investment.[18] New industrial electricity demand totaling around 7,000 megawatts is also queued, with proposals spanning hydrogen production, critical mineral processing, and clean technology ventures.[19] The Province's plan to double clean electricity supply by 2050 aims to build on this advantage.[20] It seeks to meet growing demand for affordable, reliable, and clean energy, advance economic reconciliation through partnerships with First Nations, and overall reinforce energy security and resilience.

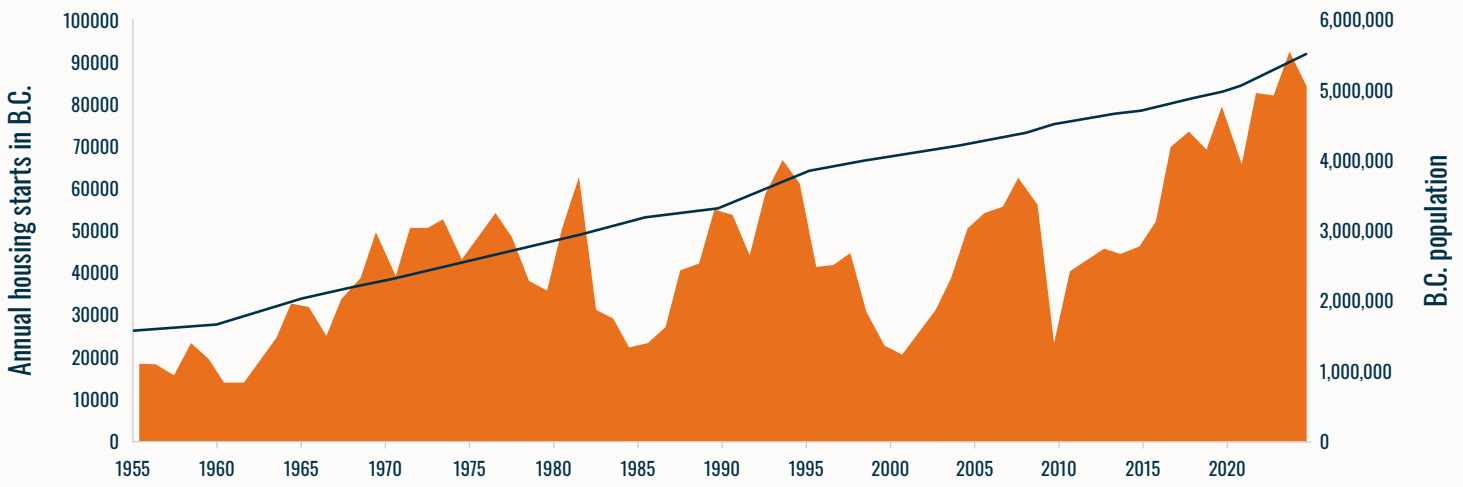
> *"B.C.'s clean, affordable power resources offer significant opportunities to strengthen resilience and competitiveness in the global clean economy."*

A time of household stress but continued climate concern

Durable policy must align with the shifting voter priorities. Over the past few years, the rising cost of living, reflected in a 20 per cent increase in the Consumer Price Index (CPI), has created a crisis for many B.C. households.[21] As a result, affordability and housing have moved to the forefront of public and political priorities.[22]

- Housing costs in B.C. remain among the highest in Canada, with many households—renters and owners alike—spending more than 30 per cent of their income on shelter.[23] Home ownership is financially out of reach for many, and many residents are being forced into precarious rentals, long commutes, or overcrowded conditions, underscoring the urgency of the issue. To address the housing crisis, the Province has set aggressive five- and ten- year targets to create 114,000 new housing units under the B.C. Homes for People Action Plan.[24] These targets will generate a surge in construction that will define the building stock for decades to come, in an era of rising climate risks and rapid change in low-carbon household technologies. At the same time, households are facing mounting pressures from insurance costs, energy bills, and the challenge of retrofitting aging buildings. Choices made in this moment will determine not

FIG 2: B.C.'S NEW HOME BUILDS



New homes are being built at record rates. Housing starts data is from Statistics Canada.[25] Population estimates are from the Government of British Columbia.[26]

only housing supply and affordability, but also long-term emissions, household costs, community resilience, and overall well-being for generations.

» Energy affordability is another dimension of the cost of living. An estimated four to 16 per cent of British Columbians live in energy poverty, with disproportionate energy poverty in Indigenous households.[27] The high cost of living is a key barrier to the adoption of the cost-saving household technologies that are also key to reducing emissions. Technologies such as electric vehicles, e-bikes, heat pumps, energy efficiency retrofits, solar panels and batteries can reduce monthly bills and improve year-round comfort, but come with upfront costs that make them out of reach for otherwise-motivated households, even with rebate programs.[28] Lower-income households, who would most benefits from the potential reductions to household energy wallets, have the least capacity to make these capital investments.

» While these immediate concerns have pushed climate action off the list of top priorities, there continues to be strong support across the political spectrum of voters for making climate change a government priority. Polling after the 2024 provincial election found that 86 per cent of B.C. voters want the Government of B.C. to make addressing climate change a very high, high, or medium priority, and seventy-two per cent of B.C. Conservative voters believe climate change should be at least a medium priority.[29]

3. The need for a broader and more integrated lens for climate policy

CleanBC achievements

B.C has long been an early adopter and climate policy leader for Canada and even North America. It was the first to roll out a broad-based carbon tax, followed by standards and incentives for electrification, fuel-switching, and energy efficiency in the transportation, industry and buildings sectors. It has also spurred natural carbon sequestration programs for forests, wetlands, and agricultural lands, and supported green innovation.

The investment of $3.5 billion of public funds in CleanBC since 2018 has led to meaningful outcomes. By 2022, the net greenhouse gas intensity of the economy had fallen by 30.5 per cent compared to 2007 levels and the net greenhouse gas emissions per person had decreased by 21.6 per cent. Industrial emissions fell by 11 per cent; methane emissions from the oil and gas sector fell by 45 per cent; and building

Downtown Vancouver traffic congestion. *iStock*

and communities' emissions fell by six per cent.[30] These are substantive achievements.

Yet, despite this progress, net emission reductions are falling well short of the core goals set for CleanBC: to reduce emissions by 40 per cent from a 2007 baseline by 2030 and net-zero by 2050. Economic and population growth since 2007 have nearly cancelled out the substantial reductions in emissions. B.C. will not hit its 2025 emissions target of 16 per cent below 2007 levels—there has been only a 2.2 per cent reduction. While some policies will have long-term payoff without additional policy action, such as the B.C. Energy Step Code for new construction, emission reductions will likely continue to be overshadowed by rising emissions from transportation and large new industrial projects, particularly liquified natural gas megaprojects. Indeed, the government has acknowledged that "the current policy landscape does not put the Province on track to meet its 2030 targets" of 40 per cent below 2007 levels, with 2030 emissions reductions are projected to achieve only half that target.[30]

Addressing CleanBC's shortcomings

The gap between ambition and reality is widening, and instead of continued momentum, the past year has brought setbacks. Climate commitments have been weakened at the federal and provincial policy levels. The consumer carbon tax has been removed, EV and Greener Homes incentives have been phased out, and the federal EV sales mandate has been paused. Meanwhile, oil and gas expansion—including LNG facilities—continues to receive support, with mixed signals on whether the proposed federal cap-and-trade system to limit emissions will move forward. Together, these actions signal a loss of direction at a time when implementation must match ambition.

A clear-eyed consideration of the shortcomings in CleanBC's plans which may have contributed to this weakening momentum is essential for renewing CleanBC to be more durable. Several common threads emerge from the eight Insight Series papers by independent sets of authors:

- **Cross-portfolio governance** is required to manage complexity and deliver integrated benefits across B.C.'s many policy priorities. This requires both policy and governance innovation. Climate action is intimately connected to economic diversification and development; certainty for investors; energy security and market transformation; reconciliation; resilience of the health care system; and household affordability and climate readiness. It cannot work in a silo, nor can it be designed as a top-down framework addressing one single problem, especially during a time of fiscal constraint. This is particularly evident in the challenge of simultaneously growing B.C.'s economy while decarbonizing it, and the goal of doubling the electricity grid's capacity. Moreover, integration across policy priorities and melding the value of climate action to other priorities will help grow social license and broaden coalitions to maintain the momentum for bold action.

- **Multi-level governance** is also key to providing place-based awareness, flexibility, and leadership that respects the unique assets, vulnerabilities, and opportunities of communities and Nations across B.C. For example, the "one size fits all" approach of the EV sales mandate has been perceived as disconnected from the daily realities of charging infrastructure, repair, and operating conditions in rural regions. Multi-level governance includes supporting rights-based and collaborative approaches to Indigenous climate action, as well as supporting resource-dependent and remote regions to develop participatory transition management frameworks to proactively plan for industrial transformation, phase-out, and diversification.

- **Reframing climate action** around the issues that matter most to British Columbians—well-being and livelihoods, affordability, safety, and health—will make climate policy relevant, empowering, hopeful, and equitable. This goes

beyond mere communication. It involves pairing high-level emission goals with tangible and relatable markers of progress for B.C. residents and giving higher profile to the integrated benefits of climate action. Additionally, it includes more targeted actions to improve energy affordability by making clean technologies accessible to more households. Finally, carefully chosen and designed policies should achieve greater emissions impact with less public investment, while also providing broader social benefits and the ability to drive lasting change.

» **Build flexibility, continuous learning, and nimble action into policy from the start**. Governments will always face colliding priorities and be rocked by sudden events. These conditions of polycrisis and uncertainty require adaptive management and keeping options open to maximize policy robustness and results through an ill-defined future. This involves moving from a target-oriented to an action-oriented approach to climate policy, considering political and technical viability under circumstances that are bound to change, and avoiding a rigid planning trap. This approach should not dilute climate action; instead, it should enable quick action to fill the solution space.

Broadening the frame: themes covered in the PICS Insight Series

The PICS Insight Series offers approaches to addressing some of these shortcomings. Three papers discuss cross-cutting approaches to reorient the overall framework of B.C. climate policy to better reflect and respond to the complex challenges and priorities of three groups: a provincial government managing multiple crises, a B.C. public increasingly disengaged with climate action, and Indigenous communities taking a rights-based and collaborative approach to climate action.

Three other papers address economic dimensions of the transition: maximizing the benefits of public investments in a time of fiscal constraint, using regional development as a tool to bring place-based flexibility into climate policy, and reforming the planning and regulation of a decarbonized B.C.'s energy system to turn it into a driver for future competitiveness.

Two final papers outline proposals to align B.C.'s housing strategy with its climate commitments, and to make clean household technologies more affordable and accessible.

People wear masks during the COVID pandemic. Climate is deeply interconnected with simultaneous crises. *iStock*

Rethinking climate policy in a complex world.

Paper 1, **Climate Policy and the Polycrisis**, argues that climate is deeply interconnected with multiple other crises. Trigger events, such as the pandemic, heat domes, and wildfires, collide with ever-intensifying stresses, including climate change, overstretched healthcare systems, cost of living pressures, increasing socio economic inequality, fiscal pressures, and deepening political divides. These interact and amplify each other, complicating efforts to address them individually. As the largest and most influential of these stresses, climate change will define the era, multiplying the impacts of other stressors. The paper looks at how governments deal with overlapping crises to identify ways to better prepare the CleanBC framework for the future. The paper suggests climate policy be designed around cross-sector synergies, flexible decision making, and continuous learning. These integrated approaches will be key to build broad coalitions that can defend the policy framework against potential political retrenchment.

> *"As the largest and most influential of current crises, climate change will define the era, multiplying the impacts of other stressors."*

Paper 2, **People First, Climate Forward**, examines the evolving political context for climate action. While climate change remains a pressing concern, it has been overshadowed by more immediate pressures including the rising costs of living,

Solar panels set up over a public parking lot in Greater Vancouver. *iStock*

strained public services, and growing geopolitical instability. Fiscal constraints have tightened, public trust has frayed, and polarization around climate policy has intensified. Climate misinformation and disinformation are spreading, targeting disengaged voters with emotionally charged stories that portray climate action as unfair, ineffective, or elite-driven. The paper shows that B.C.'s climate action, though firmly grounded in science, is leaving parts of the electorate feeling left out and disconnected. Consequently, ambitious climate action may be losing its social licence and feeding polarization. To shift public engagement from passive concern to active support, climate policy should centre less on the emissions narrative, and more on the integrated, tangible benefits which support the immediate concerns of British Columbians. This will also entail moving away from one-size-fits-all approaches by designing flexible, place-based policies that reflect the unique needs, opportunities, and values of different communities.

> *"B.C.'s climate action, though firmly grounded in science, is leaving parts of the electorate feeling left out and disconnected."*

The third paper, **Indigenous Governance and Authority in Climate Action**, delves into how CleanBC can better align with Indigenous legal authorities, the United Declaration on the Rights of Indigenous Peoples (UNDRIP), and the B.C. First Nations Climate Strategy and Action Plan. The authors critique CleanBC's carbon centric perspective and its vision of a green economy that largely upholds a system premised on the physical and jurisdictional dispossession of Indigenous Peoples. For Indigenous communities, climate resilience is deeply entwined with healthy territories and Indigenous self-determination. This is expressed in the B.C. First Nations Climate Strategy and Action Plan developed in 2022 by the First Nations Leadership Council. This plan takes a rights-based and collaborative approach to supporting climate response and preparedness, capacity, and leadership, and land and water protection. The paper identifies six areas where CleanBC could amplify Indigenous governance, self-determining authority, and priorities set out in the Action Plan: land use planning, coastal protection, food sovereignty, energy systems, emergency response structures, and project financing. Additionally, it identifies an important opportunity for CleanBC activities to amplify the extensive experience of ecosystem-based collaborative governance already underway in B.C.

Investment, development, and competitiveness

Paper 4, **Maximizing Public Funds**, addresses B.C.'s current period of financial constraint. As pressures mount from many sides and the forecasted 2025-26 budget deficit approaches $12 billion, climate policy risks being pushed to the back burner. Yet, treating climate action as discretionary during difficult times simply pushes greater costs down the road and ignores its structural role in long-term economic resilience. In this context, making prudent use of today's public dollars by considering the cost-effectiveness and fiscal efficiency of climate policy choices is more critical than ever. This analysis reveals how different policy instruments vary widely in their cost-effectiveness and fiscal efficiency. By carefully choosing and designing policies, greater emissions impact can be achieved with less expenditure, and government climate investments can also consider broader benefits, behavioural impacts, and the ability to drive lasting change. Flexible regulations that shift costs within regulated markets, transparent carbon pricing that raises useful revenue, and well-targeted incentives all play distinct roles in a fiscally prudent climate strategy. A forward-looking policy mix must also consider long-term dynamics, such as how infrastructure shapes future behaviour, how innovation lowers future costs, and how policy interactions can amplify or undercut impact.

Paper 5, **Climate Policy as Territorial Development**, considers how B.C. climate policies could better reflect the uneven regional impacts of GHG emissions and climate risks.

Climate policies inherently reshape regional economies, alter patterns of investment and employment patterns, and transform territorial relationships. Resource-dependent and remote regions face higher compliance costs, limited diversification opportunities, and greater exposure to economic and climate shocks. In contrast, urban and service-oriented regions are better positioned to benefit from the low-carbon transition. This makes climate policies fundamentally territorial development policies, regardless of their stated primary purpose. If these policies fail to address the unique realities and historical marginalization of peripheral, resource-dependent regions, they will perpetuate existing patterns of injustice. Drawing from European Union policy, the paper proposes a framework to bring regional development considerations into more place-based flexibility for B.C. climate policy. Territorial cohesion supports place-based policy design, inclusive governance, and participatory planning to reduce regional disparities in economic, social, and environmental outcomes. Territorial competitiveness focuses on the economic advantages of regions, enhancing their specific economic strengths, supporting sectoral transformation, and investing in innovation. By integrating these approaches, climate policy can be reoriented to more explicitly address the unique assets, vulnerabilities, and opportunities of diverse regions making up the province.

Revelstoke Canyon Dam on the Columbia River. *iStock*

> *"The ability to provide a reliable supply of clean electricity will be pivotal in attracting investments in new sectors and supporting existing ones to remain competitive."*

Paper 6, **Positioning British Columbia's Energy System for Decarbonization and Increased Competitiveness** emphasizes the urgent need to align B.C.'s net-zero goals, electricity system strategy, and energy planning, and it helps us to think through the province's challenge of simultaneously growing its economy while decarbonizing it. While B.C. benefits from a clean electricity grid, approximately 63 per cent of its total energy use in 2021 came from refined petroleum products or natural gas. These fuels must be replaced with non-emitting energy sources to achieve the provincial target of net-zero emissions by 2050. While plans to double the electricity grid's capacity by 2050 have begun, the ability to provide certainty about the reliable supply of clean electricity will be pivotal in attracting investments in new sectors and supporting existing ones to remain competitive in a world increasingly prioritizing low-carbon goods and services. This requires new tools, such as an integrated energy plan, processes for integrated utility planning, regulatory reforms to modernize the energy system, and diversification of B.C.'s supply of clean, reliable, and affordable electricity. Additionally, B.C.'s path to a climate-aligned energy system should support First Nations rights, ownership, and equity participation, and improve energy affordability by maintaining incentives and streamlining the consumer experience in adopting clean technology.

Housing, affordability, and practical solutions

Paper 7, **Sustainable and Affordable Housing**, highlights the critical intersections between housing and climate policy and identifies opportunities for aligning B.C.'s housing strategy with its climate commitments. While CleanBC targets a 59 to 64 per cent reduction in residential and community emissions by 2030, residential sector emissions have slightly risen since 2018. The design of homes and neighbourhoods, and what energy they use, will determine whether future targets are met. Opportunities include scaling low-carbon and circular construction, mobilizing the forest sector and bio-based products, and building in the flexibility to integrate emerging technologies like solar, electric vehicle (EV) charging, and energy

storage. Recent housing reforms, such as small-scale multi-unit zoning and transit-oriented area frameworks, can also support more sustainable growth if paired with resilience standards and sited to avoid hazards. Jumpstarting these opportunities will require key policy shifts, including aligning building codes and financing, skills training, and removal of interprovincial trade barriers. Roadmaps for collaboration and sharing of performance data to create accountability and continuous improvement are also needed.

Households are on the front lines of both climate change and the affordability crisis. Energy use in homes not only drives monthly costs but also contributes nearly a quarter of provincial emissions. Paper 8 in the Insights Series—**Pathways to Accelerating Household Clean Technology Adoption across British Columbia**—draws on research in Metro Vancouver to better understand how households adopt clean technologies and the barriers they face. The paper focuses on three key areas: transportation (electric vehicles and home charging), home heating and cooling (heat pumps, electric water heaters, smart thermostats), and renewable energy generation and storage (rooftop solar and household batteries). Households reported similar challenges across all three: high upfront costs, limited control over upgrades for renters and residents of multi-unit buildings, knowledge gaps, and the need for expensive electrical upgrades. To overcome these barriers, the paper proposes targeted actions the Government of B.C. could take to make clean technologies more affordable and accessible—supporting households in lowering their costs while helping the province advance toward its climate goals.

Condominium construction in suburban Vancouver. *iStock*

4. Conclusion: setting the stage for CleanBC's renewal

In the years since CleanBC began, B.C. has endured record wildfires, floods, and heat events, claiming hundreds of lives and costing taxpayers billions. These events are a stark reminder of what is at stake as we collectively consider the future of climate policy in British Columbia. Climate impacts will only intensify in the years ahead.

By renewing CleanBC, British Columbia can attract investment, unlock new economic opportunities, and strengthen its position as a climate leader. CleanBC 2.0 must reflect today's more complex, climate-risked, and unaffordable world, while embedding a deep commitment to regional equity and Indigenous reconciliation. By providing direct and tangible benefits to households, businesses, communities, and Nations across B.C., a renewed CleanBC can show that climate action is about more than emission reductions; it is about driving regional economic development, reducing the strain on public services, and supporting health and prosperity for current and future generations of British Columbians. When investment and competitiveness translate into better daily lives, CleanBC becomes a policy that truly serves British Columbians.

> *"CleanBC 2.0 must reflect today's more complex, climate-risked, and unaffordable world, while embedding a deep commitment to regional equity and Indigenous reconciliation."*

Leaders in British Columbia face a responsibility: to see the complexity of overlapping risks clearly, and to help navigate the turbulence of today and tomorrow. Indeed, the test of leadership today is to comprehend the multiple stressors on interconnected social, environmental, and economic systems and systematically respond to ensure B.C. can withstand shocks, create a more resilient society, and grow a green economy. Given our access to talent, favorable geography, and deep experience in advancing ambitious climate policy and action, British Columbia is well positioned to do this. CleanBC can be renewed in a manner that uplifts citizens and creates cohesion around a shared purpose of safeguarding and supporting communities, Nations, and natural world that sustains us.

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Insights Series: CleanBC Review

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Climate Policy and Polycrisis in British Columbia

Recommendations for future-proofing CleanBC

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Foreword

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our university-based network was groundbreaking and remains a core strength of the organization.

In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C. Drawing on academic expertise from across the province, the series is designed to inform the 2025 independent review of CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change.

When CleanBC was launched in 2018, climate action was a public and political priority. While concern about climate change remains widespread, it has increasingly been overshadowed by more immediate pressures, such as rising costs of living, strained public services, and growing geopolitical instability. Intensifying climate impacts exacerbate each of these challenges, which increases the complexity and opportunity for bold climate solutions. Now is not a time to retreat from ambition. Rather, it is a time for integrated solutions and public policy that unlock energy transformation, reduce climate risk, and increase prosperity at local, regional, and global scales.

The Insights Series highlights the deep connections between climate action and other top issues facing British Columbians: housing, affordability, economic competitiveness, Indigenous reconciliation, regional economic development, and fiscal efficiency.

B.C.'s climate leadership can be renewed—not by repeating the strategies of the past, but by evolving CleanBC to meet the realities of today.

Territory acknowledgement: At the University of Victoria, where the Pacific Institute for Climate Solutions (PICS) is hosted, we acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day

PICS and its university network have campuses across the province known as British Columbia. We respect and acknowledge the many unceded traditional territories and Nations where PICS universities stand including: xʷməθkʷəy̓əm (Musqueam) • Sḵwx̱wú7mesh Úxwumixw (Squamish) • səl̓ilw̓ətaʔɬ (Tsleil-Waututh) • q̓íc̓əy̓ (Katzie) • kʷikʷəƛ̓əm (Kwikwetlem) • Qayqayt • Kwantlen • Semiahmoo • Tsawwassen • Stó:lō • Syilx (Okanagan) • Dakelh (Carrier) territory: Lheidli T'enneh, Lhtako, Nazko, Lhoosk'uz • ?Esdilagh, a Tsilhqot'in Nation • Dane-zaa territory: Doig River, Blueberry River, and Halfway River • Tsimshian territory: Kitsumkalum, Kitselas, Lax Kw'alaams, and Metlakatla • and Gitwinksihlkw, a Nisga'a Village.

Disclaimer: This paper was funded by the Pacific Institute for Climate Solutions (PICS). The views expressed in this paper are those of the author(s) and do not necessarily reflect the views or opinions of PICS.

Pedestrians watch as a forest fire flares up in the hills above Penticton in August 2021. *iStock*

Executive summary

British Columbia is facing not one crisis, but many—and they are hitting all at once, affecting and amplifying each other. Housing is inadequate and unaffordable, health systems are stretched thin, and fiscal and economic headwinds are growing stronger. Climate change is making each of these problems harder to manage.

> *"CleanBC 2.0 must serve as both a climate strategy and a governance tool to manage complexity."*

CleanBC 2.0 must serve as both a climate strategy and a governance tool to manage complexity, deliver co-benefits, and maintain public trust. Climate action cannot work in a silo, nor can it be designed as a top-down framework addressing one single problem. While CleanBC has spurred measurable progress, such as lowering per capita emissions and accelerating clean technology adoption, it was not designed to respond to the full scale and urgency of today's interacting economic, social, and environmental pressures. The Government of British Columbia needs to take a renewed approach: one that aligns climate ambition with people's day-to-day priorities and strengthens public trust in government's ability to respond on all fronts.

This is a moment for B.C. to lead—not just on emissions targets, but on how governments navigate an era defined by complexity and compounding risk. The province's climate legacy, innovative spirit, and leadership in clean energy offer the tools to act now.

In this paper, we review the key threats B.C. faces, how climate change magnifies them, and the challenges that have limited CleanBC's impact. We consider the implementation

challenges CleanBC has faced and the opportunities for the Government of British Columbia to lead on climate policy once again. Finally, we offer four design principles to guide a renewed framework and regain the initiative:

1. **Multi-solve for the polycrisis:**
   Recognize that housing, health, affordability, and climate are deeply connected, and build internal coordinating structures and policies that address them together.

2. **Collaborate across departments:**
   Use CleanBC as a whole-of-government tool to unify strategies and goals with other crises, break departmental molds, and accelerate delivery.

3. **Build flexibility, continuous learning, and nimble action into policy from the start:**
   Embrace systems thinking under conditions of uncertainty by shifting from rigid targets to adaptable, viable action-first policies that can evolve and scale.

4. **Build popular support for climate action by focusing on affordability, prosperity, and energy security:**
   Lead with affordability, energy security, and prosperity, and make the financial benefits of action and costs of inaction visible.

Getting this right is not just about meeting climate goals; it is about strengthening public confidence and improving the lives of British Columbians.

Demonstrators in Vancouver demand actionable measures to address climate change. *iStock*

A freighter sits offshore near Victoria. *iStock*

Introduction

British Columbia is facing multiple overlapping, amplifying crises, of which climate change is arguably the largest and most dangerous, but the least well understood. But the existing policy framework for addressing climate change in the province, which seeks to limit further heating and protect people and infrastructure from the consequences climate heating is already unleashing, has fallen short of the government's commitments. The CleanBC framework, launched in 2018 and intended to guide climate action in the province, will not meet its 2030 targets.

> *"British Columbia is not just facing the climate crisis: it is facing a polycrisis, where multiple crises—social, economic, political, and environmental—affect and amplify each other."*

British Columbia is not just facing the climate crisis: it is facing a **polycrisis**, where multiple crises—social, economic, political, and environmental—affect and amplify each other, complicating the efforts of governments to address each challenge on its own terms. Top-down policy frameworks intending to solve a single problem are no longer effective in this context.

A revamped CleanBC framework can be truly effective and transformative only if it acknowledges the present polycrisis facing British Columbia and adjusts to account for it. In this paper, we review the various crises facing the province and their interactions and explain how climate change acts as a threat multiplier. We consider the implementation challenges that CleanBC has faced so far, and the opportunities still available for British Columbia to lead on climate policy once again. Finally, we offer some high-level recommendations to guide efforts to improve and update the CleanBC framework.

A complex set of crises has worsened the issue of homelessness throughout B.C. *iStock*

Understanding B.C.'s polycrisis

British Columbia is experiencing the collision of long-mounting **stresses**—increasing socioeconomic inequality, climate heating, or demographic change—and sudden **trigger events**, like a devastating heat dome or the declaration of a global pandemic. When these collisions occur between systems—like health care, housing, the economy, and climate—the conditions create a polycrisis.

> *"Climate chaos is not a problem of the era; it defines the era."*

Of these stresses, climate change is the largest and most influential, a "threat multiplier" that worsens other planetary stressors, like the rise of political authoritarianism, zoonotic disease, mass migration, biodiversity decline, and food scarcity.[1] British Columbia is already feeling interactions between these effects, as we will describe below. They will likely grow more impactful in any number of ways, whether through mass migration, a destabilized political climate, or food security becoming more fragile due to biodiversity loss and climate change. Climate chaos is not a problem of the era; it defines the era.

To understand the need for policy that responds across B.C.'s current challenges, we need to understand how these crises interact with and amplify climate impacts today and in the future.

Physical and mental health stresses

As the site of one in every three apparent drug-related deaths in Canada, British Columbia is "ground zero for the drug toxicity crisis"[2] with rising overdose death tolls and increasingly unsafe supply.[3] Despite historic investments in supports for mental health in 2023, further investment

A car on Vancouver's Skytrain during the COVID pandemic. *iStock*

has stalled, and British Columbians continue to experience greater-than-average barriers to mental health, addictions, and substance use health services.[2] Residents also face challenges accessing primary care, particularly in the wake of the COVID-19 pandemic, which put B.C.'s health system under unprecedented strain. Seven hundred thousand British Columbians have no family doctor, while physicians are overwhelmed by the complexities of navigating a fragmented health system.[5] Nursing positions across the health system are chronically understaffed.[6] While the 2025 provincial budget avoided additional cuts, health advocacy groups have pointed out the challenge of continuing to provide adequate care without further investments.[7]

> *"Unchecked climate impacts will put additional pressure on an already-overstretched provincial health-care system."*

These challenges will grow intractable as climate heating intensifies. Climate impacts are projected to worsen health outcomes across Canada as heat waves, new illnesses, and extreme weather events strain health systems and disrupt lives and livelihoods.[8] The 2021 heat dome, which climate heating made 150 times more likely,[10] killed 619 people across the province.[51] Health fatalities and heat costs will continue to rise; the cost of ground-level ozone exposure, which increases with rising temperatures, has been projected to cost Canada $86 billion per year by 2050.[8] Climate-related health impacts will hit equity-deserving populations and the economically disadvantaged hardest.[1] They will exacerbate the mental health crisis in British Columbia, whether chronically (increased suicides and addictive disorders) or systemically (increased anxiety and affective disorders.[9] Unchecked climate impacts will put additional pressure on an already-overstretched provincial health-care system, increasing costs and demand on aging infrastructure and overdrawn personnel.

Inflation and cost-of-living stresses

Economic pressures caused by international trade wars, inflation, and the ongoing results of supply chain disruptions from the COVID-19 pandemic are exacerbating the issue of affordability in British Columbia, especially in the housing sector. Homelessness is increasing, especially in equity-deserving populations.[11] The cost of renting and owning homes has skyrocketed as speculation and demand for housing have outstripped new construction.[4] The Canada Mortgage and Housing Corporation estimates that British Columbia needs to build 610,000 more homes above current building trends by 2030 in order to provide adequate housing.[4] Despite making significant advances in housing policy, including passing a raft of reforms to allow for denser and more affordable homes,[12] the government remains under significant pressure to deliver more.

Contending with inflation and cost-of-living stresses necessarily involves contending with climate change. Climate-related damages cost the average Canadian household $700 a year,[13] while extreme weather events, many of which have wrought horrific damage to towns and cities,[14] will continue to increase in frequency and intensity as emissions rise.[1] Climate impacts will be most severe for low-income homeowners and renters without the means to transition to low-emissions energy sources or retrofit their homes.[1] Additionally, the building sector represents 14 per cent of provincial emissions.[15] New housing in the province will need to be as low-carbon as possible, while remaining affordable and resilient to climate impacts.

Fiscal and governance stresses

The current government is under mounting financial pressure from increased public spending, projecting an $11 billion deficit in the 2025 budget.[16] Though the government has said the spending is necessary in order to help address the stresses detailed above, a significant deficit with no perceivable increase in quality of life is, according to the Fraser Institute, eroding public trust and multiplying tensions in political discourse.[17] Additionally, the current New Democratic Party government lost its majority after a divisive election in 2024, weakening its legislative clout.[18] The supply and confidence agreement between the governing NDP and assisting Green Party has assured some mid-term stability, but lack of progress on climate issues has led to discontent from the Greens, endangering the stability of the agreement.[19]

Beyond internal government issues, B.C. has not been immune to the rise of populism, misinformation, and deepening political divides that have characterized the rest of Canada's social and political discourse in recent years.[20] The government has been forced to cancel several headline policies, including the province's carbon tax, to maintain popular support.[21]

Managing crises means prioritizing climate

Already, the stresses mentioned above are interacting in British Columbia, compounding problems and hamstringing the government's capacity to act. Three recent examples include:

1. **The consequences of 2021's twin climate disasters:** The June 2021 heat dome and November 2021 severe floods were extreme weather events supercharged by climate change. The heat dome caused widespread damage to marine and forest ecosystems, sparked fires that devastated the community of Lytton, and exacerbated existing inequalities, with heat deaths concentrated among low-income renters. The atmospheric river extreme rainfall event caused intense flooding that devastated agriculture in the Fraser Valley, severed Vancouver's rail and road connection to the rest of the country, and caused an estimated $285 million in damage.

2. **Fiscal consequences of ending the carbon tax:** Due in part to the national shift in political attention from climate to affordability, the B.C. government announced it

The remains of houses burned down by the wildfire that consumed Lytton on June 30, 2021. *iStock*

would eliminate the provincial consumer carbon tax a few days after the federal government's announcement of the end of the federal consumer carbon tax.[22] Although the tax was beneficial to consumers in the long run,[24] "the policy became absolutely toxic with British Columbians," the premier said.[23] In doing so, however, the government lost a $1.5 billion source of revenue, further increasing its overall deficit and reducing the funding available for health-care and housing reform. By reacting to one stimulus in order to preserve popularity and reflect the national mood, the government has hobbled its ability to address other crises that could become its legacy, especially as climate change continues to increase housing and health costs.[25]

3. **Lack of coordination in extreme heat management:** In 2023, in the context of more frequent and intense climate-induced heat waves, the government announced a $10 million grant to provide free air conditioners to vulnerable citizens, largely to lower-income seniors.[26] Yet the program was lambasted by critics as a piecemeal approach to extreme heat, one which ignored the intersecting crises of climate, housing, health, and affordability.[27] Climate experts considered the program myopic and ignorant of the increased energy costs of air conditioning as a long-term strategy, compared to high-efficiency heat pumps that provide both heating and cooling.[28] The program ignored these cost implications, meaning the province was unprepared when landlords denied residents' requests to install air conditioning units.[29] Health advocates called for far more systemic solutions, including energy poverty programs, more integrated senior health programs, and a longer-term climate and health strategy.[30] The program is a clear example of disjointed, reactive governance.

> *"Futureproof policy in an era of polycrisis requires radically different governance mechanisms."*

Deploying futureproof policy in an era of polycrisis requires radically different governance mechanisms than those previously deployed. Policymakers must understand the interactions among enmeshed crises, build adaptive governance structures, and recognize the need to engage stakeholders and governance levels across the board.

Aerial view of Westridge Marine Terminal at the Port of Vancouver. *iStock*

Stress-testing the CleanBC framework

CleanBC has built on British Columbia's record as a climate leader, providing a nationally and internationally advanced environmental policy framework. The province had already put into place world-class environmental legislation—the 2008 provincial carbon tax, which raised revenue for further transition activities, and the 2010 Low Carbon Fuels Requirements, which reduced B.C.'s fuel carbon intensity by 13 per cent over twelve years.[31]

The CleanBC framework was hailed for setting best-in-Canada, progressively ambitious, long-term targets for low-carbon building performance and supporting policies.[32] Building on B.C.'s Climate Action Toolkit, the initial framework set a target to lower greenhouse gas emissions by 40 per cent by 2030 compared to 2007 levels, using revenue from the province's now-defunct consumer carbon tax to support emissions-reduction projects from large industrial operations through the CleanBC Industry Fund. British Columbia was also the first Canadian jurisdiction to enshrine climate accountability into law.[32]

> *"There is a major gap between the province's targeted emissions trajectory and actual progress."*

Yet the framework has also experienced significant challenges. There is a major gap between the province's targeted emissions trajectory and actual progress: while emissions have fallen in the province since 2018, British Columbia may achieve only half of its 40 per cent reduction target by 2030.[33] Emissions reduction policies have proven

insufficient. Significant emissions reductions policies have fallen by the wayside, notably:

- The Clean Transportation Action Plan, which was an early commitment from the framework, has made no notable progress, despite receiving submissions for multiple years.[34]
- A provincial cap on oil and gas emissions has been repeatedly delayed, partly due to uncertainty with the federal government's own emissions cap, and partly due to industry pushback from increased compliance costs.[35]

A coal terminal in Prince Rupert loads metallurgical coal, thermal coal, and petroleum coke. *iStock*

Critics argue that the original CleanBC framework provided only vague targets for industrial emissions, including oil, gas, and freight, some of the province's highest polluters.[36] Other critics argue that the government's climate policy shows clear influence from emissions-heavy industries such as oil and gas, and that public funds spent on decarbonizing the gas industry would be better spent deploying renewable energy infrastructure and preparing for an eventual phaseout of fossil fuels in the province.[37]

Climate policy advocates in the province are in a bind. Politically, climate change has become a divisive issue, with the opposition Conservative party denouncing further emission reductions measures as fiscally irresponsible.[38]

Public attention has largely shifted towards affordability and security, with an authoritarian and erratic U.S. president threatening catastrophic trade and energy disruptions.[39]

There remains an opportunity for B.C. to build a climate framework that responds to the polycrisis while strengthening climate action, but only if those drafting the policy are willing to break old patterns of governance and learn from its previous challenges. The province has been a climate policy leader for decades. Its strategic positioning in the Cascadia region as an energy provider and trade hub, combined with a federal government committed to significant infrastructure projects, gives it influence and opportunity in a clean energy transition.[40] If planned well, a revitalized CleanBC is an untold opportunity to embed polycrisis governance into climate policy. It can champion not only a clean energy transition, but also security, affordability, and reliability for systems across B.C. and the rest of Canada.

Contending with inflation and cost-of-living stresses necessarily involves contending with climate change. *iStock*

Recommendations for polycrisis-proofing CleanBC

The emerging literature around polycrisis governance is clear: climate policy amidst a polycrisis must do more than prepare for or respond to shocks. Effective policy must be rooted in cross-sectoral collaboration, flexible decision making, continuous learning, and multi-solving, advancing cross-cutting policies and investments that address multiple problems in different sectors.

> *"Policy should improve health and well-being, produce savings, and advance long-term climate goals all at once."*

Based on the analysis of B.C.'s polycrisis laid out above, we propose the following four design principles to guide CleanBC's reformulation:

1. **Multi-solve for polycrisis.**
   The Government of British Columbia must recognize that the crises it faces are interrelated and amplify each other, and the revised CleanBC framework must account for this interconnectedness at a governance level. Climate adaptation planning, for example, needs to take into account calls for housing reform and energy poverty strategies.[41] It also needs to build in messaging to argue that investments in climate mitigation are directly linked to cost savings in health care. Policy should be created to "multi-solve" across crises—that is, improve health and well-being, produce savings, and advance long-term climate goals all at once.[42]

By taking a polycrisis governance approach, the revised CleanBC framework can lay out clear pathways to cooperation between government departments and sectors. At minimum, the provincial government should build a centralized office for polycrisis management, ensuring communication between high-level policymakers and ensuring that efforts are coordinated across issue management teams. More specifically, by creating policy frameworks based on problems to be solved rather than sector barriers, policy solutions could involve experts and stakeholders across departments.

2. **Collaborate across departments.**
Polycrisis literature shows that a unified strategy to tackle multiple crises is key to building effective collaboration among government departments and stakeholders.[43] It has become a platitude to impel governments to break departmental silos, but the literature is clear: studies of COVID-era governance show that countries that made explicit and soft links between industries, social needs, and the overwhelming health crisis emerged with a better capacity to innovate and balance short- and medium-term goals.[43] A unified strategy like a climate framework can, if well-drafted, serve as a valuable starting point for addressing other crises and for breaking departmental molds.[44]

   Studies of effective policy response to the polycrisis all point to the need for "enhancing internal administrative cooperation"[43] to allow for strategic crisis management with a wide-angle view. Governments must make transparent decisions, communicate them effectively, and refer them to shared goals. These decisions must also take into account the important role of local governments in facilitating coordination, especially with central authorities.[45]

3. **Build flexibility and continuous learning into policy from the start to enable action.**
CleanBC must be built to evolve alongside the polycrisis. Building immovable policies rather than a slate of options can cause situations in which governments double down on existing institutions despite clear failures, or scrap good policies that could have created financial benefit, such as the B.C. carbon tax. Environmental governance within the EU, for example, suffered under COVID-19 when the crisis led policymakers to double down on pre-existing institutional choices, despite evidence that the policy needed to evolve to respond to the unfolding economic and health crises.[43, 44] Governments will need to embrace systems thinking under conditions of uncertainty, and build frameworks that can shift to accommodate new information and global developments.

A paramedic assists a patient on a stretcher outside Victoria General Hospital's emergency department, Victoria, B.C. *iStock*

Governance in a polycrisis or "at the edge of chaos," as Waldrop describes it,[46] requires keeping as many options open as possible, so a policy maximizes robustness and results in the face of an ill-defined future. This requires policies that build in opportunities for restructuring and long-term adaptation, rather than set paths with binary outcomes. Outcomes need to be considered from the point of view of political and technical viability under changing circumstances rather than absolute optimization.[47] Rather than taking a top-down perspective on objective-setting, goals may need to be prioritized based on whether they align with already-expressed priorities from stakeholders.[48]

The CleanBC review should identify viable actions that can be undertaken immediately, build momentum, and produce clear benefits for stakeholders. The previous iteration of CleanBC set long-term targets that became so complex and costly that policy actions were never enacted in the first place. Moving from target-oriented to action-oriented climate policy will help avoid the "planning trap" of high-level targets. Balancing these does not dilute climate action; rather, it creates conditions where

actions can be quickly taken and the solution space filled, rather than setting technically challenging and politically unworkable goals.[49]

A review of CleanBC should integrate broad coalitions from industry, communities, and levels of government to identify short-term and mid-term actions, avoiding the pitfall of top-down targets without the support of those sectors that must work to meet them. Establishing common objectives between the framework and broader civil society will also ensure that these objectives remain in place regardless of potential changes in government.

4. **Build popular support for climate action by focusing on affordability, prosperity, and energy security.** Financial arguments against climate action are easy to build in a political context where balanced budgets are seen as the singular metric of fiscal prudence, and where other seemingly unrelated crises demand attention. Yet when the cost of inaction on climate change mitigation or adaptation is integrated into governance frameworks, it becomes clear that heavy investments from government are still smaller than the potential damages to health care or housing caused by not investing in the first place.[8, 13]

   If climate action is to remain front of mind in provincial governance, CleanBC's reviewed framework needs to state its economic benefits as clearly as possible. Where the immediate financial benefits are difficult to calculate, the framework must show the costs of inaction, integrating financial metrics like the social cost of carbon into its cost-benefit analyses.[50]

   In addition to economic justifications, climate policy also needs to build broad coalitions that will defend the policy framework against potential political retrenchment. Studies of health and climate "multi-solving" efforts identified that initiatives that brought stakeholders together to design community projects with climate in mind saw system-wide benefits that vastly exceeded costs and created other incommensurable benefits.[42]

"If climate action is to remain front of mind in provincial governance, CleanBC's reviewed framework needs to state its economic benefits as clearly as possible."

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Recentering B.C. climate policy

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Foreword

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our university-based network was groundbreaking and remains a core strength of the organization.

In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C. Drawing on academic expertise from across the province, the series is designed to inform the 2025 independent review of CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change.

When CleanBC was launched in 2018, climate action was a public and political priority. While concern about climate change remains widespread, it has increasingly been overshadowed by more immediate pressures, such as rising costs of living, strained public services, and growing geopolitical instability. Intensifying climate impacts exacerbate each of these challenges, which increases the complexity and opportunity for bold climate solutions. Now is not a time to retreat from ambition. Rather, it is a time for integrated solutions and public policy that unlock energy transformation, reduce climate risk, and increase prosperity at local, regional, and global scales.

The Insights Series highlights the deep connections between climate action and other top issues facing British Columbians: housing, affordability, economic competitiveness, Indigenous reconciliation, regional economic development, and fiscal efficiency.

B.C.'s climate leadership can be renewed—not by repeating the strategies of the past, but by evolving CleanBC to meet the realities of today.

Territory acknowledgement: At the University of Victoria, where the Pacific Institute for Climate Solutions (PICS) is hosted, we acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day

PICS and its university network have campuses across the province known as British Columbia. We respect and acknowledge the many unceded traditional territories and Nations where PICS universities stand including: xʷməθkʷəy̓əm (Musqueam) • Sḵwx̱wú7mesh Úxwumixw (Squamish) • səl̓ilw̓ətaʔɬ (Tsleil-Waututh) • q̓íc̓əy̓ (Katzie) • kʷikʷəƛ̓əm (Kwikwetlem) • Qayqayt • Kwantlen • Semiahmoo • Tsawwassen • Stó:lō • Syilx (Okanagan) • Dakelh (Carrier) territory: Lheidli T'enneh, Lhtako, Nazko, Lhoosk'uz • ?Esdilagh, a Tsilhqot'in Nation • Dane-zaa territory: Doig River, Blueberry River, and Halfway River • Tsimshian territory: Kitsumkalum, Kitselas, Lax Kw'alaams, and Metlakatla • and Gitwinksihlkw, a Nisga'a Village.

Sunny beach of Golden Ears Provincial Park in early September, Maple Ridge. *iStock*

Executive summary

Durable policy must align with the shifting priorities of voters. When CleanBC was launched in 2018, climate action was top-of-mind. It was backed by a strong economy, a minority government seeking bold action, and a federal partner with high climate ambition. Today, the context is markedly different. While concern about climate change remains widespread, it has been overshadowed by more immediate pressures including the rising costs of living, strained public services, and growing geopolitical instability.

> *"For a renewed CleanBC to succeed, it must shift from a climate-first to a people-first framing."*

B.C.'s shifting context has reshaped the terrain for climate action. Fiscal constraints have tightened, public trust has frayed, and polarization around climate policy has intensified. At the same time, more British Columbians feel disengaged. This is not due to apathy, but to policy narratives that do not connect with their day-to-day lives. Into this void, misinformation and disinformation is spreading, targeting disengaged voters with emotionally charged stories that portray climate action as unfair, ineffective, or elite-driven.

For a renewed CleanBC to succeed, it must respond to British Columbians' current realities. This means shifting from a climate-first to a people-first framing—designing and communicating climate action in ways that align with people's priorities and lived experiences. A renewed CleanBC must show how climate policy can deliver good jobs, lower household costs, strengthen public health, and build more resilient communities. It must also bring people into the

process through trusted messengers, regionally tailored policies, and pathways that reflect the fact that there is no one-size-fits-all transition to net zero.

In this analysis, we propose five strategic shifts for a renewed CleanBC:

1. **Adopt a people-first narrative focused on well-being and livelihoods:**
   Frame climate action around the issues that matter most to British Columbians—affordability, jobs, safety, and health—so that policy feels relevant, empowering, and hopeful.

2. **Ground emissions targets in tangible, relatable outcomes that can be seen:**
   Pair high-level goals with visible markers of progress, such as more heat pumps, transit access, or clean energy projects, to help people see climate action working in their communities.

3. **Reflect local and regional realities in policy development:**
   Move away from one-size-fits-all approaches by designing flexible, place-based policies that reflect the unique needs, opportunities, and values of different communities.

4. **Cultivate trusted messengers and diversify communications channels:**
   Use credible, relatable voices, such as peers, doctors, Indigenous leaders, and local champions, and reach people through multiple platforms, from social media to town halls.

5. **Invest in countering misinformation and disinformation:**
   Build public resilience with clear, accessible messaging, pre-bunking strategies, and stronger climate literacy efforts that target the moveable middle and inoculate against delay narratives.

Getting this right is not just about meeting climate goals, it is about strengthening public confidence and improving the lives of British Columbians.

Since 2021 Lime e-bikes were introduced into cities like Vancouver, Coquitlam and Kelowna to enhance transit integration, respond to urban and environmental challenges and bridge transit gaps. *iStock*

Communities across B.C. are understandably concerned about pressing health, social, economic, and geopolitical issues that threaten immediate well-being. *iStock*

Purpose

In May 2025 an independent review panel was tasked to "examine, evaluate, and update current climate targets, and recommend policies, programs, and initiatives to achieve significant emissions reductions in the province to meet these updated targets."[1] The panel's challenge is to identify ways the Government of British Columbia can get back on course to meet mid- and longer-term emissions targets of CleanBC.

> *"Climate policy has grown more polarizing, muddying the political motivation for ambitious policy."*

The CleanBC review comes at a moment of climate headwinds. Communities across B.C. are understandably concerned about pressing health, social, economic, and geopolitical issues that threaten immediate well-being.[2] Meanwhile, climate policy has grown more polarizing across the province and country, muddying the political motivation for ambitious policy. In this paper we explore the importance of public support for and participation in climate policies, and the implications for a future CleanBC. Meeting constituencies where they are at and ensuring policies have real and tangible value is vital to getting wind back in the sails of climate action.

Background: building on achievements

CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change, was created in the wake of the 2017 provincial election. It reflects that political moment: climate as a top-of-mind voter priority; a strategic need for the NDP minority government to agree to a robust climate plan

with an opposition Green Party; a strong provincial economy; and a federal government with high climate ambitions. The 2018 CleanBC plan set science-driven emission reductions targets and laid out evidence-based technology pathways to meet those targets, driven by strong climate-first policies.

CleanBC reaffirmed B.C.'s position as a North American climate leader, building on established B.C. policies and programs and setting a course to measurable progress. By 2022, the net greenhouse gas intensity of the economy had fallen by 30.5 per cent of 2007 levels and the net greenhouse gas emissions per person fell by 21.6 per cent. Industrial emissions fell by 11 per cent; methane emissions from the oil and gas sector by 45 per cent; building and communities emissions by six per cent. Measures since then, including biofuel blending and the zero-carbon building code, are forecast to contribute further reductions. People across B.C. were also living the change by 2022. More homes were being heated and cooled by heat pumps; home retrofits were up; public transit ridership was up; and B.C. households in the Lower Mainland and the Island were leading North America in zero-emission vehicles (ZEVs) purchases.[3]

Despite the massive changes underfoot, the core indicator of climate impact—net emission reductions—flatlined. By 2022, B.C.'s high economic and population growth rates were nearly cancelling out the substantial per-capita emissions reductions under way. In fact, net emissions in 2022 were down only 2.2 per cent from 2007 levels and by 2025, the government conceded that "the current policy landscape does not put the Province on track to meet its 2030 targets" of 40 per cent below 2007 levels.[3] Through CleanBC, the province has achieved many ambitious climate goals despite not meeting its targets. This speaks to the complexities of developing climate plans and the importance of this review and next steps.

Victoria's large mixed use development Dockside Green features a biomass gasification plant (making it carbon neutral in operations), onsite wastewater treatment, and water reuse—reinforcing sustainable neighborhood-scale design prior to the formal code. *Source*

Context

Shifting political and economic realities and public priorities

Durable policy goes with the grain of voters. For CleanBC to deliver, climate policy will need to reflect the political moment of 2025, a moment profoundly different from 2017. While climate was still a concern for voters in the 2024 provincial election, it was overshadowed by other issues including cost of living and housing, access to healthcare, the economy, crime and public safety, as well as addiction and mental health.[4] Voters signaled this shift in concerns by moving to the political right, particularly in rural and interior ridings; dropping support for the Greens; and giving the NDP a minority of seats.

> *"While climate was still a concern for voters in the 2024 B.C. election, it was overshadowed by other issues."*

Donald Trump's win for a second term as U.S. President unleashed a hinge moment of geopolitical, economic, and tariff uncertainty for all of Canada, B.C. included. The 2025 B.C. Speech from the Throne[5] and subsequent Budget[6] responded to the threat, prioritizing economic growth, trade diversification, clean energy and mining investment, and support for B.C. manufacturing and innovation. Issues were layered onto the NDP's election platform priorities, which included training for skilled trades; investing in critical transportation infrastructure; and supporting a surging population by strengthening housing availability and access to healthcare, protecting public services, and ensuring community safety and resilience.

BOX 1: WHAT IS THE MOVABLE MIDDLE AND WHY ARE THEY STRATEGICALLY CRITICAL?

The "moveable middle" represents a broad and strategically critical segment of British Columbians—those who are concerned about climate change, support clean energy, and believe more should be done, but are not yet deeply engaged. This group is not ideologically opposed to climate action; rather, they are focused on more pressing personal and economic concerns. Many lack strong climate literacy, do not see clear links between climate policies and their daily lives, and are especially susceptible to narratives that frame climate action as burdensome, unfair, or disconnected from local realities.[2, 11]

Engaging this demographic is essential for sustaining public license and building the durable, cross-partisan support that long-term climate ambition requires. The moveable middle includes a large share of rural, suburban, and working-class voters, many of whom sit outside traditional climate constituencies but are open to action if it aligns with their values and priorities.

A record $10.9-billion projected deficit and rising debt-to-GDP ratio alongside significant trade-related risks has brought notable fiscal constraints to the provincial government's agenda. A further $1.8 billion in revenue is estimated to be lost with the elimination of B.C.'s consumer carbon tax in April 2025.[7] This loss of consumer carbon tax revenue comes at a challenging time when the Government of British Columbia is seeking to rein in spending.

A large majority of B.C. voters still want action on climate

B.C. voters continue to want action on climate change. Polling has repeatedly shown that most B.C. voters are still concerned about what climate change means for their future, despite this concern being overshadowed by more immediate concerns:

- A May 2024 poll found 21 per cent of B.C. voters identified environment/climate change as one of their top three issues.[8]
- A September 2024 poll found 75 per cent of British Columbians believe we all need to do "a bit more" or "much more" to deal with climate change, with little variation across regions.[9]
- A post-mortem assessment of the role that climate change played in the October 2024 election found that while cost-of-living concerns were top-of-mind, 86 per cent of B.C. voters want the Government of B.C. to make addressing climate change a very high, high, or medium priority.[4]

Support for climate action also spans the political spectrum. Seventy-two per cent of B.C. Conservative voters believe climate change should be at least a medium priority.[4] A 2025 Re.Climate study reinforces this, showing 61 per cent of British Columbians—of which half are on the political right—are part of the "moveable middle"[10] (see Box 1).

Public attitudes on climate reflect the moment and should guide future climate policy. Indeed, British Columbians want strong climate action woven into other societal priorities linked to cost-of-living, well-being, and livelihoods. Engagement with the public is critical to unlocking B.C.'s potential.

B.C. voters are not feeling engaged in current climate plans and policies

The economy, cost of living, health care, and public safety are considered the priority issues currently facing British Columbians. For many people, connecting those issues to climate change is difficult, and as a result, climate action has fallen down their list of priorities.

Some factors exacerbating this feeling of disengagement from climate action relate to the framing (narratives) of climate plans and policies:[10]

- Expressing climate targets as abstract emission reduction concepts does not resonate with people's immediate concerns (such as local economies, affordability, fairness, health, resiliency) or convey more tangible outcomes that have broad support (such as growth in renewable energy, expanded regional transit).

- "Climate crisis" messaging fosters fatalism, particularly if not accompanied with a clear path for people to participate in climate solutions.
- Positioning of climate action as a burden or sacrifice, or taking a moralizing tone, adds to stress and anxiety.

Disengagement is also driven by perceptions that current climate policies are designed by the elite economic and political class, reflecting their distinct realities. The elite-driven perception comes through in urban vs. rural divides and the sentiment that climate policy does not reflect the realities and needs of everyday British Columbians.[12] Support for specific climate policies is often best assessed through their perceived fairness to people with low income or those living in rural communities or small towns,[13] in short, people least likely to engage with those policies in the first place. For example, policies promoting electric vehicle uptake may be seen as unfair to those living in rural and remote communities, as electric vehicles are seen as either too costly or impractical due to a lack of access to qualified electric vehicle mechanics, reliable charging infrastructure, and/or limited vehicle options.

Without strong public engagement, the Government of B.C. will miss a strategic opportunity to advance climate action in a manner that supports a healthy and resilient economy and population, especially as the issue of climate become increasingly politicized.

In a charged political context, it's challenging for citizens to wade through the various messages, especially in an era of sophisticated disinformation campaigns. *iStock*

> *"In a charged political context, it's challenging for citizens to wade through the various messages, especially in an era of sophisticated disinformation campaigns."*

Climate policy is being drawn into broader culture wars

Policy messaging matters as much as policy design. Growing polarization, more fragmented news and information sources, and distrust in government have muddied the plotline for climate policy. In B.C. this divide often shows up along three lines: rural versus urban perspectives, jobs versus the environment, and progressive versus populist worldviews.[12] This polarization is not happening by accident. Bad-faith actors are deliberately stoking division, using issues like the consumer carbon tax, 15-minute cities, or bans on natural gas heating to turn climate action into a flashpoint in a broader culture war.[14]

The new media and political environment make it harder to find a foothold through traditional communications. Messages from governments, business leaders, scientists, or academics—historically trusted views—are now often viewed with skepticism and even scorn, particularly by those outside major urban centres or on the political right. Many voters feel these "elite" voices are out of touch with everyday concerns like affordability, job security, and community well-being.[12] Among conservatives and centrists, there's growing mistrust in institutions they perceive as left-associated, especially universities and scientific organizations.[12, 15]

Meanwhile, well-meaning, fact-based climate messages are struggling to cut through. Analytical reports shared with narrow audiences can't compete with populist, emotionally charged anti-climate content designed to spread quickly and widely on social media.[12]

In such a charged political context, it's challenging for citizens to wade through the various messages, especially in an era of sophisticated disinformation campaigns.

Disinformation is confusing voters and decision makers

Disinformation campaigns are presenting a serious challenge to climate engagement. Industry groups, think tanks, and online actors seed doubt about climate science as a strategy to delay climate progress. That climate denial strategy has evolved into "climate delay" narratives and climate-related conspiracy theories.[16] The objective is to sow confusion and disbelief in the need and effectiveness of climate policy. Some examples of these narratives include: blaming other countries or jurisdictions for greenhouse gas emissions; positioning fossil fuels as essential to a low-carbon transition; promoting incremental actions and voluntary policies; and framing emissions reduction as burdensome and ineffective.[17] Climate delay narratives frequently use emotionally charged content to tap into public anxieties, including worries about cost-of-living and the economy.[17] The disinformation narratives also frequently take advantage of information fatigue and digital disorientation by embracing people's anxieties and concerns, and framing climate action as an unnecessary burden that makes voters worse off.[10]

These climate delay narratives deliberately target the moveable middle.[10] More troubling still, they are accompanied by climate conspiracies that blame climate impacts on government actions—such as in Alberta's 2023 wildfires—or that scapegoat vulnerable groups.[16, 18] Such disinformation further erodes trust in government and public institutions.

Thus, strong climate policy requires strong and strategic communication and engagement, and B.C. is at a perfect moment to refresh and roll out this approach.

Recommendations and discussion

B.C.'s approach to combatting climate change has been rooted in a strong climate-first, science-driven framing. This framing has left a broad constituency of B.C. voters feeling excluded and disengaged. Consequently, and in the additional context of proliferating misinformation and disinformation, ambitious climate action may be losing its social license and feeding polarization. To shift public engagement from passive concern to active support, climate policy and messaging needs a deliberate rebalance, centred on the immediate concerns of British Columbians.

CleanBC should ensure policies and messaging put people's immediate concerns about safety, cost of living, healthcare, and housing front and centre. *iStock*

We propose five strategic approaches the Government of British Columbia could use to rebalance the way climate policy is designed, seen, and felt:

1. **Adopt a people-first narrative focused on well-being and livelihoods:** *Frame climate action around the issues that matter most to British Columbians—affordability, jobs, safety, and health—so that policy feels relevant, empowering, and hopeful.*

   Ensure CleanBC policies and messaging puts people's immediate concerns about safety, cost of living, healthcare, and housing front and centre. This requires a significant shift from stories about emissions-reduction to stories about positive gains for B.C. voters.[17] Lessons can be learned from the framing of the 2022 U.S. Inflation Reduction Act, which was purposefully framed as an investment agenda to address people's concerns about job security and economic stability and broaden the constituencies for its initiatives. Updates on the Inflation Reduction Act's impacts also reflected this framing by tracking material benefits such as creation of good paying jobs, expanded opportunity, and lower energy costs.[19] Public support for the Inflation Reduction Act remained strong, including in conservative jurisdictions, even as many of its gains fell victim to President Trump's tax cuts.[20]

> *"Narrative reframes could include a shift from stories about emissions-reduction to stories about positive gains for B.C. voters."*

Specific narrative reframes could include:

a. **Harness emotions to build hope and empower:** Evoke emotions of hope and pride by showcasing B.C. leadership (e.g., in renewable energy and Indigenous-led clean energy); framing climate action as a vehicle to a better future (e.g., good jobs, healthier and safer communities); and showing how people can easily participate (e.g., action is possible, even desirable or enjoyable, not a burden). This makes climate action feel personal and achievable, key to mobilizing the moveable middle, and can also counter fear and loss narratives in climate delay discourses.[17]

b. **Lead with the public priority benefits:** Start narratives with a policy's material benefits first. For example, how new jobs are being created through renewable energy, electrification, and retrofits; how carbon-competitiveness helps B.C. industry in global markets; how heat pumps lower energy bills and provide thermal safety in heat waves; how bike lanes enable affordable transportation for young families. Position emissions reductions as a co-benefit.[21]

c. **Lean into the benefits for public health:** Narratives that show how policies can improve health outcomes, reduce pressure on the healthcare system, and safeguard society against climate impacts are potentially effective in B.C. as health issues resonate "strongly with voters".[17]

d. **Showcase environmental benefits:** British Columbians have a strong "cultural identity as a province rich in natural beauty,"[17] and narratives that frame the links between climate action and the environment/biodiversity particularly resonate with the moveable middle.[22]

e. **Adapt messaging for specific audiences, regions, and demographics:** Aligning narratives with local priorities builds trust and relevance. For example, in resource-dependent regions, focus on economic opportunities from clean energy projects. This might include local jobs, investment, and economic diversification, or quality of life and livelihood improvements from expanded regional transit.[23]

2. **Ground emissions targets in tangible, relatable outcomes that can be seen:** *Pair high-level goals with visible markers of progress, like more heat pumps, transit access, or clean energy projects to help people see climate action working in their communities.*

   a. **Pair emission targets with relatable and tangible targets:** Emissions are abstract, but public and active transit, wind and bioenergy projects, household technologies, nature-based solutions and the growth of the clean technology sector (and the jobs it brings) are not. Establish these tangible targets and prioritize these initiatives in communications, while also tracking emissions impact.

   b. **Share win-win stories:** Win-win messages resonate with voters across the political spectrum and help overcome paralysis and media fatigue. They highlight that climate action can be both effective in reducing emissions and improving lives through better jobs, lower costs, and more resilient communities.

3. **Reflect local and regional realities in policy development:** *Move away from one-size-fits-all approaches by designing flexible, place-based policies that reflect the unique needs, opportunities, and values of different communities.*

   People need to feel a part of climate solutions and included in finding solutions for the places where they live. Not all policies require deep engagement. But

British Columbians have a strong "cultural identity as a province rich in natural beauty." Columbia River in Revelstoke. *iStock*

In addition to peers, local community and Indigenous leaders, physicians are regarded as trusted and relatable messengers, seen as better attuned to people's values and priorities than politicians or other 'elite' experts. *iStock*

policies that directly impact daily life like home retrofits, transportation shifts, or land use planning benefit from meaningful engagement.

Engagement that is rooted in local and regional coalition-building and which prioritizes place-based pathways can take various forms, including:

a. **Feedback loops** so there is a "living dialogue" between policymakers and the public, e.g., through regular climate surveys or regional polling
b. **Community conversations** in communities across the province (rather than relying on mass messaging). Build trust by partnering with local organizations that have strong relationships with communities or different demographics.
c. **Climate assemblies:** citizen groups selected by lottery to deliberate and recommend climate actions can foster trust and reduce polarization. They also help build a more climate-literate and politically engaged public.[17]
d. **Storytelling and information-sharing** so the public can share successful initiatives, personalize climate action and build momentum. Peer-to-peer storytelling and relationship-building, such as a farmer discussing solar savings or a youth leader describing a community initiative, often resonate more powerfully than traditional messaging.

Inclusive, localized, and ongoing engagement supports policy durability and can be more than a check in; it can be built into the design of climate policies themselves by giving greater regional agency for transition pathways, recognizing that there is no one pathway to net zero.[24] This shift away from a "one-size-fits-all" design approach focuses on place-based adaptability and provides people, communities, and different regions with agency in tailoring co-designed climate action to regional realities. It might include expanded regional transit in rural as well as urban regions; community-specific heat pump or household solar deployment and related workforce training strategies; or local bioenergy initiatives. Combining this with tangible, trackable, and localized climate metrics can also boost engagement, e.g., tracking the number of installed heat pumps in one town, shift in transport modes, or percentage of renewables in local grids.

Finally, a coalition-building engagement model supports a key consideration for a renewed CleanBC: alignment with DRIPA. This involves ongoing engagement and relationship building with First Nations that respects "duty to consult" principles and Indigenous self-determination (and distinct from the community engagement addressed above). Approaches could include co-developing policies with First Nations and ensuring benefits (funding, jobs, capacity building) flow to Indigenous communities.

> *"Inclusive, localized, and ongoing engagement supports policy durability and can give greater regional agency for transition pathways."*

4. **Support and encourage trusted messengers and diversified communications channels:** *Use credible, relatable voices such as peers, doctors, Indigenous leaders, and local champions and reach people through multiple platforms, from social media to town halls.*

   Engaging diverse messengers to share narratives about climate action can address the current trust deficit and re-engage British Columbians in climate action. Credible and relatable messengers include peers, local community

leaders, Indigenous leaders, and physicians, as there is a perception they understand peoples' values and priorities more than politicians or "elite" experts.[10]

The moveable middle is most influenced by their peers, families, and friends.[10] This demographic also considers doctors as "some of the most trusted messengers."[17] As health care is a core priority for British Columbians, physicians speaking to the health benefits of clean air or protection from extreme heat could resonate strongly across the province. Partnering with First Nations leaders to share narratives on how Indigenous land stewardship aligns with climate goals and contributes to the well-being of people, communities and the environment also builds trust and engagement.[25–27]

As well as diversifying messengers, a multi-channel approach that includes targeted digital media, local and regional media, and in-person interactions alongside mainstream media can build trust and engagement. This is particularly true if different communications tools are used, such as strong emotionally resonant visuals to accompany the messages.

Another dimension of trust is institutional: people need to trust that climate programs will be fair and effective. Past experiences, such as rebate programs that were hard to access can erode trust. For example, B.C.'s electric vehicle rebate program was recently paused to review its income cut-off, which unintentionally excluded many middle-class and younger families, the demographic that was likely both most interested and likely to benefit.[28] Ground-up engagement might have identified this sooner. Effective engagement can address legitimate public concerns about fairness and competence.

5. **Invest in countering disinformation:** *Build public resilience with clear, accessible messaging, pre-bunking strategies, and stronger climate literacy efforts that target the moveable middle and inoculate against delay narratives.*

   Fostering an information environment full of factual, relevant, and hope-oriented climate narratives combat the disinformation of the climate counter-movement. Specific strategies include building media literacy, directly countering mis/disinformation, and reframing narratives as discussed in Section 3.1.[17]

   For example, there is evidence that pre-empting misinformation or disinformation with simple, accessible facts about false claims is an effective strategy. This approach has worked in public health and political campaigns.[17]

   Boosting climate literacy through a targeted provincial campaign[10] or funding research on individuals, organizations, and institutions promoting disinformation could also help counter this movement. Another strategy is to hold the climate change counter-movement accountable for "intentionally spreading harmful disinformation."[17]

   Finally, robust public engagement is itself a defense against mis/disinformation. If people feel genuinely informed and involved in the policy process and the messaging comes through reliable sources, they are less likely to be swayed by misinformation or disinformation.

> *"Robust public engagement is itself a defense against mis/disinformation."*

Conclusion

At this pivotal juncture, CleanBC has the chance to regain momentum and secure durable climate progress by putting people first.

CleanBC must evolve to meet the realities of today, not the conditions of 2018. This means shifting from a climate-first to a people-first strategy that speaks directly to the pressures British Columbians now face: affordability, job security, health, and community well-being. CleanBC can rebuild public trust and broaden the coalition of support by reframing climate action as a pathway to lower household costs, stronger services, rewarding livelihoods, and tangible benefits that British Columbians can see.

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CLEAN ENERGY CANADA

Insights Series: CleanBC Review

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Positioning British Columbia's Energy System for Decarbonization and Increased Competitiveness

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Foreword

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our university-based network was groundbreaking and remains a core strength of the organization.

In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C. Drawing on academic expertise from across the province, the series is designed to inform the 2025 independent review of CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change.

When CleanBC was launched in 2018, climate action was a public and political priority. While concern about climate change remains widespread, it has increasingly been overshadowed by more immediate pressures, such as rising costs of living, strained public services, and growing geopolitical instability. Intensifying climate impacts exacerbate each of these challenges, which increases the complexity and opportunity for bold climate solutions. Now is not a time to retreat from ambition. Rather, it is a time for integrated solutions and public policy that unlock energy transformation, reduce climate risk, and increase prosperity at local, regional, and global scales.

The Insights Series highlights the deep connections between climate action and other top issues facing British Columbians: housing, affordability, economic competitiveness, Indigenous reconciliation, regional economic development, and fiscal efficiency.

B.C.'s climate leadership can be renewed—not by repeating the strategies of the past, but by evolving CleanBC to meet the realities of today.

Territory acknowledgement: At the University of Victoria, where the Pacific Institute for Climate Solutions (PICS) is hosted, we acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day

PICS and its university network have campuses across the province known as British Columbia. We respect and acknowledge the many unceded traditional territories and Nations where PICS universities stand including: xʷməθkʷəy̓əm (Musqueam) • Sḵwx̱wú7mesh Úxwumixw (Squamish) • səl̓ilw̓ətaʔɬ (Tsleil-Waututh) • q̓íc̓əy̓ (Katzie) • kʷikʷəƛ̓əm (Kwikwetlem) • Qayqayt • Kwantlen • Semiahmoo • Tsawwassen • Stó:lō • Syilx (Okanagan) • Dakelh (Carrier) territory: Lheidli T'enneh, Lhtako, Nazko, Lhoosk'uz • ?Esdilagh, a Tsilhqot'in Nation • Dane-zaa territory: Doig River, Blueberry River, and Halfway River • Tsimshian territory: Kitsumkalum, Kitselas, Lax Kw'alaams, and Metlakatla • and Gitwinksihlkw, a Nisga'a Village.

Disclaimer: This paper was funded by the Pacific Institute for Climate Solutions (PICS). The views expressed in this paper are those of the author(s) and do not necessarily reflect the views or opinions of PICS.

Vancouver at night. *iStock*

Executive summary

CleanBC's emissions-centric focus has been disconnected from the build out and modernization of British Columbia's electricity system. Additionally, B.C.'s various energy systems are currently planned and regulated separately from one another. To maintain an affordable, reliable, and growth-driving energy system, more must be done to align B.C.'s net-zero goals, electricity system strategy, and energy planning. This will require new tools to plan, regulate, and operate the province's energy systems, along with new governance systems.

> *"More must be done to align B.C.'s net-zero goals, electricity system strategy, and energy planning."*

Like other jurisdictions around the world, British Columbia is grappling with what is required to simultaneously grow and decarbonize its economy. While B.C. benefits from a clean electricity grid, approximately 63 per cent of the total energy used in 2021 came from refined petroleum products or natural gas. To achieve the provincial target of net-zero emissions by 2050, these fossil fuels must be replaced with non-emitting energy sources. While plans to double the electricity grid's capacity by 2050 have begun, the ability to provide certainty about the reliable supply of clean electricity will determine whether B.C. can attract investments in new sectors as well as support existing sectors to remain competitive in a world increasingly prioritizing low-carbon goods and services.

This paper outlines key actions for the B.C. Government to integrate into a renewed CleanBC plan to create a climate-aligned energy system. These aim to maintain B.C.'s path to decarbonization and net zero while ensuring affordability and

reliability, improving economic competitiveness, contributing to reconciliation, and building a resilient electricity system prepared for a changing climate. These actions fall under four categories and include:

1. **Integrate and modernize the planning and regulation of an energy system.**
   B.C. must commission a pathways assessment to inform the development of an integrated energy plan. Additionally, it should create a new British Columbia Utilities Commission (BCUC) process to enable integrated utility planning and support the implementation of regulatory reforms to help modernize the energy system. Furthermore, it could establish a BC Hydro-led local energy planning process, empower BCUC to authorize "innovation sandboxes" for technologies and regulation, expand BCUC's capacity to conduct independent analysis of utility proposals, and update (electric vehicle EV) charging infrastructure assessment and targets.

2. **Diversify B.C.'s supply of clean, reliable, and affordable electricity.** B.C. must develop interprovincial and regional transmission plans. Additionally, it should establish long-term renewable energy targets and procurement schedules, and BC Hydro should regularly publish transmission and distribution capacity maps. Furthermore, B.C. should develop a long-term energy storage strategy and explore the creation of "renewable energy zones" to support the rapid and cost-effective deployment of renewables.

3. **Achieve sustainable economic growth that supports First Nations rights, ownership, and equity participation.**
   B.C. must build on existing efforts and enhance the comprehensive and permanent funding available to support First Nations capacity to evaluate, partner on, develop, and own clean energy projects. Additionally, B.C. should develop a clean energy labour market outlook aligned with its integrated energy plan. Furthermore, B.C. should establish a framework to determine the "highest and best use" of electricity resources, anchored by its net-zero objectives and develop a policy to support First Nations retail access and wheeling.

4. **Improve affordability.**
   British Columbia must implement a clean heat and cooling action plan, develop an affordable zero emission vehicle action plan, and adopt household clean technology deployment targets. This should include maintaining incentives and streamlining the consumer experience in technology adoption. Additionally, the province should conduct a study on the potential of Distributed Energy Resources (DERs) in British Columbia and develop a public roadmap to maximize their deployment.

Looking down Cleveland Dam and the Capilano River in North Vancouver. *iStock*

British Columbia's electricity system: an overview

Cheap clean electricity has been the backbone of B.C.'s economy for many decades. While Canada has the lowest electricity rates among G7 countries, B.C. does even better, with the third-lowest electricity bills in North America (after Quebec and Manitoba, two other hydro-rich provinces).[1]

B.C.'s grid is also among Canada's most reliable systems when compared to those in other provinces, even accounting for increased wildfires and service disruptions in recent years.[2] The province's clean electricity is an economic advantage in a number of ways. The first is the ability for B.C. to use its large hydro reservoirs to provide power when it's needed and when prices outside the province are high. This flexibility has allowed B.C. to benefit from a net gain from electricity trade of more than $1.5 billion since 2019, reducing residential electricity bills by 10 per cent from what they would otherwise be this year. Electricity exports exceed imports on average across these years, and trading keeps rates lower for ratepayers.[3]

Affordable electricity also keeps costs low for B.C. households and businesses. An average B.C. household (assuming 1,000 kWh used) spends $114 per month on electricity.[4] In contrast, the same family in Alberta would spend $258 per month for the same amount of electricity.[5]

And lastly, low-cost, reliable electricity is B.C.'s competitive advantage. Foreign investors are increasingly looking to locate in jurisdictions with an electricity system that is reliable, affordable, predictable, and clean. British Columbia is particularly well-positioned to participate in the net-zero transition. With an electricity grid that is 97 per cent non-emitting, B.C.'s grid is

among the world's cleanest.[6] The province also has 16 of the 34 critical minerals on Canada's critical minerals list, and 18 proposed critical mineral mines with an investment estimated at $37 billion if all mines were built.[7, 8] And five of the Global Cleantech 100 companies, an annual list of the world's most promising cleantech companies, are B.C.-based, including Ionomr Innovations, Mangrove Lithium, Pani, pH7 Technologies, and Svante.[9]

> *"About 63% of the energy used in B.C. in 2021 must be replaced (or offset) by non-emitting energy to reach net zero in 2050."*

The ongoing electrification of the global economy, however, has necessitated that governments and electrical utilities reassess their energy systems, and B.C. has had to do likewise. BC Hydro's 2021 20-year Integrated Resource Plan was amended in 2023, in part to account for new load growth as a result of climate policies and the consumer and business shift from fossil-fuel to electric transportation and building cooling/heat.[10] The provincial government and electrical utilities have also recently made major capital investments, announced new calls for power, and articulated an energy vision.

As the province grows its economy in the coming decades, affordable clean electricity will continue to be a key competitive advantage if the province makes the right moves now.

British Columbia's electricity system's role in broader energy system decarbonization

CleanBC was launched in 2018 as part of a wave of climate plans following the 2015 Paris Agreement. This era was premised on a high level of international alignment and cooperation on climate ambition, a central role for top-down government policy, and an emissions-centric focus. The CleanBC plan, however, did not adequately integrate an electricity system strategy, which has led to a disconnect between the province's net-zero goals and its energy planning.

For the province to maintain an energy system that remains affordable, reliable, and drives economic growth, more must be done to plan for the coming decades to ensure that future generations of British Columbians will continue to benefit. For context, about 63 per cent of the energy used in B.C. in 2021 was supplied by either refined petroleum products or natural gas that must be replaced (or offset) by non-emitting energy for B.C. to reach net zero in 2050 (Table 1).

This paper outlines the actions the B.C. Government needs to take and integrate into a revised CleanBC plan for the province to maintain a path to decarbonization and net-zero that improves economic competitiveness, protects the ratepayer, contributes to reconciliation, and builds an electricity system ready for a changing climate.

TABLE 1: BRITISH COLUMBIA TOTAL FINAL ENERGY USE

Energy type	Overall use (PJ)	Breakdown by sector
Refined petroleum	394 PJ (33%)	74% transportation 24% industrial 2% buildings
Natural gas	366 PJ (30%)	60% industrial 40% buildings
Biofuels and decarbonized gas	229 PJ (19%)	81% industrial 13% transportation 6% buildings
Electricity	208 PJ (17%)	57% buildings 43% industrial
Other	8 PJ (1%)	100% industrial

Source: Canada Energy Regulator. Canada's Energy Future Data Appendices [Internet]. Canada Energy Regulator; 2017 Oct 25. Available here.

Actions for British Columbia to maintain a path to decarbonization/ net zero

The fortunate situation British Columbians find themselves in now, with some of the world's cheapest electricity, was a result of decades of thoughtful planning and the build-out of our electricity system.

Now is the time to plan for the coming decades to ensure that future generations of British Columbians will continue to benefit. To that end, there are a number of actions the provincial government should take to lock in our clean power advantage while charting an affordable and reliable path to a net-zero 2050.

Modernize the planning and regulation of the energy system

Like other jurisdictions around the world, B.C. is grappling with what is required to rapidly grow its electricity system —intending to double it by 2050—while simultaneously replacing fossil fuel use with electricity.[11] These twin challenges must be tackled in parallel and will require new tools to plan, regulate, and operate our energy systems, along with new governance systems. If implemented decisively and proactively, these reforms offer opportunities to strengthen B.C.'s competitiveness for new economic investments, enhance energy security for households, and secure new opportunities to reduce household energy bills.

> *"B.C.'s various energy systems are currently planned and regulated separately from one another."*

While B.C. has long had a continent-leading climate plan, its energy planning has been falling behind. Over the last few years this has begun to change, with major capital investments, new calls for power, and the articulation of an energy vision. However, meeting the growing demand for clean electricity will require a greater integration and ongoing coordination between energy and climate objectives.

A key issue is B.C.'s various energy systems are currently planned and regulated separately from one another, with electricity and natural gas falling under the British Columbia Utilities Commission (BCUC) and fuels like hydrogen falling under the BC Energy Regulator. As B.C. seeks to rapidly scale up clean energy production, as well as electrify and decarbonize sectors across the economy, it will be necessary to fully integrate the planning and build-out of these different systems. Failing to do so will see growing costs placed on ratepayers with a growing risk of locking in emitting infrastructure or stranding fossil fuel assets.

A trio of wind turbines in northern B.C. *iStock*

In order to modernize the planning and regulation of the energy system, B.C. must:

- **Conduct a pathways assessment.** Following the lead of other jurisdictions who are trying to secure a clean electricity advantage, B.C. needs to commission a pathways assessment to help inform the development of an energy plan.[12] This type of assessment helps identify the most realistic cost-effective pathways for achieving net-zero objectives, informing energy planning, bringing stakeholders together around a common set of assumptions for the build-out of our clean energy system and helping to avoid stranded assets that risk driving up rates. B.C. should look to Ontario, Western Australia, and other jurisdictions on how to conduct an effective pathways assessment.[13]

- **Create a new BCUC process to enable integrated utility planning.** Leveraging other actions, the pathways assessment and recent efforts that the B.C. Government and BCUC have made on requiring utilities to produce

long-term resource plans, can establish a process that coordinates the investments across energy systems in line with our climate and energy objectives.[14] Jurisdictions across North America are piloting different approaches, and B.C. will need to conduct its own consultations to establish a made-in-B.C. approach.[15]

- **Support the implementation of key regulatory reforms.** In the last several years, both BCUC and BC Hydro have initiated or brought forward a variety of key regulatory reforms that help modernize our energy system. It is critical the government is an active partner in supporting the development and implementation of key initiatives.

In addition, B.C. should consider the following actions:

- **Establish a BC Hydro-led local energy planning process.** Different regions across B.C. will have vastly different challenges and opportunities when it comes to the decarbonization of existing energy systems and the required growth to support the electrification of households and industry. Bottom-up local planning—a growing practice in energy planning in the EU—helps ensure that energy planning is grounded in the local context, building community support and buy-in and matching investments to the unique needs of the region.[16]

Building out B.C.'s charging infrastructure is an essential step. *iStock*

- **Empower BCUC to authorize "innovation sandboxes" for technologies and regulation.** Innovation sandboxes are an increasingly important tool to support the integration of new clean energy technologies and to pilot new approaches to regulation. Allowing for experimentation outside of traditional rate-basing and benefit-cost analysis frameworks, this approach is seeing growing use in jurisdictions like Ontario, but has not been widely embraced in B.C.[17]

- **Expand BCUC's capacity to conduct independent analysis of utility proposals.** One key element in supporting integrated planning will be to adequately resource BCUC to conduct its own analysis of the proposal put forward by both electricity and natural gas utilities. Currently, the regulator is heavily reliant on the analysis advanced by utilities, with limited ability to conduct its own assessments of the underlying requirements.

- **Update EV charging infrastructure assessment and targets.** As the uptake of electric vehicles continues to grow, and commercial vehicles increasingly look to electrification, it will be essential that B.C.'s charging infrastructure is proactively built out. This includes incorporating updated forecasts about the scale of infrastructure required and expanded programs to support both public and private deployment.[18]

Diversify our supply of reliable and affordable clean electricity

The ability to attract adequate interest at competitive pricing, ensure First Nations' participation, streamline permitting processes, and build grid capacity are at the core of a successful and timely build-out of renewables capacity. In addition, complementing flexibility with cost-effective grid energy storage will be critical.

British Columbia has considerable renewable energy potential. Recent calls for power have received proposals for more than three times the amount of energy required.[19] However, bringing these resources online in a timely and cost-effective manner is essential. Existing permitting processes are time consuming and inefficient, often lacking coordination between the different permitting departments.

In addition, doubling B.C.'s electricity grid over the next 25 years will require a proactive approach to resource planning, with both BC Hydro and the B.C. Government providing certainty regarding the frequency, size, and type of energy procurements they intend to conduct. It will also be essential that the government is proactive in engaging stakeholders in communities that may be impacted by new clean energy projects.

> *"As a greater share of electricity comes from renewables, customers will need to have confidence in the reliability of the electricity system."*

As the grid grows, and a greater share of our electricity comes from renewables, the B.C. Government will need to ensure both industrial and residential customers have confidence in the reliability of the electricity system. Achieving higher shares of variable renewables offers a considerable opportunity for reduced energy costs but will require proactive strategies for managing the different peaks and seasonal variability from these resources. Proactive communication that focuses on the actions being taken to ensure reliability and the development of reliability focused policies will be vital.

In order to diversify our supply of reliable and affordable clean electricity, B.C. must in the short-term:

- **Develop interprovincial and regional transmission plans.** Expanded transmission with both Alberta and the U.S. is both an economic opportunity and an opportunity to maintain and enhance the reliability of B.C.'s electricity system. Dedicated resources should be allocated to working with the Alberta government on conducting a Benefit Accrual Study as Electricity Canada has recommended,[20] as well as to support conversations with other Western Electricity Coordination Council (WECC) jurisdictions about multi-jurisdiction resource planning.

- **Establish long-term renewable energy targets and procurement schedules.** While the government and BC Hydro have announced two new calls for power, the government (with BC Hydro) should outline the expected schedule for future energy procurements, providing both the timelines and scale of energy demand expected. This could take the form of dedicated targets informed by BC Hydro's planning and should be updated on a regular basis.

- **Publish regular transmission and distribution capacity maps.** As B.C. develops its schedule for future calls for power, it will be essential that BC Hydro proactively publish and update transmission capacity maps that help project proponents understand which regions have the necessary transmission capacity to support new projects, and which will require infrastructure investments to unlock them. Similarly, B.C. should publish distribution capacity maps on a distribution level, like those published in Ontario.[21]

In addition, B.C. should consider the following actions in the medium-term:

- **Develop a long-term energy storage strategy.** To help provide market and customer certainty, as well as combat misinformation about B.C.'s electricity system, the government should develop a dedicated energy storage strategy. This should encompass the integration of grid scale battery storage, consideration of vehicle-to-grid (V2G) opportunities, and the optimal role of B.C.'s legacy hydro resources in a system with a growing share of variable renewables.

- **Develop renewable energy zones.** Leveraging experiences in the EU and in Texas, B.C. should explore the creation of "renewable energy zones" (REZ) to support the rapid deployment of variable renewables.[22] A REZ is a geographic area that features high-quality renewable resources and can be proactively developed to build community support, ensure infrastructure is in place, and bring interested developers together. It can help lower costs, shorten timelines, and provide greater certainty for project proponents. As an example, the B.C. Environmental Assessment Act enables class assessments to inform regulatory processes and their requirements by project type and/or geographic region.

A dedicated energy storage strategy will help provide market and customer certainty. Source

Power sustainable economic growth that enables First Nations rights, ownership, and equity participation

From mining to AI, B.C. is experiencing rapidly growing demand for clean electricity from industrial and economic projects in every region of the province. The ability to provide certainty about the reliable supply of clean electricity will determine whether B.C. can attract investments in new sectors, like the battery industry, as well as support existing sectors to remain competitive in a world increasingly prioritizing low-carbon goods and services.

The B.C. Government has taken a number of important steps, including anchoring clean electricity as a key element of its economic strategy and starting to plan for the doubling of the electricity grid by 2050. Modern industrial policy, however, increasingly requires governments to make strategic decisions about which economic sectors are the priority. With finite resources, capacity, and energy, the B.C. Government must be willing to prioritize sectors that offer the greatest growth opportunities for the province that will remain relevant in a world increasingly electrifying. Helping support these priority sectors to adopt clean technologies, connect to the electricity system, and ensure a reliable and clean source of energy will be vital in securing new investments.

In B.C., the increasing electrification of our economy will rely on lands and resources where Indigenous nations are title- and rights-holders. From partnerships to Indigenous-owned and operated initiatives, First Nations expect to be full economic partners in these projects. In order to achieve the required clean energy build-out while delivering on the commitments outlined in the Declaration on the Rights of Indigenous Peoples Act (DRIPA), First Nations must have the resources and ability to explore, develop, own, and operate clean energy projects.

> *"Certainty about the reliable supply of clean electricity will determine whether B.C. sectors will remain competitive."*

Underpinning the doubling of B.C.'s electricity grid and the installation of clean technologies in millions of homes across the province is the workforce that makes it happen. Without decisive action, labour and skill shortages will become a limiting factor that undermines B.C.'s ability to build the resources it needs.

In order to power sustainable economic growth, B.C. must:

- **Establish comprehensive and permanent funding for First Nations capacity.** From making informed decisions about proposed projects to directly participating in project design to negotiating deals, First Nations require access to resources (both financial and expertise) that can support their capacity to evaluate, partner on, develop, and own clean energy projects. This is a critical gap highlighted by the First Nations Major Project Coalition (FNMPC) in the National Electrification Strategy, which could include both a dedicated funding stream and support for an Indigenous-led institution that supports capacity development on the ground.[23]

- **Develop a clean energy labour market outlook aligned with B.C.'s energy plan.** Ensuring B.C. has the skilled workers available to install, build, and operate clean energy projects of all sizes will require deliberate planning and an understanding of different needs. With the goal of doubling the grid over the next 25 years and supporting the adoption of clean technologies across the province, a new labour market outlook informed by B.C.'s energy plan is essential.

In addition, B.C. should consider the following actions:

- **Establish a framework to determine the "highest and best use" of electricity resources**. As B.C. takes steps to bring online new resources, it will be necessary to develop a framework that helps guide how B.C. allocates its energy resources and prioritizes the capital investments to expand the grid. In addition to choices between sectors or projects, the province will also need to balance the pursuit of economic projects with the need to achieve decarbonization objectives and the grid investments required to ensure households can secure the benefits from clean energy technologies.

- **Develop a policy to support First Nations retail access/ wheeling.** As more and more First Nations develop their own clean energy projects to meet the growing demand for electricity across the province, it will be critical that the B.C. Government establish a policy that enables First Nations to leverage existing BC Hydro infrastructure to negotiate directly with projects.[24]

Improving affordability through household electrification

Electrification is one of the biggest opportunities to drive down costs for homeowners across the province. From how we heat and cool our homes to how we power our vehicles, it is essential that British Columbians are provided with the choice and opportunity to reduce their costs through electrification.

Energy efficiency is one of the best ways that British Columbians can save money. Adopting an efficiency-first approach will help reduce the need to expand our electricity grid, reducing pressure on electricity rates. According to BC Hydro, the updated energy efficiency plan will help customers save $80 million per year by 2026.[25]

> *"B.C. lacks an overarching framework for driving deployment of distributed energy resources or managing their integration as a resource to defer or avoid new grid assets."*

For many British Columbians, the electrification of heating and cooling presents a major opportunity to reduce their energy bills. *iStock*

Recognizing this potential, the B.C. Government made "efficiency-first" one of the guiding principles moving forward. Actioning this principle must be a priority for both securing savings and reducing GHG emissions.

For many British Columbians, the electrification of heating and cooling presents a major opportunity to reduce their energy bills. However, as more and more families electrify by taking advantage of technologies like heat pumps, there will be increasing pressure on natural gas utilities to maintain the existing system even as the consumer base shrinks, with the potential for both rate increases and a growing threat to energy security for many households. And this won't be felt equally: low-income families and underserved communities may be left holding the tab on an increasingly expensive natural gas system. Without clear direction from the provincial government, natural gas utilities have been continuing to make status quo investments, seeking to expand the natural gas grid and pushing back on municipal government efforts to accelerate the electrification of heating and cooling.

The B.C. Government needs to join the growing number of jurisdictions taking decisive action to chart a path for the electrification of building heat, seizing the opportunity to protect and enhance the affordability and security of the province's heating systems.[26]

One of the most profound transformations being driven by electrification is the rise of distributed energy resources (DERs)

Incentive programs play a critical role in supporting the adoption of clean technologies, helping address their often-higher capital costs. *iStock*

and the growing importance of demand-side solutions. While B.C. is consistently a provincial leader in energy-efficiency programs, its demand-side management and capacity savings programs consistently underperform compared to other provinces. Furthermore, as other provinces accelerate the frameworks needed to integrate DERs, B.C. is being left behind without any overarching framework driving their deployment or managing their integration as a resource to defer or avoid new grid assets.

In order to protect choice and affordability through household electrification, B.C. must:

- **Implement a clean heat and cooling action plan.** The government should build on existing policies and rebates to develop an action plan that proactively and cost-effectively supports the electrification of B.C. heating systems. This plan should be anchored in ensuring households can benefit from greater energy efficiency, affordability, security and comfort, similar to the proposed plan in Manitoba.[27, 28] This approach should consider regional differences and bring together key policies, which could include:
  - The Highest Efficiency Equipment Standards (HEES) can be an effective regulatory instrument to ensure all newly installed heating and water heating systems are efficient and electrified where possible, which will avoid costly retrofits in the future.
  - Develop a clean heat standard for utilities in lieu of the utility emissions cap, modelled on the standards implemented or under development in Colorado, Vermont and Massachusetts. A clean heat standard typically establishes clear targets for emissions intensity or technology deployment. These approaches allow for incremental steps with a clear, predictable trajectory, but must be designed to avoid the lock-in of unnecessary gas assets.
  - The Province took an important step for health and safety by introducing a maximum temperature requirement for new dwellings in the B.C. Building Code. This effort should be extended by introducing a maximum temperature requirement in the Residential Tenancy Act. Landlords and tenants should be encouraged to install a heat pump for cooling needs, thereby also providing efficient and low-emissions heating, such as through the expanded suite rebate the government introduced in July.[29]
  - Supporting BCUC to conduct a "future of gas proceeding" investigating the pathways to achieving net zero in heating and electricity systems and exploring the steps being taken to plan and manage the transition in other jurisdictions.[30]

- **Adopt household clean technology deployment targets and build a coalition to help drive adoption.** Establishing clear targets for clean technologies (e.g., heat pumps, EVs, chargers) can help catalyze the actions required to drive their deployment. The California Heat Pump Partnership brings together government and private sector actors to tackle regulatory, financing, labour, supply chain and other related challenges.[31] This approach would complement the government's intention to use their buying power to bring down costs, ensuring partners are in place to help achieve deployment and identify the policies and regulations required.

- **Maintain incentives and streamline the consumer experience in technology adoption.** Incentive programs play a critical role in supporting the adoption of clean technologies, helping address their often-higher capital costs. In addition to continued support for incentive programs, the government should continue to refine program delivery to ensure they remain accessible to a greater number of British Columbians regardless of income or housing situation, ensure they are addressing

the barriers faced by those most likely to adopt clean technologies, and ensure a streamlined consumer experience in accessing incentives. (*See companion Insights Series paper, Pathways to accelerating household clean technology adoption across British Columbia*)

- **Conduct a study on the potential of DERs in B.C. and develop a public roadmap to maximize their deployment.** Following the lead of jurisdictions like Ontario, a DER potential study and roadmap will help ensure B.C. is leveraging the clean energy technologies being deployed in homes and businesses across the province to maximize household benefits and help bring down electricity system costs by offsetting larger capital investments.

- **Develop an affordable vehicle action plan.** B.C. should reorient its EV policy package around the headline objective of delivering British Columbians a selection of affordable EVs under the price point of $40K by 2030. The package should include modernizing the ZEV mandate with small adjustments to targets and compliance pathways, restarting Go Electric rebates, developing and EV charging strategy, and working with the federal government to reconsider Canada's EV trade approach and open up Canada's car market. (*See companion Insights Series paper, Pathways to accelerating household clean technology adoption across British Columbia, for more detail)*

Conclusion

Cheap clean electricity has been the backbone of B.C.'s economy for many decades. B.C.'s grid is also among Canada's most reliable systems when compared against those in other provinces, even accounting for increased wildfires and service disruptions in recent years.[32]

As the province grows its economy in the coming decades, affordable clean electricity can continue to be a key competitive advantage if the Province makes the right moves now.

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Pacific Institute for Climate Solutions

Insights Series: CleanBC Review

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Climate Policy as Territorial Development

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Foreword

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our university-based network was groundbreaking and remains a core strength of the organization.

In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C. Drawing on academic expertise from across the province, the series is designed to inform the 2025 independent review of CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change.

When CleanBC was launched in 2018, climate action was a public and political priority. While concern about climate change remains widespread, it has increasingly been overshadowed by more immediate pressures, such as rising costs of living, strained public services, and growing geopolitical instability. Intensifying climate impacts exacerbate each of these challenges, which increases the complexity and opportunity for bold climate solutions. Now is not a time to retreat from ambition. Rather, it is a time for integrated solutions and public policy that unlock energy transformation, reduce climate risk, and increase prosperity at local, regional, and global scales.

The Insights Series highlights the deep connections between climate action and other top issues facing British Columbians: housing, affordability, economic competitiveness, Indigenous reconciliation, regional economic development, and fiscal efficiency.

B.C.'s climate leadership can be renewed—not by repeating the strategies of the past, but by evolving CleanBC to meet the realities of today.

Territory acknowledgement: At the University of Victoria, where the Pacific Institute for Climate Solutions (PICS) is hosted, we acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day

PICS and its university network have campuses across the province known as British Columbia. We respect and acknowledge the many unceded traditional territories and Nations where PICS universities stand including: xʷməθkʷəy̓əm (Musqueam) • Sḵwx̱wú7mesh Úxwumixw (Squamish) • səl̓ilw̓ətaʔɬ (Tsleil-Waututh) • q̓íc̓əy̓ (Katzie) • kʷikʷəƛ̓əm (Kwikwetlem) • Qayqayt • Kwantlen • Semiahmoo • Tsawwassen • Stó:lō • Syilx (Okanagan) • Dakelh (Carrier) territory: Lheidli T'enneh, Lhtako, Nazko, Lhoosk'uz • ?Esdilagh, a Tsilhqot'in Nation • Dane-zaa territory: Doig River, Blueberry River, and Halfway River • Tsimshian territory: Kitsumkalum, Kitselas, Lax Kw'alaams, and Metlakatla • and Gitwinksihlkw, a Nisga'a Village.

Disclaimer: This paper was funded by the Pacific Institute for Climate Solutions (PICS). The views expressed in this paper are those of the author(s) and do not necessarily reflect the views or opinions of PICS.

Blue hour at Port Alberni's working waterfront. *iStock*

Executive summary

Climate interventions inherently reshape regional economies, alter patterns of investment, and transform territorial relationships. Recognizing this, climate policy should be reframed as territorial development: a strategy for integrating environmental, economic, and social objectives at the regional level by explicitly addressing the unique assets, vulnerabilities, and opportunities of diverse regions. The conventional approach, which treats environmental goals as primary and regional development as a secondary spillover, is both analytically flawed and practically counterproductive.

> *"This approach promises more effective climate outcomes, strengthened democratic governance and community empowerment."*

The rationale for B.C. to frame its climate policy as territorial development stems from the uneven regional impacts of B.C.'s greenhouse gas (GHG) emissions and climate risks. Resource-dependent and remote regions face higher compliance costs, limited diversification opportunities, and greater exposure to economic and climate shocks. Urban and service-oriented regions, by contrast, are better positioned to benefit from the low-carbon transition. A territorial development approach helps to overcome these divides through the twin concepts of territorial cohesion (reducing regional imbalances and fostering cooperation) and territorial competitiveness (building region-specific economic strengths). It includes better coordination between provincial ministries, federal agencies, First Nations, and regional institutions to support integrated development and climate action and overcome the governance gaps created by current sectoral approaches. Proactive, participatory transition management frameworks

also support workers, communities, and industries through industrial transformation, phase-out, and diversification.

This paper proposes five key actions to frame B.C.'s climate policy as territorial development:

- **Embed climate policy in regional development:** Integrate climate objectives into regional development funding, planning, and governance processes, making climate action a core criterion for investment and policy decisions.
- **Strengthen multi-level and cross-sectoral governance:** Formalize mechanisms for coordination among provincial ministries, federal agencies (e.g., PacifiCan), First Nations, regional districts, and economic trusts to align climate and development goals.
- **Enhance place-based support:** Tailor incentives, investments, and transition supports to the specific needs of regions, especially those most vulnerable to economic and climate risks. Empower local institutions to lead experimentation and adaptation.
- **Promote social infrastructure and equity:** Expand social supports and community benefit-sharing programs to address the broader impacts of industrial transition, particularly in rural, remote, and Indigenous communities.
- **Adopt adaptive management:** Implement monitoring and evaluation systems that track both climate and socio-economic outcomes, enabling continuous learning and adjustment of strategies.

Port Edward, located near Prince Rupert, has been considered a hub for LNG operations. *iStock*

By framing climate policy as territorial development, B.C. can simultaneously advance emissions reduction, regional equity, and economic resilience. This approach promises not only more effective climate outcomes, but also strengthened democratic governance and community empowerment, positioning B.C. as a model for just, place-based climate action.

Left: Wood chips at a Princeton mill will be made into pellet fuel.
Right: A volunteer and emergency response worker make sandbags at a flood preparation station in Kelowna in 2017. *iStock*

Introduction

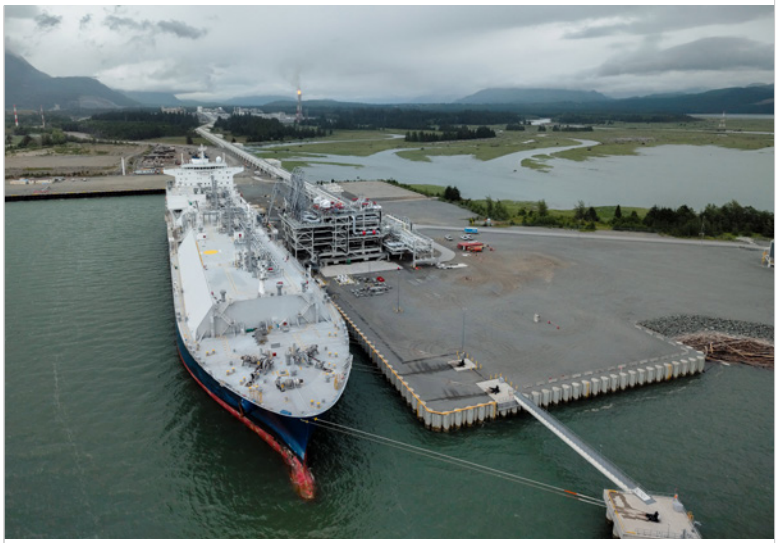
The Government of B.C. has long been hailed as a climate leader. It was the first province in Canada to adopt a comprehensive climate action plan and the first jurisdiction in North America to adopt a broad-based carbon tax.[1] Since that time, efforts have expanded. Today CleanBC implements a comprehensive set of climate actions to reduce GHG emissions by 40 per cent below 2007 levels by 2030. These actions span several interconnected areas: emissions reductions strategies targeting major sectors like transportation, industry, and buildings through electrification, fuel-switching, and efficiency standards; natural ecosystem protection centered on conserving forests, wetlands, and agricultural lands to enhance carbon sequestration; support for green innovation, including incentives for clean technology adoption and support for low-carbon industrial processes; and a host of financial incentives (e.g., for home retrofits, EV purchases, and industrial upgrades).

> *"GHG emissions in B.C. have remained virtually unchanged since 2007, despite $3.5 billion invested in CleanBC since 2018."*

Today's independent review of CleanBC's programs is an opportunity to reflect on what's working and what can be improved at a critical time: B.C. is not meeting its climate objectives despite significant investments and policy commitments. GHG emissions have remained virtually unchanged since 2007, despite $3.5 billion invested in CleanBC programs since 2018.[2] The government's latest Climate Change Accountability Report notes that only half of its 2030 target has been met, projecting a 20 per cent reduction below 2007 levels instead of the promised 40 per cent.[3] There are stagnant or rising emissions in key sectors, underreporting of major

emission sources, policy gaps and delayed implementation and ongoing fossil fuel expansion, especially LNG. Meanwhile, the province's population continues to grow, with resulting pressure on infrastructure and energy demand. We risk falling behind at a time when the consumer carbon tax has been eliminated, previous approaches are being questioned in the face of economic constraints and there is great deal of uncertainty.

> *"Climate policy interventions inherently reshape regional economies, alter spatial patterns of investment and employment, and transform territorial relationships."*



LNG carrier GasLog Glasgow at the Canada site in Kitimat. Source

Framing climate policy as territorial development can help overcome these challenges. The conventional approach to climate policy treats environmental objectives as primary, with territorial development benefits considered secondary spillovers. However, scholarship in regional development theory and place-based climate action demonstrates that this hierarchy is both analytically flawed and practically counterproductive.[4–6] Climate policy interventions inherently reshape regional economies, alter spatial patterns of investment and employment, and transform territorial relationships—making them fundamentally territorial development policies regardless of their stated primary purpose. This is not to say that regional development should be the sole focus of climate policy, but that it should be a key part of it and that doing so can help produce more effective, durable, socially acceptable and place-based climate solutions.

A territorial development approach addresses the unique economic assets, vulnerabilities, and opportunities of different regions while reducing territorial disparities that have long characterized B.C.'s economic landscape. This encompasses a suite of initiatives, policies, and strategies designed to promote economic growth, social well-being, and environmental sustainability in specific places. It can be thought of as the glue that connects the different CleanBC measures to social and economic development and "place". Such an approach aims to reduce disparities between regions and foster innovation, improve infrastructure, support local industries, and enhance quality of life by taking into account the unique characteristics, resources, and needs of each area. Doing so helps regions serve as laboratories to test new governance models, technologies, and policies and scale them where they've proven to be effective. It demands identifying and acknowledging place-based differences, e.g., climate risks, industrial transitions, or demographic changes, and providing targeted interventions. It entails working in new ways, forging alliances, and foremost, developing a vision of what can be achieved that is responsive and community-grounded. Essentially, it's an approach that seeks both territorial **competitiveness** and territorial **cohesion**.

CleanBC already provides the foundations for such an approach, it just needs to be strengthened. This paper presents a framework for climate policy as territorial development. It describes the twin concepts of territorial cohesion and competiveness and outlines why these are critical for effective climate policy. It presents a framework for action, outlining multiple pathways by which climate policy mechanisms can generate regional development outcomes, integrating climate policy interventions with broader place-based development objectives.

Some distinct landscapes of British Columbia, touched by different forms of development. From left: downtown Vancouver; agriculture in Oliver in the Okanagan Valley; logged area of Vancouver Island. *iStock*

Territorial cohesion and competitiveness

B.C.'s GHG emissions policies pose uneven risks across its diverse regions due to differences in geography, remoteness, and economic structure. The province's emissions profile is dominated by transportation, which accounts for more than 40 per cent of total emissions, followed by industrial sectors including oil and gas production.[7] The Mainland South-West, the province's economic hub dominated by knowledge-based and service industries, faces relatively low direct risks since its low-carbon economy benefits from growing demand for clean technologies and services. Coastal Vancouver Island, with its balanced mix of forestry and tourism, experiences a more moderate impact where increased regulations raise costs for resource sectors but also enhance the value of intact ecosystems and nature-based tourism. In contrast, the interior regions—including north east, Cariboo, north coast and Nechako—are heavily reliant on resource extraction industries such as oil and gas, mining, and forestry, which are emissions-intensive and geographically remote. These factors amplify the costs of compliance with stricter emissions regulations, limit diversification opportunities, and increase the risk of economic disruption. Smaller regional centers like Kootenay and Thompson Okanagan have more diversified economies blending agriculture, tourism, and light manufacturing, which provide some resilience, but their rural nature means higher per capita emissions and greater sensitivity to carbon pricing. The greatest risks concentrate in the resource-dependent, remote interior, while urban and service-oriented regions face fewer direct economic threats. B.C. has one of the highest disparities in sub regional GHG emissions in Canada.[8]

Climate initiatives risk reproducing existing patterns of injustice if they do not address the unique realities and historical marginalization of peripheral, resource-dependent regions.[9] The province's economic structure reflects a classic core-periphery dynamic[10], with the Mainland/

southwest region producing around 70 per cent of provincial GDP while resource-dependent regions remain vulnerable to volatile commodity cycles.[10, 11] These disparities stem from historical resource dependence, metropolitan agglomeration effects, colonial land dispossession, and policy fragmentation that often overlooks higher per-capita costs in sparsely populated areas.

While this matters for mitigation, it is equally pertinent for adaptation initiatives. The southern Interior B.C. and coastal First Nations regions face the highest climate exposure levels, while northern B.C., Peace River, and rural/small communities are among the least prepared to manage climate risks.[12] The province shows significant adaptation gaps, with climate impacts outpacing adaptive capacity in most regions outside the Lower Mainland. Heat waves, wildfires, and floods are costing the province billions annually, yet many communities lack adequate resources for effective climate preparedness.[13] The B.C. Government's 2019 Preliminary Strategic Climate Risk Assessment for British Columbia[12] was excellent and comprehensively outlined risks at the community and regional levels. In contrast, the province's Climate Change Accountability Reporting does not include such spatially disaggregated analysis.[3] Some regional districts have created their own reports, but the big picture on regional risks and disparities is missing.

In the past 20 years, a wide range of policies have been employed to manage transitions in advanced economies with innovation; research and development; labour market planning; and skills development and supports among the most prevalent.[14] However, the connections of these sectoral policies to "place" and local institutions have often been weak, limiting their effectiveness and many approaches have been reactive instead of proactive.[15] B.C.'s successive climate strategies are largely sectoral in their targets—a place-based lens has been missing.[i] This is in part by design:

> *The legislation [Climate Change Accountability Act, 2018] does not explicitly require that the government's plans include specific measures to support workers, communities, and industries impacted by the transition towards a low-carbon economy.16*

Neglecting these differences risks alienating a segment of society. An urban-rural divide has long been a feature of Canadian politics.[17] B.C.'s last election shows that this divide may be growing[18] with the potential to create "geographies of discontent".[19]

A territorial development approach can help overcome these divides. Such an approach centres the assets, vulnerabilities, and opportunities of different regions, identifying the resources and investments that they need to successfully meet their development objectives. It is not a singular approach, but a way of governing, planning and strategically directing resources. While "region" forms the central organising concept for action, it is a flexible concept. The institutions that support regional development may differ; a water management board may be part of regional development and scaled differently than a regional transportation body or a regional economic development agency, but all play their part in supporting regional development.

> *"The connections of sectoral climate policies to 'place' and local institutions have often been weak."*

The twin concepts of territorial cohesion and competitiveness can help to reframe climate policy around a territorial development agenda.[ii] Both concepts have been foundational to EU policy but hold relevance for Canadian and B.C contexts.[20] Territorial cohesion can be conceptualised as "the process of promoting a more cohesive and balanced territory" through four essential dimensions: supporting the reduction of socioeconomic territorial imbalances, promoting environmental sustainability, reinforcing territorial cooperation and governance processes, and establishing

Peace River viewpoint. *iStock*

Aerial view of Burrard Inlet and its port facilities in the Lower Mainland. *iStock*

polycentric urban systems.[23] Territorial competitiveness represents the capacity of cities and regions to compete in a globalized economy based on absolute advantage principles, distinguishing it fundamentally from national competitiveness which operates under comparative advantage.[21] These concepts are mutually reinforcing, where cohesion policies serve as prerequisites for achieving territorial competitiveness. This integration recognizes that market forces, driven by globalization, tend toward geographical concentration and acceleration of activity relocation, leading to greater territorial disparities that can only be addressed through coordinated territorial approaches. A focus on territorial cohesion ensures that climate policy addresses environmental sustainability while reinforcing territorial cooperation and governance processes. This is particularly crucial for B.C., where complex jurisdictional relationships between federal, provincial, local, and Indigenous governments and rightsholders require coordinated approaches to climate action. The polycentric urban development component of territorial cohesion supports the development of multiple centers of climate innovation and adaptation, reducing dependence on single urban centers while building resilience across the provincial territory.

By organising B.C. climate policy around these twin concepts, the province can move beyond sector-based approaches toward integrated territorial strategies that recognize climate action as simultaneously an economic development opportunity and a cohesion imperative. Table 1 outlines a framework for the implementation of each dimension. This framework ensures that climate policies contribute to reducing regional disparities while building competitive advantages based on each territory's unique assets and capabilities. It addresses some of the critiques of "green growth" wherein "the negative environmental impacts arising from a strong economy together with the tendency of spatial policies to overlook localised social and environmental inequities, dysfunctional growth dynamics are likely to consolidate."[24] The remainder of this paper explains what is meant by such an approach, with references to examples of how this can be implemented.

TABLE 1: TERRITORIAL COHESION AND COMPETITIVENESS OBJECTIVES FOR CLIMATE POLICY

Dimension	Territorial Cohesion	Territorial Competitiveness
Policy Objective	» Reduce regional disparities in economic, social, and environmental outcomes » Ensure fair access to climate benefits and opportunities across all regions » Foster social inclusion and balanced development	» Enhance regional economic strengths and innovation capacity » Promote productivity and growth in clean sectors » Position regions to attract investment and talent in the green economy
Mechanisms	» Place-based policy design tailored to local vulnerabilities and needs » Equity-oriented funding formulas » Support for communities facing transition, disruption or decline » Inclusive governance and participatory planning, social dialogue	» Investment in regional innovation hubs and clean technology » Support for sectoral transformation (e.g., forestry, manufacturing) » Infrastructure for connectivity and market access (supports economic diversification) » Skills training for green jobs
Key Interventions	» Community-owned renewable energy projects » Structural adjustment assistance » Comprehensive adaptive support » Transition agreements ensuring support for affected workers and communities and service delivery hubs	» Clean energy infrastructure aligned with regional economic priorities » Commercialization of clean technologies » Support for industrial transformation and diversification » Strategic investments in competitive sectors (e.g., hydrogen, bioeconomy)
Governance Structures	» Regional transition coalitions with broad representation (municipalities, First Nations, labour, civil society) » Multi-level coordination to ensure balanced development » Mechanisms for monitoring and accountability to ensure equitable outcomes » Transition agreements (funded multi-level government agreements)	» Regional innovation ecosystems involving industry, academia, and government » Public-private partnerships for clean investment » Regional economic trusts and development agencies focused on competitiveness
Expected Outcomes	» Reduced urban-rural and core-periphery divides » Greater social acceptance and legitimacy of climate action » Enhanced resilience and well-being in vulnerable regions	» Increased regional productivity and economic growth » Attraction of investment and skilled labor » Leadership in clean technology and sustainable industries

Source: Author's own elaboration.

The Highland Valley Copper mine near Logan Lake is one of the largest copper mines in the world. Copper is an essential resource in electrification. *iStock*

A territorial development framework for climate action

There are multiple pathways by which climate policy mechanisms can generate regional development outcomes. The table on the next page illustrates this across five dimensions spanning cohesion and competitiveness objectives. Viewed collectively, the pathways illustrate a single insight: climate policy is most durable and effective when it is simultaneously economic, social and spatial policy. By embedding clean-energy incentives within regional diversification plans, tailoring support to vulnerable workers, knitting territories together with shared infrastructure and empowering local institutions to experiment and learn, governments convert decarbonisation from a cost-centric mandate into a broad-based development agenda.

> *"Climate policy is most durable and effective when it is simultaneously economic, social, and spatial policy."*

B.C.'s framework for regional development operates through a collaborative multi-level governance structure. These could be better connected to climate policy:

- At the federal level, Pacific Economic Development Canada (PacifiCan) could play a more strategic role in linking regional economic diversification with climate objectives. Currently, PacifiCan's Regional Economic Growth through Innovation program supports business scale-up and regional innovation ecosystems, but these initiatives could be more explicitly oriented toward clean technology

development and low-carbon economic transitions. The agency's mandate to foster economic development and competitiveness aligns naturally with climate policy goals when regional investments prioritize sectors like renewable energy, clean technology, and sustainable resource management. Enhanced federal-provincial coordination could ensure that PacifiCan's funding streams actively support the implementation of the CleanBC Roadmap to 2030 at the regional level. The federal-provincial Regional Energy and Resource Table could be a key mechanism for this; presently it is structured in a very sectoral manner and seems poorly connected to regional development.

- The provincial ministries responsible for regional development, the Ministry of Housing and Municipal Affairs and the Ministry of Jobs, Economic Development and Innovation, represent critical leverage points for climate-development integration, yet their coordination with the

TABLE 2: CLIMATE POLICY AS TERRITORIAL DEVELOPMENT STRATEGY: FRAMEWORK FOR ACTION

Pathway/Mechanism	Regional Development Outcome
Economic Development	
Clean technology investment and deployment	Regional economic diversification
Green job creation and workforce transition	Local employment growth; skills upgrading
Regional innovation and entrepreneurship	New business formation; local economic resilience
Value-added processing and local supply chains	Increased local value capture; supply chain integration
Social Equity	
Just transition programs for affected workers	Reduced inequality; inclusive economic participation
Community energy ownership models	Community wealth-building; local empowerment
Indigenous self-determination and climate leadership	Enhanced Indigenous governance; reconciliation
Affordable clean energy access	Reduced energy poverty; equitable service provision
Territorial Cohesion	
Rural-urban, rural-rural, FN-local government partnership development	Balanced growth; reduced regional disparities
Inter-regional collaboration and knowledge sharing	Shared best practices; capacity building
Infrastructure connectivity and service integration	Improved access; regional integration
Balanced regional development outcomes	Territorial cohesion; reduced polarization
Innovation Systems	
Clean technology R&D hubs	Regional innovation ecosystems; tech leadership
Knowledge transfer and commercialization	Accelerated deployment; economic spillovers
Skills development and training programs	Workforce adaptability; higher productivity
Demonstration projects and pilot initiatives	De-risked investment; local learning
Enhanced Governance	
Multi-level collaborative frameworks	Coordinated action; policy coherence
Participatory planning processes	Democratic legitimacy; community buy-in
Indigenous co-governance structures	Shared authority; culturally relevant solutions
Regional capacity building	Local empowerment; sustained implementation

Source: Author's own elaboration.

Climate Action Secretariat remains underdeveloped. These ministries could establish formal mechanisms to ensure that all regional development funding and policy decisions undergo climate lens analysis, similar to approaches being implemented in other jurisdictions. This would involve embedding climate considerations into housing strategies, infrastructure investments, and economic development programs from the outset, rather than treating climate action as an add-on consideration.

» First Nations governments and Tribal Councils, as rights-holders and key regional development actors, bring unique perspectives and governance models that could significantly enhance climate-regional development integration.[25] The BC First Nations Climate Strategy and Action Plan provides a comprehensive framework that emphasizes the inseparability of decolonization from decarbonization, offering pathways for collaborative climate action that respect Indigenous jurisdiction while advancing regional economic development goals. Enhanced partnerships between First Nations and other regional development actors could leverage Indigenous knowledge systems and governance approaches that have historically integrated environmental stewardship with economic activity.[26, 27]

» The 27 regional districts and their governance structures present perhaps the greatest opportunity for improved climate-regional development integration. The ten Regional Growth Strategies that currently exist could serve as primary vehicles for embedding climate considerations into long-term regional planning. These 20-year strategic plans already address housing, transportation, services, parks and natural areas, and economic development, all sectors central to climate action, but they vary significantly in how comprehensively they integrate climate mitigation and adaptation objectives. Regional districts could adopt climate resilience indicators, and low-carbon development pathways that align with provincial climate goals while addressing local economic development priorities.

» The four territorial-specific economic trusts, Columbia Basin Trust, Economic Trust of the Southern Interior, Island Coastal Economic Trust, and Northern Development Initiative Trust, represent unique institutional innovations that could be leveraged more effectively for climate-regional development integration. These trusts already demonstrate climate leadership through various initiatives: Columbia Basin Trust's comprehensive Climate Action Program supports community-level emission reductions and adaptation projects, while Northern Development Initiative Trust has invested in clean technology ventures and community energy efficiency projects. However, these efforts could be significantly amplified through enhanced inter-trust collaboration and coordinated regional climate strategies that leverage the collective $300+ million in assets these institutions manage. Cross-trust partnerships could support large-scale regional climate infrastructure projects, clean technology commercialization, and just transition initiatives for communities dependent on carbon-intensive industries.

» The broader ecosystem of regional actors, including higher education institutions, NGOs, industry associations, and businesses, could be more systematically engaged in climate-regional development planning through enhanced governance mechanisms. Multi-stakeholder regional climate collaboratives, similar to successful models in other jurisdictions, could bring together diverse actors to develop shared climate-development visions and coordinate implementation efforts. These collaboratives could serve as platforms for pooling resources, sharing knowledge, and scaling up local innovations while ensuring that climate action contributes to broader regional competitiveness and social equity goals. Networks like the Northern BC Climate Action Network and the Vancouver Island and Coastal Communities Climate Leadership Plan demonstrate the appetite for such initiatives.

> *"Embed climate considerations into housing strategies, infrastructure investments, and economic development programs from the outset, rather than as an add-on consideration."*

The institutions that "carry" this work forward in different parts of the province differ. Metropolitan areas tends to be institutionally "thick" with a wide range of critical actors such as higher education, business and industry groups, innovation hubs and accelerators, a strong social and non-profit sector, and many

other resources that benefit from proximity and scale. In lower density arras, this landscape will typically look different and some of the key drivers of regional development may be absent. It is important to recognise these institutional contexts in the design of interventions and supports. In rural, remote and northern contexts, it becomes all the more important to share resources and scale initiatives wherever possible through partnerships, shared services, and joint investments to increase capacity. Many government programs promote a "competitive" approach, for example where municipalities apply for funding individually in competition with their neighbours. This is a missed opportunity. Rural, remote and northern communities would be better served by rural-rural, rural-urban, and FN-local government partnerships: these can be encouraged through policy design. The EU's Integrated Territorial Investment instrument offers an example of how to achieve this. The governance framework could also benefit from adaptive management approaches that enable regions to respond flexibly to changing climate conditions and economic circumstances. This would involve building monitoring and evaluation systems that track both climate **and** social and economic development outcomes, enabling continuous learning and adjustment of strategies based on emerging evidence and changing regional priorities. Such approaches are particularly important given the increasing frequency and intensity of climate-related disruptions that require rapid regional responses while maintaining long-term development trajectories.

A territorial development approach also requires a framework to understand and target place-based transitions. Consider for example the following simplified typology of net zero transitions in the industrial sector (a key sector for B.C.'s emissions reductions commitments) spanning five types:

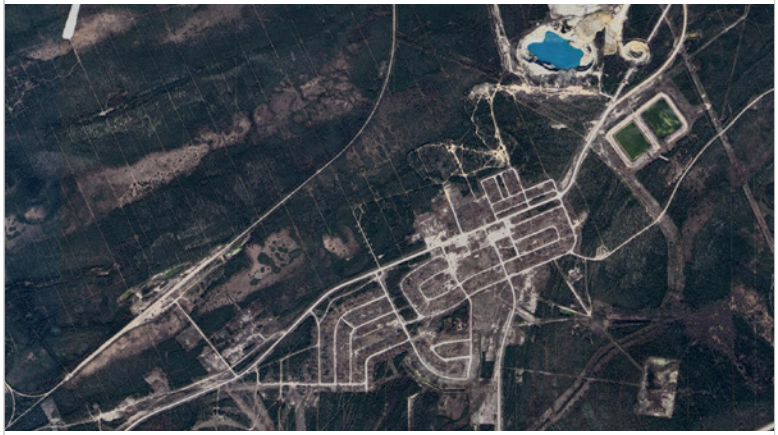
i. The first type, **new and emerging industries**, such as critical minerals and hydrogen industries, entails innovation, investments, and infrastructure which may be proximate to existing related activities (e.g., innovation clusters) or take place in entirely new ones. In the case of mining, these activities disproportionately take place in rural and remote territories.

ii. The second type, **transformation**, refers to innovations and investments needed to reduce the GHG emissions of a specific sector or industry (e.g., decarbonization of steel production). In this type, the industry is not being replaced, but transformed and as such, may require support for innovation/R&D/capital investments in order to meet decarbonization objectives. Such transformation may impact the nature of the local/regional economy and community wellbeing, but much of the economic activity may continue in place.

iii. The third type, **industry phase-out and replacement**, describes a clear shift from one industry to another related industry (e.g., from oil and gas production to clean hydrogen). In such instances, the policy interventions to manage such a transition are commonly targeted to workers and industry and while the broader community may be impacted, economic activity remains within the region. Industry phase-out and replacement requires large capital investments and can have large impacts on land and the environment.

iv. In the fourth type, an **industry is phased-out and economic diversification** is pursued (e.g., coal industry phase out). In communities where there is a large share of employment in the industry, there can be major impacts on the local/regional economic and community wellbeing. Such transitions are risky for people/places/firms and require longer-term strategies and investments and a regional development approach and environmental remediation.

v. Finally, an **industry can be phased-out with no or little potential for alternative industries/businesses.** This scenario has played out in hundreds of rural and remote towns in Canada, such as Pine Point, Northwest Territories, and Schefferville, Quebec, which experienced mine closures.[28, 29]



The abandoned locality of Pine Point, Northwest Territories, built to serve the work force at the open-pit mine producing lead and zinc ores. *Google Maps*

The small northern B.C. town of Atlin near the Yukon border. *iStock*

These ideal types have a clear relation to 'place' with heightening vulnerability across the spectrum. The creation of new sustainable industries or the transformation of high GHG emitting ones requires investments in innovation, human resources, infrastructure and capital investment to make these transformations feasible. Urban locales are more likely to have these investments in place than rural and remote ones, where they may need to be brought in, or developed. For phase-out and economic diversification, this is again much more likely in an urban economy than a rural or remote one where specific industries are more likely to dominate economic activity and employment. Phase-out with no replacement economic activity is again a rural and especially remote occurrence.

Each transition type has implications for the scale and scope of interventions alongside governance and accountability frameworks that support it. There can be overlap between transition types wherein new regulatory requirements have whole economy-society impacts, but also impact specific regional/local industries, thus necessitating a combination of broad and targeted policy responses. The drivers for change across each of the transition types can stem from such factors as regulatory requirements, new innovations/competition, exogenous shocks, etc. Where drivers may be anticipated, transitions can be planned in advance in order to reduce negative effects. Where transitions are unanticipated, emergency responses are needed. B.C.'s Community Transition Services are critical for this work. They are a dedicated team within the provincial government coordinates across government departments and with other levels of government to provide: workers transition supports; community and local government supports; and economic development and diversification.[30] Ideally, governments will be able to provide supports on the basis of proactive planning. However, where that is not possible, a reactive approach is important. Addressing territorial disparities requires sustained commitment to regionally differentiated strategies, equity-oriented funding formulas, and explicit spatial justice approaches to prevent B.C from becoming a two-track province where prosperity concentrates along the Pacific corridor while peripheral and Indigenous regions bear disproportionate social and economic costs.

> *"The creation of new sustainable industries or the transformation of high GHG emitting ones requires investments in innovation, human resources, infrastructure and capital investment."*

A central feature of transition management is the "transition arena," a participatory space where diverse actors collaborate to identify systemic problems, develop shared visions, and design experimental pathways.[31, 32] This process involves four key governance activities: strategic (long-term visioning and planning), tactical (designing programs and partnerships), operational (implementing action plans), and reflexive (monitoring and evaluating progress).[33] Regional and community economic transition planning in Europe has evolved into such a structured framework. The European Union's Territorial Just Transition Plans (TJTPs) serve as the cornerstone, requiring member states to outline pathways for phasing out carbon-intensive industries while fostering sustainable growth. These plans emphasize multi-level governance, public participation, and alignment with broader EU climate objectives, such as the European Green Deal. Among Canadian provinces and territories, B.C. has many leading practices for transitions management and is one of the few jurisdictions to have a transitions management unit. However, transitions management is not generally integrated into regional development processes. It is important to proactively identify types of transitions in order to ensure that the correct suite of supports is available with higher levels of upper level government interventions required in some types. Ideally, there

can be anticipatory planning for economic/industry transitions. There is a real hesitancy to do this in Canada in general.[34] Some key elements of regional planning in a European context of course do not translate well to B.C. A key challenge is how to address transition planning in lower density places where there are thinner institutions. Building scale and capacity through partnership and shared investments are an important strategy in this regard.

Transition management is not just about reducing harm, it is also about leveraging opportunities, for example, through *social co-benefits.* New investments are a chance to enhance community capacity and resilience. For example, community benefit-sharing programs in areas with large-scale investments in green infrastructure/renewables, etc. have been used to fund community and social supports. There are a wide variety of ways to structure benefits: see for example a typology of the spectrum of potential arrangements in the UK developed by Keir, Johnson, and Weir.[35] There are also cautionary examples of community benefit agreement failures. For example, in Detroit, the Community Benefits Agreement ordinance in the city of Detroit failed to protect the interests of the impacted community and was instead mired in recriminations of environmental racism.[36] Governments can facilitate community benefit programs by establishing legal structures and templates to support them. Communities can also benefit by repurposing infrastructure or accessing funding in the event of industry closure. Framework agreements/legislation to ensure that communities are not left with environmental and fiscal liabilities and receive benefits facilitate this.

> *"A key challenge is how to address transition planning in lower density places where there are thinner institutions."*

Conclusion

B.C.'s climate challenge is also a regional development opportunity. By viewing climate action through the lens of territorial development, the province can address both its emissions reduction goals and its persistent regional disparities. This includes providing pathways for resource-dependent communities to diversify their economies while building on existing assets, just transition governance mechanisms to help bridge core-periphery divides, and a community-grounded approach that centers Indigenous knowledge and rights, supporting reconciliation while enhancing climate effectiveness.

> *"Success will require moving beyond sectoral silos toward integrated approaches that recognize the interconnected nature of climate, economic, and social challenges."*

Framing CleanBC as a territorial development strategy represents more than a semantic shift—it requires fundamental reconceptualization of climate policy as inherently territorial and developmental. Success will require moving beyond sectoral silos toward integrated approaches that recognize the interconnected nature of climate, economic, and social challenges. Most importantly, it will require developing a vision of climate action that communities across B.C. can see themselves in—one that promises not just emissions reductions but also economic opportunity, social well-being, and community empowerment. A major part of regional development are the stories we tell ourselves about our communities and economy and what we want them to be: social dialogue. **Progress happens at the speed of trust, as they say.** Climate policy as regional development means working in a way that involves stronger social coalitions and leveraging place-specific assets while building institutional capacity for long-term transformation. Such an approach can help address territorial disparities that undermine political sustainability while creating more democratic and participatory approaches to climate governance.

British Columbia has the opportunity to lead territorial climate governance by demonstrating how place-based development strategies can achieve both climate, cohesion, and competitiveness objectives. This would position B.C. as a model for just and democratic climate actions. The path forward requires institutional innovation, genuine power-sharing, and sustained commitment to territorial equity and innovation as a core climate objective. The potential benefits—enhanced climate effectiveness, reduced territorial polarization, strengthened democratic governance, and more sustainable regional development—make this transformation both necessary and achievable.

It is easy to give advice but of course much harder to implement it. As a comparativist, I draw inspiration from the many regions I've studied that demonstrate the effectiveness of such approaches while recognising that anything in B.C. needs to be home grown and especially, to be grounded in Indigenous governance systems. I also see that there is already a strong basis for operating in this way here, with successful examples. In the past year I've co-led a research team conducting fieldwork across northern B.C. that demonstrates the appetite and utility of such approaches (Northern Regional Energy Dialogues project with Kara Shaw and Sinead Earley, part of the Accelerating Community Energy Transformation initiative). As a university researcher I'm part of the regional development landscape and am committed to continuing to work in partnership with others towards this vision of climate policy as territorial development. So, I'll end this by throwing my hat in the ring to emphasise that this not just a task for the provincial government, but something we do together.

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Endnotes

i Beyond climate policy, across all B.C. strategies, plans and programs, the majority (64 per cent) are sector specific; 18 per cent mention rural areas and the remaining 18 per cent include some targeted rural interventions[15].

ii The concept of territorial cohesion originated in French spatial planning traditions and entered EU policy discourse in the late 1990s, gaining formal status in the Lisbon Treaty (2007) as a pillar of cohesion policy.[21, 22] Territorial competitiveness emerged around the same time, influenced by economic theories emphasizing regional innovation and global competition. Both concepts were synthesized in EU policy documents like the Territorial Agenda and Europe 2020 strategy, reflecting a shift towards integrated, place-based approaches. Together, they aim to balance reducing regional disparities with enhancing the economic dynamism and competitiveness of all European regions.

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Insights Series: CleanBC Review

October 2025

Maximizing Public Funds:

Examining the fiscal efficiency of climate policy in B.C.

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Foreword

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our university-based network was groundbreaking and remains a core strength of the organization.

In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C. Drawing on academic expertise from across the province, the series is designed to inform the 2025 independent review of CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change.

When CleanBC was launched in 2018, climate action was a public and political priority. While concern about climate change remains widespread, it has increasingly been overshadowed by more immediate pressures, such as rising costs of living, strained public services, and growing geopolitical instability. Intensifying climate impacts exacerbate each of these challenges, which increases the complexity and opportunity for bold climate solutions. Now is not a time to retreat from ambition. Rather, it is a time for integrated solutions and public policy that unlock energy transformation, reduce climate risk, and increase prosperity at local, regional, and global scales.

The Insights Series highlights the deep connections between climate action and other top issues facing British Columbians: housing, affordability, economic competitiveness, Indigenous reconciliation, regional economic development, and fiscal efficiency.

B.C.'s climate leadership can be renewed—not by repeating the strategies of the past, but by evolving CleanBC to meet the realities of today.

Territory acknowledgement: At the University of Victoria, where the Pacific Institute for Climate Solutions (PICS) is hosted, we acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

PICS and its university network have campuses across the province known as British Columbia. We respect and acknowledge the many unceded traditional territories and Nations where PICS universities stand including: xʷməθkʷəy̓əm (Musqueam) • Sḵwx̱wú7mesh Úxwumixw (Squamish) • səl̓ilw̓ətaʔɬ (Tsleil-Waututh) • q̓íc̓əy̓ (Katzie) • kʷikʷəƛ̓əm (Kwikwetlem) • Qayqayt • Kwantlen • Semiahmoo • Tsawwassen • Stó:lō • Syilx (Okanagan) • Dakelh (Carrier) territory: Lheidli T'enneh, Lhtako, Nazko, Lhoosk'uz • ?Esdilagh, a Tsilhqot'in Nation • Dane-zaa territory: Doig River, Blueberry River, and Halfway River • Tsimshian territory: Kitsumkalum, Kitselas, Lax Kw'alaams, and Metlakatla • and Gitwinksihlkw, a Nisga'a Village.

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Northbound traffic on the Alex Fraser Bridge from Delta to Richmond, during morning rush hour. *iStock*

Executive summary

As British Columbia nears its 2030 climate targets, the province remains on pace to achieve only half of its legislated emissions reductions. Meanwhile, deficit scenarios and growing fiscal pressures ranging from inflation and housing affordability to rising trade frictions underscore the need for climate policy that delivers maximum impact per dollar spent. In this context, understanding the fiscal efficiency and cost-effectiveness of climate policy instruments has never been more critical.

> *"Fiscal pressures underscore the need for maximum impact per dollar spent."*

Drawing on recent academic research, this paper outlines different ways to measure the cost-effectiveness of climate policies and examines the fiscal efficiency of key instruments under CleanBC to inform upcoming policy decisions. The analysis highlights opportunities to prioritize policies that achieve greater emissions reductions at lower public cost while advancing energy affordability, innovation, and equity.

Key messages:

- **Assessing cost-effectiveness requires considering more than just the price tag for government.** When judging a policy's value, we must look beyond up-front costs to include its broader benefits, behavioural impacts, and ability to drive lasting change.

- **Flexible regulations can drive significant emissions reductions at low fiscal cost.** By creating performance standards with tradeable credit markets, policies like B.C.'s Low Carbon Fuel Standard and Zero Emissions Vehicle

(ZEV) mandate limit costs to consumers and avoid the need for large government outlays, while maintaining high levels of public support.

- **Carbon pricing remains a foundational tool.** When designed transparently and stringently, pricing pollution not only reduces emissions but also raises revenue that can be reinvested in decarbonization or address distributional impacts. Maintaining and enhancing the output-based pricing system for large emitters will be critical to cost-effectively achieving our emission reduction goals.

- **Incentive programs are widespread but variable in their fiscal efficiency.** The most effective programs target electrification (e.g., shifting from gas furnaces to heat pumps) and prioritize underserved or lower-income households where the purchases would otherwise not be made.

- **Strategic public infrastructure investment can yield high returns and lock in long-term emissions reductions.** Infrastructure shapes long-run demand and behaviour. Prioritizing investments that support decarbonization (e.g., increasing renewable electricity supply) and build climate resilience (e.g., buildings that better withstand fire and flood) will have long-term benefits that greatly exceed their initial costs.

- **Considering interactions across instruments is essential for an effective climate policy mix must.** Overlapping or misaligned policies can reduce cost-effectiveness. Clear design principles are needed to align subsidies, pricing, and regulations for maximum impact.

High tension electricity power transmission lines high above Shuswap Lake, Scotch Creek in the interior of B.C. *iStock*

Solar panels set up over a public parking lot in Greater Vancouver. *iStock*

1. Introduction

A volatile economic landscape characterized by recent inflation, tariffs, and uncertainty have forced governments to re-evaluate their fiscal priorities. As British Columbia forecasts a 2025-26 budget deficit approaching $12 billion while seeking to address pressing challenges of affordability and economic resilience, climate policy risks being pushed to the back burner.

> *"To treat climate action as discretionary during difficult times simply pushes greater costs down the road."*

Yet, climate change represents a present and accelerating economic threat. To treat climate action as discretionary during difficult times simply pushes greater costs down the road and ignores the structural role of addressing climate change in long-term economic resilience. In this context, making smart use of public dollars today, by considering the fiscal efficiency and cost-effectiveness of climate policy choices, is more critical than ever. Done right, this can generate economic and social co-benefits including cleaner air, reduced traffic, good jobs in emerging industries, and innovative technology and businesses here in B.C.

B.C. has a strong track record on climate action. From 2007 to 2022, emissions per capita have declined by 20 per cent and emissions per dollar of GDP have fallen 29 per cent, representing decarbonization in action.[1,2] Yet with strong growth in the

The intake station of the Strathcona Dam, which provides power for parts of Vancouver Island. *iStock*

economy (+42 per cent) and population (+25 per cent), total emissions remain stubbornly high over this period (+0.1 per cent). As 2030 approaches, we are on pace to reach only half of our legislated emissions reduction target.[3]

This represents an important moment to evaluate the fiscal efficiency and cost-effectiveness of CleanBC and chart a path forward.

This paper examines recent research on the fiscal efficiency of climate policy and explores the implications for B.C.'s existing policy mix. Section 2 examines alternative metrics for assessing the cost-effectiveness of climate policy and introduces the marginal value of public funds. Section 3 reviews recent research on the efficiency of key climate policy instruments for B.C. Section 4 discusses policy design considerations and Section 5 concludes.

> *"Cost-effectiveness is about more than minimizing expenditure; it requires accounting for broader benefits, behavioural impacts, and potential for long-term change."*

2. Assessing the cost-effectiveness of climate policy

Governments, inevitably confronted with competing objectives and limited resources, must make efficient use of revenue to achieve the greatest possible benefit per dollar of public expenditure. But cost-effectiveness is about more than minimizing expenditure; it also requires accounting for broader benefits, behavioural impacts, and the potential to lock in long-term change.

The cost-effectiveness of climate policy is often measured as dollars per tonne of carbon dioxide equivalent emissions reduced, also referred to as the **emissions abatement cost**. Yet, there are multiple ways of measuring abatement costs, sometimes used interchangeably and without distinction, based on who is incurring the cost.[4] These include:

i. **Resource abatement cost:** the incremental cost of switching to a lower-emission alternative divided by the emissions reduced (see equation in Table 1), often presented as marginal abatement cost curves.[5] While useful for comparing technologies, this metric excludes behavioural responses such as free riders and rebound effects (see Section 2.3) as well as the public finance implications, making it poorly suited for evaluating policy.

ii. **Government cost:** the reduction in emissions per dollar of government spending.[4, 6] This approach more directly assesses the cost-effectiveness of climate policy; however, it often fails to account for co-benefits of climate policy beyond emissions reduction (e.g., health benefits from improved air quality, poverty reduction, and traffic congestion). Additionally, this approach considers revenue raising policies (such as a carbon tax) to have negative costs, which could be perceived as "free" to governments, yet these policies do also impose costs on society that must be considered.

iii. **Net social cost:** subtracts the value of co-benefits from public expenditure before dividing by emissions reduced.[4, 7] This approach is more comprehensive but makes implicit assumptions around the cost-effectiveness of co-benefits rather than the fiscal efficiency of all benefits generated.

TABLE 1: COMMON ABATEMENT COST METRICS

	Resource cost	Government cost	Net social cost	Marginal value of public funds (MVPF)
Direct cost to	Technology purchaser	Government	Society	Society
Accounting for free riders	✗	✓	✓	✓
Rebound effects	✗	✓	✓	✓
Co-benefits	✗	✗	✓	✓
Equation	$\frac{\textit{Additional tech cost}}{\textit{Emissions reduced}}$	$\frac{\textit{Public expenditure}}{\textit{Emissions reduced}}$	$\frac{\textit{Public expenditure - co-benefits}}{\textit{Emissions reduced}}$	$\frac{\textit{Social benefits - social costs}}{\textit{Public expenditure}}$

These measures provide a way of ranking emissions reduction activities from least to most expensive, although they differ in what they capture (see summary Table 1) and may diverge markedly in what interventions are identified as most cost-effective.[4]

The cost per tonne may then be compared against the **social cost of carbon (SCC)**, the estimated economic damages of each additional tonne of greenhouse gas (GHG) emissions. Conversely, the SCC can be thought of as the economic benefits of reducing each tonne of GHG emissions. As understanding of climate impacts improves, the estimate of the social cost of carbon has increased.[8, 9] Canada currently employs a social cost of carbon of $271 per tonne for 2025, rising to $394 per tonne in 2050.[10] In other words, any policy with an abatement cost of less than $271 today would pass a cost-benefit analysis.

> *"Simply choosing climate policies with the lower per tonne abatement cost may overlook the opportunity for significant co-benefits."*

Rather than rely on these "cost per tonne" measures, public policy interventions can be evaluated using a metric called the **marginal value of public funds (MVPF)**.[11] This measures the social benefits generated by a policy minus social costs per dollar of public expenditure (see Table 1). Expanding the scope of benefits and costs beyond emissions also allows for comparing the relative welfare effect of public expenditure across policy domains; high-MVPF policies mean greater social return for each public dollar spent. For instance, a policy with an MVPF of 1.5 yields social returns of $1.50 for each dollar of public expenditure.

One important caveat of the MVPF approach is that it aggregates welfare gains without considering who benefits. It makes no distinction between a dollar of benefit to a high-income household and a low-income household. Policies that score moderately on MVPF but target vulnerable communities or reduce energy poverty may still be warranted on distributional equity grounds. Conversely, high-MVPF programs that exacerbate inequality may require complementary instruments (e.g., means-testing, rebates) to align with provincial priorities. Section 4.2 discusses important distributional considerations.

2.1 Co-benefits

Simply choosing climate policies with the lowest per tonne abatement cost may overlook the opportunity for significant co-benefits. These can be extensive and range from improved air quality, enhanced competitiveness and innovation in emerging industries, lower electricity prices, reduced traffic and vehicle accidents, to improved energy security in the face of volatile global markets.[12]

Ignoring co-benefits can skew assessments of climate policy. For example, evidence suggests the health co-benefits of climate action are substantial and may rival the magnitude of climate benefits in some cases.[13-15] Since mitigating GHG emissions often also reduces harmful air pollutants produced alongside, climate policy can lead to lower rates of respiratory

disease. Estimates from the Canadian Climate Institute suggest a net-zero emissions pathway could save Canada $7 billion per year in healthcare costs alone.[16]

2.2 Dynamic efficiency: accounting for technological innovation and lock-in

Well-designed climate policies can also help address additional market failures. Firms tend to underinvest in innovation because they cannot capture the full value of their inventions, known as knowledge spillovers.[17] Firms developing low-carbon technologies may face high upfront costs and uncertain market demand, while some of the benefits of their innovation diffuse to competitors. Public support for innovation, through R&D fundings, subsidies, or risk guarantees can correct this failure and help unlock long-term benefits.

Accounting for the dynamic efficiency of climate action can reveal that seemingly expensive climate policy today may be much more cost-effective in the long term once innovation is accounted for.[18] For example, early policy support for solar panels and electric vehicles have helped drive dramatic cost declines that make abatement costs much lower today than they were 10 years ago.[19] To the extent that policy choices support innovation and reduce future costs of low-emitting technology, either directly through R&D or indirectly through subsidies, increasing adoption and thus technological learning, they can provide benefits in reducing the future costs of abatement that should be considered in identifying efficient policy options.

Evidence on whether knowledge spillovers in the form of learning by doing can justify generous deployment subsidies has been found to be context dependent.[20] For example, while they may be worthwhile in the offshore wind industry,[21] this may not be the case for other technologies such as biofuels.[22]

Decarbonization is a long-term effort that involves the replacement of long-lived capital and infrastructure. Vehicles, water heaters, furnaces, and power plants are all infrequently made choices that "lock-in" users to that specific technology, often for the duration of its usable life.[23] Choosing technologies with a lower price tag but higher emissions today may have higher dynamic costs by either locking in the lifetime emissions or stranding the asset by forcing its early retirement. Therefore, supporting and investing in technology choices representing more costly emissions reductions today can prove to be lower cost in the long term by setting us on a lower emissions trajectory compatible with our decarbonization goals.[24]

> *"A significant share of public funding in broad incentive programs may fail to induce additional emissions reductions."*

2.3. Free riders and rebounds

While climate policy aims to shift behaviour and encourage low-carbon investments, its cost-effectiveness depends on whether it meaningfully alters decisions at the margin. Two challenges can significantly reduce the actual impact of a policy, undermining its efficiency: free-riding and rebound effects.

Free riding occurs when public subsidies go to individuals or firms who would have taken the desired action anyway, creating transfers that increase public spending without altering behaviour. This can be a pervasive problem. A U.S. study of energy efficient appliance subsidies finds 70 per cent of recipients would have made the purchase without the subsidy and another 15 to 20 per cent merely altered their purchase timing to take advantage of the program.[25] Similarly, earlier research on hybrid vehicles rebates in Canada finds that 74 per cent went to such free riders.[26] These findings suggest that a significant share of public funding in broad incentive programs may fail to induce additional emissions reductions and instead serve as costly windfalls to free riders.

The **rebound effect** occurs when efficiency improvements lower operating costs, which in turn increases consumption, partially offsetting some of the expected emissions reductions. The size of the rebound effect varies across technologies and can offset 5-40 per cent of energy savings.[27, 28] For example, Barla et al.[29] estimate that Canadian vehicle fuel efficiency improvements resulted in a rebound effect of eight to 20 per cent from lower cost of travel leading to an increase in driving. Accounting for such behavioural responses is an important consideration when evaluating the cost effectiveness of alternative policies that is frequently left out of traditional cost-per-tonne metrics.

3. Fiscal efficiency of climate policies

Understanding which climate policies deliver the most social benefit per public dollar is critical in the current fiscal environment. Recent work by Hahn et al.[4] applies the MVPF framework (Section 2) to assess 96 climate policies based on

empirical research in the U.S., accounting for climate benefits as well as co-benefits and behavioural responses such as rebound effects. Below I draw extensively on this work to assess the available evidence on the fiscal efficiency of alternative climate policies and seek to contextualize those findings in relation to CleanBC and B.C.'s circumstances.

3.1. Carbon pricing

Economists have long pointed to carbon pricing as the most cost-effective tool to reduce emissions. B.C. established itself as a global leader when it introduced a carbon tax in 2008. Revenue from the carbon tax was initially used to reduce personal income taxes along with targeted credits and corporate income taxes. This form of tax swap, where revenue from taxing a negative externality (GHG pollution) is used to reduce existing distortionary taxes, can reduce the overall costs of the tax system.[30, 31] A growing body of research demonstrates that B.C.'s carbon tax helped reduce GHG emissions with minimal net impacts on economic activity.[32-36]

Although B.C. repealed the consumer carbon tax in April 2025, the output-based pricing system (OBPS) for large emitters remains in place and offers an important tool to cost-effectively reduce emissions while also generating revenue and addressing the challenges faced by industries that are emission intensive and trade exposed. National modelling suggests the OBPS will contribute the largest emissions reductions of any single policy by 2030.[37] However, opportunities for improvement remain. Available evidence suggests the policy stringency is highly variable across the different systems in Canada.[38] Increased transparency is needed in credit allocation, trading, and prices to assess the stringency, competitiveness effects, and overall costs of the program. Aligning the program with other provinces and territories to allow for a wider pool of credit trading can also improve cost-effectiveness.

In the context of policies that generate revenue, the MVPF measures the cost on individuals of raising one dollar in government revenue (see Figure 1). In this case, a lower score is better, indicating lower costs to raise $1 of revenue. Hahn et al.[4] find that taxes on polluting goods impose a cost of less than $0.70 for each dollar of revenue raised. The cancellation of the consumer carbon price removes a major source of revenue used to pay not only for household rebates but also targeted subsidy programs and earlier personal and corporate tax reductions, adding to the deficit challenge facing the province.

FIG 1: MARGINAL VALUE OF RAISING PUBLIC FUNDS

$$MVPF = \frac{\text{Welfare cost to individuals}}{\text{Revenue raised}}$$

In the absence of consumer carbon pricing, alternative revenue raising approaches such as taxing fossil fuels through motor fuels or royalty rates can also represent cost-effective revenue generation with lower costs than existing sources, such as income taxes.[39, 4] For example, Hahn et al.[4] estimate the MVPF of a gasoline tax to be 0.6 compared to 1.1 for revenues from an income tax. This implies that every dollar of revenue shifted from an income tax to gasoline tax represents a welfare increase of more than 50 cents.*

Yet an explicit price on carbon is neither strictly necessary nor sufficient to achieve our emission reduction targets.[40] Alternative policy instruments such as flexible regulations can drive significant emission reductions at low fiscal cost.

3.2. Flexible regulations

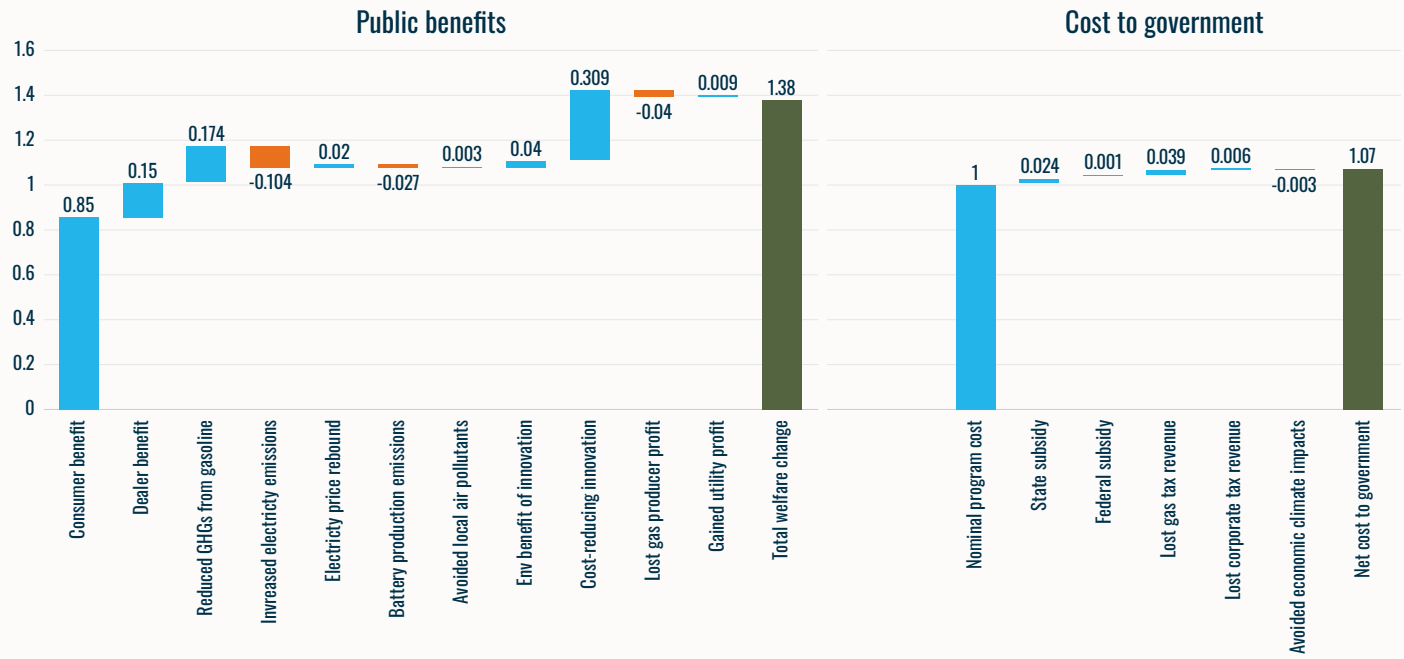
A flexible regulation sets an aggregate performance standard (e.g., emissions per unit of output) and allows firms flexibility in how they achieve that standard.[41] It establishes a credit market where firms with an emissions intensity below the standard can sell credits to firms who are unable to reach the standard. In this way, a flexible regulation provides incentives for all firms to reduce their emissions but gives high-emitting firms the opportunity to buy credits from low-emitting firms, which helps to keep the costs of the system relatively low. British Columbia has several flexible regulations (sometimes referred to as a tradeable performance standards) in place such as the Low Carbon Fuel Standard and ZEV Sales Mandate.[42]

From a fiscal perspective, these flexible regulations have the potential to drive large emissions reductions without imposing major costs on government beyond monitoring and enforcing compliance. Flexible regulations have been shown to receive high levels of public support in comparison to carbon pricing.[43]

However, they typically do not have the added benefit of generating revenue and governments need to carefully

* However, revenue generation through a gas tax is more regressive than an income tax. See Section 4.2 on distributional impacts.

FIG 2: DECOMPOSING THE MARGINAL VALUE OF PUBLIC FUNDS SPENT ON EV SUBSIDIES



Source: Hahn et al.[4] based on the findings of Muehlegger & Rapson.[45]

consider distributional impacts and policy interaction effects in policy design.[44, 22] Introducing price ceilings in credit markets can help deliver certainty to regulated firms and potentially provide a source of revenue generation.

3.3. Incentive programs

Incentives that reduce the cost of purchasing a low-emission technology are the most common type of climate policy implemented in B.C. as well as across Canada. These programs aim to accelerate the adoption of low-emitting technologies by reducing upfront costs and shifting consumer and business choices. To the extent that incentives contribute to additional low-emitting technology uptake, replacing current high-emitting technologies, they can help reduce emissions. They can also play an important role in addressing additional market failures such as innovation spillovers, network externalities, and information asymmetries. B.C. has used targeted incentive programs across sectors including for electric vehicles, e-bikes, heat pumps, home energy efficiency improvements, and low-emission agricultural practices, among others. More than half of these programs specifically target the transportation and buildings sectors, which together represent roughly half of provincial emissions.[42]

3.3.1. Transportation

CleanBC's GoElectric program makes up 75 per cent of the province's transportation incentive programs. Electrification is the most promising pathway for decarbonizing passenger transportation and B.C. has a clear advantage with its low-emissions electricity grid. More than 90 per cent of transportation incentive programs in B.C. are well-targeted toward end-use fuel switching (i.e. switching from gasoline and diesel to electricity).[42]

One of the most salient programs under CleanBC is the consumer rebate for electric vehicle adoption, which is currently paused. Hahn et al.[4] estimate an MVPF for EV subsidies of 1.3 in the U.S. indicating that each dollar of public expenditure on EV subsidies generates approximately $1.30 in benefits.

Figure 2 breaks down this calculation into its component parts, including the public benefits and costs on the left and the costs to government on the right. Each dollar of EV subsidy expenditure generates direct benefits to consumers ($0.85) and EV sellers ($0.15). It also generates global environmental

The Go Electric Training program helps B.C.'s workforce lead the move to EVs. As of December 31, 2024, 412 electricians have been trained to install and maintain charging infrastructure, and 632 automotive technicians have been trained to diagnose, repair and maintain EVs. Source

benefits from reduced GHG emissions ($0.17) as well as innovation benefits which reduce future technology costs ($0.31) and future abatement costs ($0.04). On the other hand, it imposes modest societal costs from battery production ($0.03) and lost profits from gasoline sales ($0.04).

The cost to government includes not only the program cost ($1.00) but also lost revenue from gasoline taxes ($0.04) and corporate income taxes ($0.006) and can induce greater costs on other orders of government to the extent that it induces EV adoption if it can also receive a federal subsidy (also currently paused).

> *"Shifting building energy use away from fossil fuels and toward electric end-uses represents a significant decarbonization opportunity."*

However, it is noteworthy that these estimates are based on a study of California's EV rebate program[45] and the value increases with a cleaner electricity grid. Specifically, the environmental costs of increasing electricity demand ($0.10) would be negligible in B.C. where electricity generation is largely carbon-free and the local health benefits of EVs are higher in jurisdictions with a clean grid.[46] This suggests the MVPF for EV subsidies in a jurisdiction with clean electricity are likely upwards of 1.5.[4]

The current program pause and future uncertainty may also be impacting consumer behaviour as consumers delay purchase decisions to see if federal and provincial programs resume. In this way, program predictability is important to consumers just as it is to businesses making investment choices.

A key impediment to widescale EV adoption is the availability of charging infrastructure. This creates a network effect where the market under invests in EVs compared to what would be socially optimal.[47] B.C. is addressing this by providing incentives for home and workplace chargers and requiring charger capability in new multi-unit residential buildings. While Hahn et al.[4] do not estimate the MVPF of charging subsidies, other research suggests that every subsidy dollar spent on EV charging infrastructure contributes more than twice the level EV adoption compared to each dollar spent on purchase subsidies.[48, 49] Thus, public support for EV charging infrastructure may be more cost-effective than direct support for EV adoption.

3.3.2. Buildings

CleanBC also offers a range of building retrofit and equipment subsidies including for home energy efficiency improvements and electrification technologies such as heat pumps and induction stoves. Given B.C.'s low-emissions electricity grid, shifting building energy use away from fossil fuels and toward electric end-uses represents a significant decarbonization opportunity.

Extensive research demonstrates that energy efficiency programs tend to underperform projections. A recent study of Canada's national energy efficiency retrofit program finds that home retrofit subsidies achieved only half of their expected energy savings[50]. A review by Giandomenico et al.[51] finds that energy efficiency programs resulted in an average improvement of just 7.2 per cent, with no program delivering savings greater than 50 per cent. Window and door replacements were found to be the least effective intervention. This underperformance can largely be attributed to excessive optimism in engineering model predictions and varying quality of work by contractors, with only six per cent of the shortfall explained by rebound effects.[7] Evidence from Michigan's weatherization program finds that costs exceed social benefits, with an average annual return

of -7.8 per cent.[52] Likewise, Hahn et al.[4] estimate the MVPF for energy efficiency support to be 0.98, indicating that costs to government exceed the social benefits by a small margin.

> *"Allowing infrastructure to evolve solely in response to market forces... will fall short of what is needed to achieve deep decarbonization."*

B.C. should therefore leverage its clean electricity advantage to emphasize support for building electrification (e.g., switching from gas furnaces and stoves to heat pumps and induction) rather than supporting minor efficiency improvements such as window and door replacements, which tend to underperform.

Well-targeted support can increase both the emissions impact and fiscal efficiency of a program. By focusing support on consumers whose behaviour is most likely to be affected by a subsidy, programs can minimize free riding and enhance the fiscal efficiency of programs. For example, Giandomenico et al.[51] find that the most efficient programs were those that exclusively targeted low-income households using fossil fuels. In this way, limiting support based on income thresholds and/or property values (as is done in B.C. for heat pump rebates and ZEVS) as well as existing fuel source used can enhance program equity and cost-effectiveness. Setting more precise incentive levels for improvements based on realized reductions from specific technologies can also enhance cost-effectiveness.[53, 54]

Additionally, pairing supports with reinforcing revenue generation can amplify their impact while minimizing net public cost. For example, B.C.'s PST exemption on electric heat pumps that is combined with a corresponding PST increase on gas furnaces represents a well-targeted revenue shift that strengthens the price signal favoring electrification and limits government cost.

Another approach for increasing home electrification while limiting direct fiscal outlay is through Property Assessed Clean Energy (PACE) financing. PACE programs enable consumers to finance clean energy upgrades such as heat pumps through their property tax bill, reducing upfront costs and spreading repayment over time as on-bill cost savings are realized. Evidence demonstrates that PACE increased uptake of residential solar PV adoption in California.[55] However, potential interactions with the mortgage lending market must be carefully evaluated.[56] Learning from pilot programs like the Saanich PACE program to support heat pump adoption can help inform best practices.

Headquartered in North Vancouver, Jetson builds in the CleanBC Energy Savings Program Heat Pump Rebate straight into their quotes to eliminate complexity for their customers. Source

3.4. Infrastructure investment

Advancing major infrastructure projects is a priority for both federal and provincial governments to shore up our productivity and resilience. Strategic infrastructure investment is also central to enabling long-term emissions reductions. CleanBC currently supports infrastructure expansion through programs like the CleanBC Communities Fund, which provides co-funding for community-scale clean energy, transportation, and efficiency projects. However, it is important to recognize that all infrastructure investments influence future emissions trajectories. Without deliberate effort, allowing infrastructure to evolve solely in response to market forces, even under emissions regulations, will fall short of what is needed to achieve deep decarbonization.

Infrastructure shapes the availability and desirability of low-carbon options. Research on induced demand shows that infrastructure influences long-term behaviour. For example, expanding road capacity leads to an increase in driving,[57] while investments in active or public transit can shift mode choice and reduce transport emissions.[58, 59] Infrastructure does not simply serve demand—it creates it.

This matters for fiscal efficiency. Investments in long-lived assets such as transit lines, electricity generation and networks, or buildings have long payback periods and often lock in technology and fuel choices. Without deliberate investments, dirtier capital may dominate due to lower upfront cost or familiarity. Therefore, it can be optimal to prioritize initially expensive, clean infrastructure investments because they displace future high-emissions infrastructure and reduce path dependence.[24] In these cases, high upfront costs may yield greater efficiency in the long term. This emphasizes the importance of B.C.'s Zero Carbon Step Code to ensure that new buildings are ready to reach net-zero and avoid costly retrofits down the road.

3.5. Information and "nudges"

Behavioural interventions (commonly referred to as "nudges") have shown promise in encouraging energy conservation at low public cost. For example, Allcott[60] finds that personalized electricity consumption feedback can reduce residential demand. Hahn et al.[4] estimate an MVPF of 3.07 for similar programs, indicating high public returns relative to public expenditure. However, in jurisdictions like British Columbia, where electricity is already near-zero emissions, reductions in electricity use may not translate into meaningful emissions reductions. This underscores the importance of tailoring nudge interventions to where they can achieve the most environmental impact.

Evidence also supports the use of information disclosure policies to incentivize investment in energy-efficient technologies. For instance,[61] find that mandatory disclosure of home energy performance can increase market value for efficient homes. Applying this insight, B.C.'s Home Energy Label program could help stimulate demand for electrification upgrades by making emissions intensity and energy costs a visible attribute in housing markets.

> *"Available support should emphasize fuel-switching and explore innovative targeting approaches to avoid free-riders."*

While peer effects are another important behavioural lever, they tend to be more influential when technology choices are visible, such as rooftop solar panels.[62] In contrast, heating system choices remain largely hidden from social networks, limiting the power of peer diffusion. Initiatives that promote social learning, such as group purchasing programs or community-led outreach, may help bridge this visibility gap. In Connecticut, for example, a solar adoption campaign that fostered peer-to-peer interaction and bulk discounts led to higher uptake and lower costs.[63] Hahn et al.[4] estimate this program's MVPF at 1.8, making it more cost-effective than many direct subsidies.

Taken together, these findings suggest that information programs and nudges can play a meaningful role in a cost-effective policy portfolio, particularly when strategically designed to maximize visibility and uptake of high-impact electrification technologies.

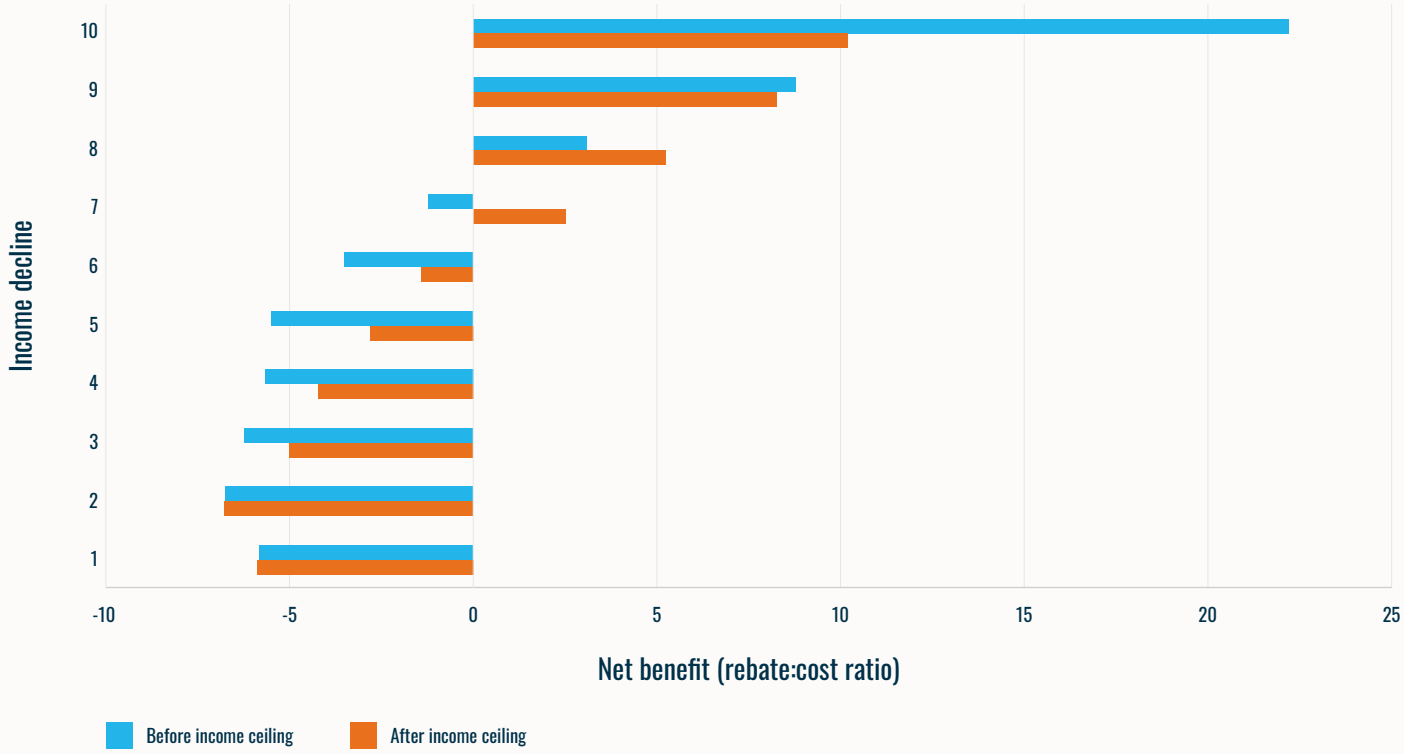
4. Policy design considerations

4.1. Targeting additional emission reductions

In the context of a constrained fiscal environment, B.C.'s use of policy "carrots" to incentivize emission reductions need to be effectively targeted to ensure they drive new emission reductions rather than rewarding actions that would have happened anyway. Therefore, available support should emphasize fuel-switching and explore innovative targeting approaches to avoid free riders.

- **Emphasize fuel switching:** B.C. has a major clean electricity advantage. Policies to support the electrification of high-emitting sectors such as transportation, buildings, and industry are essential to reaching our climate goals. Here, B.C.'s Clean Electricity Standard plays a critical role in maintaining this advantage. Continuing the diversification and expansion of clean electricity generation, particularly to rural and remote northern communities, and leveraging recent cost declines in solar plus storage, will prepare the province to meet growing electricity demand from electrification without increasing emissions. This also reinforces the cost-effectiveness of fuel-switching policies by reducing future system costs and maintaining reliability.

FIG 3: NET BENEFIT TO COST RATIO OF CALIFORNIA'S EV REBATE PROGRAM BEFORE AND AFTER INCOME ELIGIBILITY CEILING[67]



» **Avoid free riders:** Exploring innovative policy designs could help target truly additional technology adoption while lowering revenue costs of implementing the policy.[64, 65] For instance, in reverse auctions for participation in incentive programs, instead of offering the same incentive to any consumer (many of whom would have purchased the technology anyway), potential consumers bid the incentive level they need to make a purchase. The funding body then allocates available funding starting from the lowest bids. Knowing they are competing for scarce funds, consumers are incentivized to bid the lowest value they would need to complete the purchase. Setting aside funding amounts for income groups or geographic regions could help mitigate distributional equity impacts.[65]

4.2. Managing distributional impacts and affordability

Rapid inflation following the COVID-19 pandemic has increased pressure on household finances. Correspondingly, this has prompted governments to shift the focus of climate policy from "sticks" to "carrots". However, subsidies for new long-lived capital tend to benefit the wealthiest, with support often going to homeowners and purchasers of new vehicles.[66]

Evidence from California demonstrates that the incidence of EV subsidies funded by cap-and-trade revenue is strongly regressive.[67] Introducing income limits on eligibility (as B.C. has) helped reduce the share of subsidies going to the highest income earners, but incidence remained regressive (see Figure 3). Notably, early evidence on heat pump adoption suggest it may be an important exception, where uptake appears to be more even across the income distribution.[68]

> *"Point-of-sale rebates can help encourage adoption among those that face constraints in covering the full cost of technologies up front."*

Targeting programs to support low-income earners and renters can enhance distributional outcomes and additionality of incentive programs. For example, point-of-sale rebates (rather than having to apply and wait or file your tax return) can increase salience and help encourage adoption among those that face constraints in covering the full cost of technologies up front.[66]

Additionally, exploring income-based electricity rates, as implemented in California, can help ensure that low-income households do not face disproportionate energy cost burdens as electrification increases.[69] These rate structures can also be aligned with broader affordability objectives to ensure price signals are preserved without exacerbating energy poverty.

4.3. Policy interactions

B.C. already has many climate policies in place. To ensure an effective and efficient climate policy mix, it is crucial to understand and account for interactions between overlapping policies. In many cases these can create synergies: for instance, policies to support end-use fuel switching have an outsized impact thanks to B.C.'s Clean Electricity Delivery Standard. Additionally, even a modest price on emissions can significantly enhance the cost-effectiveness of the policy mix.[70]

However, overlapping policies that target the same emissions using different mechanisms can reduce cost-effectiveness without increasing emissions reductions, particularly with quantity- or intensity-based instruments.[71, 37] Using subsidies to support emissions reductions among firms that already face stringent regulations are less likely to support additional abatement and should be used judiciously to support competitiveness.

5. Conclusion

As British Columbia prepares for the next phase of climate policy under CleanBC, rising fiscal constraints and mounting climate urgency demand a more strategic approach to public spending. This analysis highlights how different policy instruments vary widely in their cost-effectiveness, and that greater emissions impact can be achieved with less expenditure, if policies are carefully chosen and designed. Flexible regulations that shift costs within regulated markets, transparent carbon pricing that raises useful revenue, and well-targeted incentives all have distinct roles to play in a fiscally prudent climate strategy.

A forward-looking policy mix must also consider long-term dynamics: how infrastructure shapes future behaviour, how innovation lowers future costs, and how policy interactions can amplify or undercut impact. Prioritizing policies that support electrification can leverage B.C.'s clean electricity advantage. Meanwhile, aligning instruments to avoid redundancy and ensure complementarity can stretch limited public dollars further. By embracing this lens of fiscal efficiency, B.C. can better navigate trade-offs and deliver a climate strategy that is economically sound, socially fair, and environmentally ambitious.

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Pacific Institute for Climate Solutions

Insights Series: CleanBC Review

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Sustainable and Affordable Housing:

Strategies, innovations, and policy directions

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Foreword

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our university-based network was groundbreaking and remains a core strength of the organization.

In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C. Drawing on academic expertise from across the province, the series is designed to inform the 2025 independent review of CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change.

When CleanBC was launched in 2018, climate action was a public and political priority. While concern about climate change remains widespread, it has increasingly been overshadowed by more immediate pressures, such as rising costs of living, strained public services, and growing geopolitical instability. Intensifying climate impacts exacerbate each of these challenges, which increases the complexity and opportunity for bold climate solutions. Now is not a time to retreat from ambition. Rather, it is a time for integrated solutions and public policy that unlock energy transformation, reduce climate risk, and increase prosperity at local, regional, and global scales.

The Insights Series highlights the deep connections between climate action and other top issues facing British Columbians: housing, affordability, economic competitiveness, Indigenous reconciliation, regional economic development, and fiscal efficiency.

B.C.'s climate leadership can be renewed—not by repeating the strategies of the past, but by evolving CleanBC to meet the realities of today.

Territory acknowledgement: At the University of Victoria, where the Pacific Institute for Climate Solutions (PICS) is hosted, we acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

PICS and its university network have campuses across the province known as British Columbia. We respect and acknowledge the many unceded traditional territories and Nations where PICS universities stand including: xʷməθkʷəy̓əm (Musqueam) • Sḵwx̱wú7mesh Úxwumixw (Squamish) • səl̓ilw̓ətaʔɬ (Tsleil-Waututh) • q̓íc̓əy̓ (Katzie) • kʷikʷəƛ̓əm (Kwikwetlem) • Qayqayt • Kwantlen • Semiahmoo • Tsawwassen • Stó:lō • Syilx (Okanagan) • Dakelh (Carrier) territory: Lheidli T'enneh, Lhtako, Nazko, Lhoosk'uz • ?Esdilagh, a Tsilhqot'in Nation • Dane-zaa territory: Doig River, Blueberry River, and Halfway River • Tsimshian territory: Kitsumkalum, Kitselas, Lax Kw'alaams, and Metlakatla • and Gitwinksihlkw, a Nisga'a Village.

Disclaimer: This paper was funded by the Pacific Institute for Climate Solutions (PICS). The views expressed in this paper are those of the author(s) and do not necessarily reflect the views or opinions of PICS.

The homes built today will likely still be lived in 50 years from now, well into an era of intensified climate hazards and rapid technological change. *iStock*

Executive summary

British Columbians are facing a dual challenge: finding homes they can afford and ensuring those homes are safe in a changing climate. The province is now experiencing its largest wave of housing construction in decades, and the choices made in this moment, how and where new homes are built, will shape the health, costs, and security of households for generations. If these homes are not designed to be low-carbon, resilient, and future-ready, today's housing boom will only deepen tomorrow's problems, leaving families with dwellings that are unsafe, costly to operate, and difficult to upgrade.

> *"This construction surge is a once-in-a-generation opportunity to reshape housing for affordability, safety, and sustainability."*

Homes British Columbians live in are not on track to meet climate or affordability needs. Since 2018, heat pump adoption has surged and building codes have raised efficiency standards, but residential greenhouse gas emissions have barely budged; in fact, they remain higher than in 2007. At the same time, the 2021 heat dome showed how deadly it can be when homes are not designed for extreme heat, while the 2021 floods underscored the risks of building in hazard-prone areas. These gaps arrive just as thousands of new homes are being planned, making today's design choices decisive for both family well-being and the province's climate future.

This construction surge is a once-in-a-generation opportunity to reshape housing for affordability, safety, and sustainability. The homes built today will likely still be lived in 50 years from now, well into an era of intensified climate hazards and rapid technological change. To ensure homes serve British Columbians rather than burden them, new housing will need

to be climate-smart, climate-adaptable, and future-ready. That means homes designed with low-carbon materials and efficient systems, sited to avoid hazards, and built with the flexibility to integrate emerging technologies like solar, electric vehicle (EV) charging, and energy storage. Decisions made now will lock in not only emissions, but also household costs, resilience, and community well-being for generations.

B.C. has clear opportunities to align housing supply with climate ambition. These include scaling low-carbon and circular construction, mobilizing the forest sector and bio-based products, and accelerating adoption of new clean technologies. Recent housing reforms, such as small-scale multi-unit zoning and transit-oriented area frameworks, can also support more sustainable growth if paired with resilience standards and low-carbon requirements.

Meeting this moment requires more than incremental change. CleanBC can align B.C.'s housing boom with long-term affordability and resilience by embedding climate into the rules, investments, and partnerships that shape new construction.

This paper outlines four pathways forward:

- aligning codes and financing so the safest and cleanest homes are also the easiest to build
- scaling skills and supply chains for low-carbon construction
- deepening collaboration among governments, Indigenous communities, industry, and researchers
- expanding data and benchmarks to track progress

Together, these shifts can ensure that the homes British Columbians move into over the next decade are not only affordable today, but safe, efficient, and adaptable for the decades ahead.

British Columbians are witnessing the consequences of having a home that is not ready for climate impacts. *iStock*

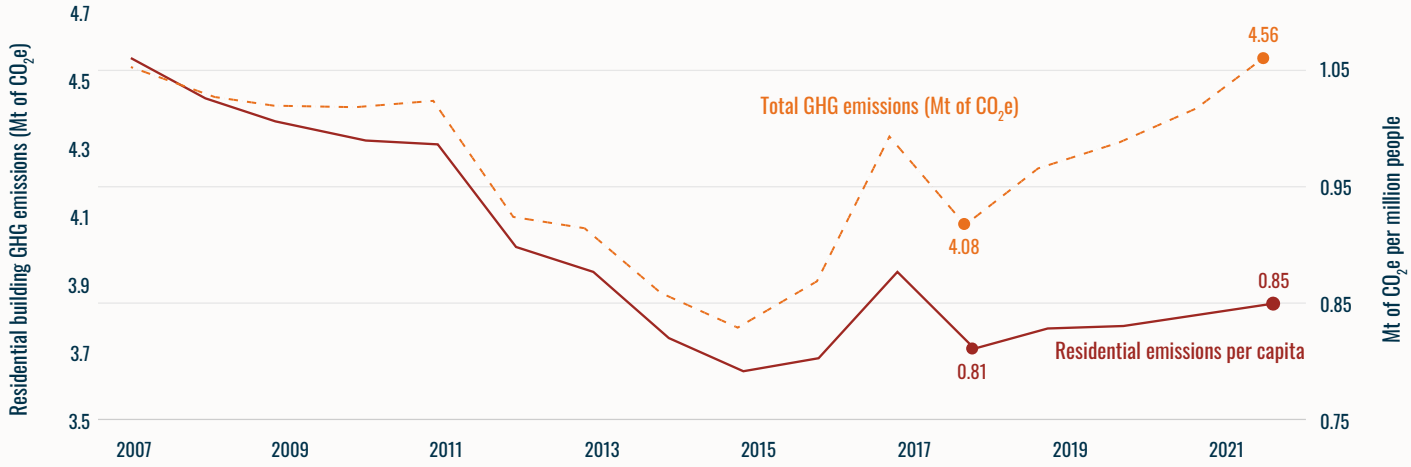
1. Convergence of housing and climate

Over the last five years, B.C. has experienced rapid population growth, sharp real-estate swings, and worsening housing availability. In response, the provincial and federal governments have committed to an unprecedented wave of residential construction. As this build-out accelerates, how homes are designed, and the energy they use, will determine whether B.C. meets its CleanBC targets. Since 2018, heat-pump adoption has surged, and the BC Building Code has raised efficiency standards. Yet residential emissions remain off track, even on a per-capita basis (Fig. 1).[1] At the same time, climate risks are intensifying.[2] These gaps arrive just as B.C. builds homes at a pace not seen in decades, making the nature of new construction decisive for climate outcomes.

> *"The 2021 heat dome demonstrated just how deadly it is when homes are not designed for B.C.'s climate changing risks."*

Simultaneously, British Columbians are witnessing the consequences of having a home that is not ready for climate impacts. The 2021 heat dome demonstrated just how deadly it is when homes are not designed for B.C.'s climate changing risks. And, major successes, like the record number of heat pumps installed in 2023, have also highlighted that it is far easier to plan for new technologies during initial construction than down the road.

FIG 1: RESIDENTIAL GREENHOUSE GAS EMISSIONS HAVE RISEN SINCE 2018 IN BRITISH COLUMBIA



Residential greenhouse gas emissions in British Columbia. In 2021, the Government of B.C. set the target to reach a 59 per cent to 64 per cent reduction in residential and community emissions by 2030 from 2007 levels. Residential building emissions are the largest source of emissions in this category. As of 2022, residential building emissions were up one per cent compared to 2007.

These climate and performance gaps are emerging just as B.C. begins its largest housing construction in decades—making the methods and locations of building crucial for both climate goals and safety of residents.

Rapid growth in new construction

Since the launch of CleanBC in 2018, rapid population growth—driven by immigration and interprovincial migration—has collided with the need to expand housing supply.[3] Governments have responded with faster approvals, zoning reforms, and infrastructure investment. Still, labour and materials constraints, higher borrowing costs, and limited municipal capacity slow delivery. Fragmented roles across provincial, federal, local, and Indigenous governments, and apatchwork of incentives further diffuse effort.

Financing situations remain a central factor shaping the nature of new builds. Higher interest rates, high permitting fees, and rising construction and insurance costs have eroded project viability and increased project risk. In this environment, low-carbon and resilient designs can be sidelined if the upfront costs are perceived as a barrier, particularly when appraisal and underwriting models fail to fully recognize their long-term value. Without deliberate policy alignment, market pressures risk locking in high-emissions systems and putting homes in hazard-prone areas, creating costly retrofits and climate risks for decades to come.

> *"Without deliberate policy alignment, market pressures risk locking in high-emissions systems and putting homes in hazard-prone areas."*

In 2023, B.C. experienced its worst wildfire season on record, with 2.84 million hectares burned, significantly exceeding the 20-year average and the previous record from 2018.[4] This emphasizes the necessity for enhanced resilience to address the challenges posed by climate-induced fires on housing.

Decisions made today about housing will influence the affordability, safety, and climate emissions for decades to come. Homes built in 2025 will likely be relied upon for the next 50 years or more—well into an era of intensified climate

hazards, technological advances, and demographic shifts. With so much new supply in the pipeline, design choices now will lock in operating emissions, resilience, and retrofit costs for generations.

Adaptable and dependable homes for a changing climate

To meet affordability and sustainability concerns, British Columbians need new housing to be climate smart, climate adaptable, and future ready.

- **Climate-smart:** Low-carbon performance across the life cycle, lower embodied carbon in materials, tight envelopes, and electrified space/water heating and cooling. Residential buildings account for ~4.5 per cent of B.C.'s GHGs;[5] scaling high-efficiency, all-electric systems is essential to meet CleanBC targets while lowering bills.
- **Climate-adaptable:** Sited and designed for extreme heat, wildfire smoke, floods, and landslides. Without hazard-informed land use, growth at riverbanks and the wildland–urban interface raises exposure and recovery costs.
- **Future-ready:** Built for tomorrow's systems, solar-ready roofs, EV-ready parking, heat-pump-ready electrical capacity, battery-ready space, and district-energy-ready connections, to avoid stranded assets and expensive retrofits.

Meeting climate, safety, and future-readiness needs requires deliberate shifts in construction methods, materials, and technologies. *iStock*

B.C. has a pivotal opportunity to align housing supply with climate goals. Recent reforms, such as Bill 44's small-scale multi-unit upzoning and Bill 47's transit oriented area framework, can reshape where and how we build.[6] But without hazard informed land use and resilience standards, and clear low carbon requirements, there is risk that B.C. will worsen affordability and climate issues by building a generation of homes that are unsafe, inefficient, and expensive to upgrade.[7]

Meeting these climate, safety, and future-readiness needs requires more than incremental change; it calls for deliberate shifts in construction methods, materials, and technologies. In this paper, we draw the connections between housing and climate policy and outline the key opportunities that could get B.C. back on track to meet its housing and climate goals.

Townley Place in Victoria was redeveloped into a multi-generational community of seniors' apartments and family townhouses. The rezoned wood-frame project emphasizes affordability and sustainability, integrating passive design, walkability, urban gardening, and energy efficiency while enhancing neighborhood diversity, vitality, and environmental stewardship. Source

2. Housing for a sustainable future

A sustainable house is climate-smart, climate-adaptable, and future ready. Expanding British Columbia's sustainable housing stock is core to addressing long-term housing affordability needs.

This section outlines three opportunities to accelerate sustainable housing in B.C. These opportunities are:

- Low-carbon and circular construction
- Forest sector, clean economy, and bio-based products
- New technologies

> *"The circular construction principle focuses on extending the life of materials, reducing construction and demolition waste."*

Low-carbon and circular construction

An eco-friendly approach to building design emphasizes using sustainable materials that produce fewer GHGs and reducing energy consumption during construction and in daily use. This results in efficient housing that contributes to environmental protection. The circular construction principle focuses on extending the life of materials by designing for adaptable use, disassembly, and reuse, thereby reducing construction and demolition waste. Below, we outline key low-carbon and circular construction methods that are emerging and relevant to B.C.

i. Material passports, life cycle assessment requirements

Material passports are a digital tool used to track critical data about construction materials, including origin, manufacturing date, durability, recyclability, environmental footprint, and potential for reuse or recycling.[v] Material passports can help companies adapt to dynamic trade policies; to change practices from a traditional approach in which materials are used and then discarded; and to a circular principle in which materials are reused or recycled. The method aims to identify and reclaim valuable materials at the end of a building's lifecycle.

Life Cycle Assessment (LCA) is used to systematically evaluate the environmental impacts of a building throughout its life cycle.[9] LCAs are increasingly used in design choices, comparing alternative materials, and meeting regulatory or certification requirements, such as LEED and the emerging net-zero carbon frameworks. Governments and industries are increasingly using LCAs at the design stage of new buildings or major retrofits to address climate policy goals. Some jurisdictions have set benchmarks on embodied carbon consideration that must be verified through LCA.[10]

> *"Reducing embodied carbon is equally important to reducing the emissions associated with B.C.'s new homes."*

Materials passports and LCAs enable a data-driven, transparent, and circular approach to construction, aligning the building sector with environmental and climate goals. Many European countries are at the forefront of incorporating the idea of material passports and LCAs into building construction, operation, and end-of-life management. Pioneering initiatives like Concular (Germany),[11] BAMB (Belgium),[12] and Madaster (Netherlands)[13] demonstrate the critical role of digital tools in tracking materials across their entire lifecycle. These efforts are further strengthened by EU-wide policies, including the Circular Economy Action Plan[14] and the European Green Deal,[15] which promote sustainable materials use, design for disassembly, and recycling.

British Columbia has not formally implemented digital material passports in the construction industry; however, several initiatives, such as the Vienna House project,[16] are actively spreading the foundation for their future adoption. Additionally, many progressive building projects across the province are incorporating design for disassembly, LCA carbon analysis, and the selection of low-impact materials. Although fully standardized digital passports are currently in the initial phases, these initiatives collectively show an increasing willingness in B.C.'s construction industry to adopt circular economy principles.[17]

Left: Rendering of Vienna House, in Vancouver, Canada. **Right:** Rendering of Vancouver House, in Vienna, Austria. The Vienna House project aims to prove that affordable housing can be highly livable, near zero-carbon, and cost-effective to both build and operate. This project is part of a multi-year sustainable-building collaboration between the two cities. Source

ii. Embodied carbon consideration (e.g., Vancouver/Nelson pilot programs)

Embodied carbon is the total carbon dioxide emissions from building materials, including extraction, transportation, manufacturing, and disposal. In B.C., embodied carbon is responsible for a growing share of a building's total lifecycle emissions, especially in new and energy-efficient buildings. While operational emissions (from heating, cooling, lighting, etc.) have declined due to high efficiency standards and cleaner technologies, the emissions embedded in construction materials remain significant.

Reducing embodied carbon is equally important to reducing the emissions associated with B.C.'s new homes. This has led to a focus on using low-carbon materials, reusing building materials, and applying LCA carbon analysis throughout the construction process. The City of Vancouver's Green Building

Policy[10] introduced an incentive program in 2022 for homes with low embodied carbon emissions. Vancouver mandated reporting and limiting embodied carbon in new Part 3 buildings. Recently, a 10 per cent reduction in embodied carbon will be required for all new Part 3 city buildings and a 20 per cent reduction for low-rise buildings using wood or mass timber.

The City of Nelson, B.C., created a framework to include embodied carbon considerations into city buildings in its material procurement policy.[18] The initiative focuses on reducing the emissions of materials used in buildings within the city. It seeks to make more eco-friendly choices when purchasing materials. The plan includes finding ways to cut down on carbon during materials procurement, educating city workers and suppliers about embodied carbon, and creating easy-to-use material guidelines. The strategy is still in the early stages of implementation.

A modular housing development manufactured by Lindbäcks Bygg, Sweden's premier modular home manufacturer. Source

iii. Modular and prefabrication construction as low-waste and efficient methods

Modular and prefabricated construction is an off-site manufacturing process that occurs at a specialized facility, where various materials are combined to form components or parts of a larger final onsite assembly. Modular and prefabricated construction methods present several advantages in terms of construction efficiency, housing affordability, and sustainability. They enhance quality and safety and reduce construction time, costs, material waste, and GHG emissions.[21]

Modular construction has steadily grown in Canada over the past decade as a solution to high costs, protracted construction, and labour shortages. In 2023, Canada's modular construction market was valued at approximately $7.1 billion, having grown at a rate of about 6.3 per cent annually since 2018.[19] Approximately 40 per cent of Canada's modular construction output is dedicated to the residential sector, primarily driven by the growing demand for affordable housing in urban centers such as Toronto, Vancouver, and Montreal.

“Modular construction has steadily grown in Canada over the past decade as a solution to high costs, protracted construction, and labour shortages.”

A notable example of the large-scale acceptance of modular construction is Sweden, with approximately 85 per cent of single-family homes made from prefabricated timber, driven by the abundance of local wood and harsh winter conditions.[20] Similar circumstances in B.C. suggest potential for widespread adoption of timber-based modular construction in the province.

These methods also encounter barriers, including the need for detailed planning, limited design flexibility, logistical issues in transporting large parts/components, building codes, and a lack of familiarity by permitting authorities. To promote the use of modular construction in B.C., it is essential for the CleanBC, industry leaders, regulators, educational institutions, and the research community to collaborate effectively. Key steps to improve modular construction in the province include aligning building regulations, streamlining approval processes, enhancing collaboration between universities and industry, investing in factories for modular components, and developing training programs/curricula for the workforce in these building design and construction strategies.

Forest sector, clean economy, and bio-based products

Forest products are becoming increasingly important in making B.C.'s economy greener and more environmentally friendly. Instead of using materials like concrete and steel, the wood and other forest products can be used to cost effectively build more sustainable homes. These eco-friendly materials can help reduce emissions and allow for faster construction. As more programs allow for sustainable housing options, the forest industry is playing a key role in supporting clean and green building progress. Below we outline some new approaches in the construction industry in B.C. and beyond.

i. Mass timber and engineered wood in construction

Canada claims 41 per cent of all certified forests globally, the highest of any country in the world. B.C. has been proactive in adopting forest certification standards from organizations such as the Forest Stewardship Council (FSC), the Sustainable Forestry Initiative (SFI), and the Canadian Standards Association (CSA). In B.C. more than 42.7 million hectares or 73 per cent of forest land have received certification from one of the above three organizations.[22] The certified forests in British Columbia are equivalent to the combined certified forests of Sweden (which is a leader in timber-based modular construction) and Australia.

B.C.'s extensive forests offer a distinctive opportunity to widely incorporate forest-based products into building construction, yielding both environmental and economic advantages. Mass timber products, such as cross-laminated timber and glued-laminated timber, are lightweight materials and easy to assemble and have excellent load-bearing capabilities, enabling their use in mid- and high-rise buildings. Adoption of mass timber significantly reduces embodied carbon, stores carbon for the lifetime, and supports faster, quieter, and cleaner construction. From an economic standpoint, mass timber supports rural and forest-based economies, creating jobs in forestry, manufacturing, and construction.

> *"Mass timber significantly reduces embodied carbon, stores carbon for the lifetime, and supports faster, quieter, and cleaner construction."*

The CleanBC Roadmap 2030[23] highlights B.C.'s commitment to reducing climate impacts by promoting the use of wood and forest products in construction. This shift to using more mass timber in both new and old buildings aims to reduce emissions, accelerate building construction, and boost the local economy. To support these goals, the Government of B.C. has introduced programs like the CleanBC Building Innovation Fund and the Mass Timber Action Plan.

RELEVANT POLICIES

The CleanBC Building Innovation Fund backs low-carbon construction technologies such as mass timber and passive house designs. This initiative represents a transition toward comprehensive provincial carbon management strategy, addressing both operational and embodied emissions to enhance the climate resilience of buildings.

B.C.'s Mass Timber Action Plan is a strategic initiative aimed at accelerating the use of mass timber construction to support a low-carbon, high-performance building sector.[24] Initiated in 2022 and updated in 2024, the program aims to stimulate economic growth, address climate change, and create jobs. It advocates for mass timber as a sustainable building material by simplifying regulations, supporting training, and promoting innovation. Mass timber can reduce carbon emissions by up to 45 per cent compared to conventional materials. The plan also focuses on establishing new manufacturing facilities, creating employment, and partnering with Indigenous communities. With support from multiple government ministries, industry stakeholders, and the Mass Timber Advisory Council, the plan positions B.C. as a North American leader in sustainable, prefabricated wood construction.

ii. Fire code advances and 18-storey allowance in B.C.

To encourage more use of wood in home construction, added investment is needed to develop fire-safe materials and improve responsible forest management. Wood and other products from forests have many benefits, but there are challenges like fire safety, access to high-quality timber, and durability.

The recent updates to the BC Building Code regarding mass timber are significant.[24] They now permit taller encapsulated mass-timber construction (EMTC) buildings, allowing for heights of up to 18 storeys for residential and office spaces, an increase from the earlier maximum of 12 storeys. Additionally, EMTC has been extended to include a wider range of building types, such as schools, libraries, retail spaces, light- and medium-industrial facilities, and care homes. There is also a provision for incorporating more exposed mass timber in the design of buildings, depending on their height and intended use, with residential structures being able to feature this up to eight storeys.

New technologies

Integrating new technologies into building design is key to improving a home's sustainability. Key technologies include solar panels, high-efficiency air and ground source heat pumps, heat pump water heaters, home digitalization systems, and technology for energy sharing between EVs and buildings, as well as between EVs and grids. Energy recovery ventilation systems are critical to improved indoor air quality (especially with increased wildfire smoke) and increasing energy efficiency. Finally, natural technologies, like living roofs and walls, can reduce energy use and improve climate resilience. Below we highlight rapidly emerging technologies being used in B.C.

i. Heat pumps, building automation, EV charging readiness

In recent years, heat pumps' heating and cooling systems have been implemented in buildings across B.C. In just five years, from 2017 to 2022, the number of homes using heat pumps jumped by about 80 per cent, rising from around 142,000 to 254,000.[25] Additionally, more heat pumps for homes were brought into the province than traditional natural gas furnaces in 2022 and 2023. This trend shows a big shift in how people are choosing to heat their homes.

> *"While other improvements in housing also help energy efficiency, all other options have less of an impact than switching to heat pumps."*

Furthermore, about 98 per cent of British Columbians live in homes connected to the hydroelectricity grid (a clean electricity source).[26] Using heat pumps in buildings where clean electricity is available provides enormous opportunities for reducing residential greenhouse gas emissions. In B.C., approximately 39 per cent of homes use forced air natural gas furnaces, while 30 per cent rely on inefficient electric baseboard heaters.[27] These heating options can be easily replaced with high-efficiency electric heat pumps. While other improvements in housing, such as improving insulation, reducing air leaks, and upgrading windows and doors also help energy efficiency, all these options have less of an impact than switching to heat pumps. CleanBC is presently offering rebates to some low-income household looking to upgrade their heating systems to heat pumps. Increasing uptake of all-electric heat pumps is critical for reducing residential emissions and reducing extreme heat exposure.

Building automation system (BAS) implies the centralized control of various systems such as heating, ventilation, air conditioning, lighting, security, and energy management.

The Hive, a 10-storey tall wood office building in Vancouver's False Creek Flats neighbourhood, features a honeycomb-shaped exterior, an expression of the mass timber building's perimeter-braced seismic system. *KK Law Photography.* Source

BAS uses sensors, controllers, and communication networks to monitor conditions in a building. BAS adjusts operations to keep people comfortable, improve energy efficiency, and reduce energy use. The system can automatically respond to building occupancy, activity level, and changes in the outside climatic conditions. This makes buildings more responsive to changing indoor and outdoor conditions. BAS will play a crucial role in achieving sustainability, supporting smart building development, and enhancing the overall performance of both new and existing buildings.

Moreover, avoiding outdated technologies in new building construction is crucial to ensuring long-term performance, economic value, and environmental responsibility. Buildings constructed today will likely remain in use for 50 to 100 years.[28] Investments in charging infrastructure in new buildings or retrofit upgrades are crucial for supporting the growth of the expanding EV adoptability. Pre-installing conduit for EV wiring/charging ensures that residents can adopt EVs without the need for expensive electrical upgrades later. Avoiding lock-in inefficiencies in building designs is not just an innovative design strategy; it is a necessary step toward building decarbonization.[29]

ii. Integration of photovoltaic (PV) systems, rainwater systems, and mechanical ventilation

Solar photovoltaic systems (e.g, solar panels) convert sunlight into electricity without emissions. They can be integrated into buildings as standalone or building-integrated photovoltaics, which can be connected to the electrical-grid or used off-grid, with or without storage systems. Solar panels can last up to 30 years, with minimal degradation in performance over time. Solar systems can give homeowners a degree of freedom of energy independence, an opportunity to earn income, and a reduced reliance on grid power. However, these systems come with some challenges, such as high upfront costs, the need for substantial space to generate enough electricity, the impact of shading, and the intermittent and unpredictable nature of solar energy. Many of these challenges can be addressed through appropriate design, site selection, adequate storage, and connectivity with the electrical grid. BC Hydro currently provides a rebate for residential solar panel and battery storage installations to increase adoption.[30]

> *"Solar systems can give homeowners a degree of freedom of energy independence, an opportunity to earn income, and a reduced reliance on grid power."*

Tank for harvesting rainwater. *iStock*

Rainwater harvesting in buildings is an eco-friendly method of collecting and storing rainwater from rooftops for non-drinking purposes, such as watering gardens and flushing toilets. This approach reduces reliance on city water supplies, lowers water bills and controls storm runoff. Using rainwater helps communities become more resilient to climate change and is becoming a common practice in green building designs and urban planning. While it has many advantages, some challenges can make it hard to adopt, especially in older buildings, such as high installation costs, the need for adequate space to collect and store the water, and the complexities involved in upgrading existing structures. Nevertheless, rainwater harvesting significantly contributes to sustainable water management and plays a crucial role in environmental preservation. In some regions of B.C., rainwater harvesting is being supported through incentives or regulatory requirements as part of broader climate adaptation and water conservation strategies.[31]

With people spending more than 90 per cent of their time indoors, the quality of the indoor air becomes a matter of concern for health, productivity, and well-being. Ventilation

systems that utilize outdated or inefficient filtration may be less effective in removing fine particulates, allergens, and pollutants, which can negatively impact air quality. Recent advancements in mechanical ventilation for buildings are centred around improving energy efficiency, enhancing indoor air quality, supporting sustainability goals, and digitalization. Demand-controlled ventilation adjusts airflow using sensors to optimize energy use based on occupancy or pollutant levels while maintaining air quality. Use of energy recovery ventilators and heat recovery ventilators is increasing. Hybrid ventilation systems are being enhanced with smart controllers for real-time adjustments. Decentralized ventilation units are becoming popular in retrofitting projects due to their compact and energy-efficient features.

Integrating new technologies into building design is key to improving a home's sustainability. *iStock*

3. Recommendations and discussion

Together, these approaches, innovative construction, sustainable materials, and advanced technologies form a toolkit for aligning B.C.'s housing boom with its climate commitments. The next step is jumpstarting these opportunities through key policy shifts.

To address the challenges and opportunities ahead, we propose four policy pathways under a renewed CleanBC. It is essential to develop and implement specific policies through authentic community engagement to ensure they are inclusive and meet the needs of Indigenous communities, low-income households, and people who are unhoused.

> *"The next step is jumpstarting opportunities through key policy shifts."*

Pathway 1: Code and financing alignment

Update code for future climate, prohibit building in high-risk areas, and align public financing with low-carbon, resilient design and technologies; streamline permitting for proven innovations.

Why it matters: Aligns rules and capital so the cheapest, fastest option is also the cleanest and safest.

Specific actions:

- The Government of B.C. could update the building code to reflect emerging climate hazards, evolving technologies, and long-term sustainability goals. This includes ensuring design standards draw from anticipated, not historic, climate conditions.

The Fort St. John 50-unit Passive House apartment project originated from a partnership between BC Housing, British Columbia's Housing Management Commission, and BC Hydro, to develop a highly energy-efficient affordable rental housing building in Fort St. John. Source

- The Government of B.C., local governments, and regional districts could ensure new housing developments are not built in high-risk areas, particularly places vulnerable to flooding, wildfires, and landslides.
- The Government of B.C., BC Housing, and the Canadian Mortgage and Housing Corporation could work together to ensure lending and public financing is focused on sustainably designed homes and that public dollars are not securing credit for emission-intensive homes.
- Governments could ease permitting and regulatory barriers for deployment of innovative technologies to speed up adoption and delivery (e.g., building information modelling, prefabrication, mass timber, heat pumps, green roofs/facades, and Passive House principles).
- The Government of B.C. and BC Hydro should double down on financial incentives to help homeowners and renters overcome upfront costs of retrofits and adoption of efficient technologies in new builds. This includes reinstating rebates to encourage fuel switching from natural gas to all electric heat pumps and expanding solar panel rebates.
- The Government of B.C. and BC Housing can focus on increasing public awareness about Passive House principles through targeted campaigns while offering financial incentives. The implementation of pilot projects across the province, such as Vienna House, would help in this campaign.

Pathway 2: Economic and skill development

Scale training for heat pumps, airtight envelope design, modular, solar PV system, and mass timber; reduce interprovincial barriers for low-carbon materials.

Why it matters: Delivery at scale hinges on people skills and supply chains.

Specific actions:

- The Government of B.C. could work with other provinces and the territories to reduce trade barriers for mass timber and other low-carbon wood-based materials.
- The Government of B.C. could invest in training and reskilling programs for sustainable building technologies, with an emphasis on inclusive, community-led initiatives that generate green jobs and support equity.
- The Government of B.C. could provide incentives for a community-run apprenticeship program for Indigenous community members to develop a skilled workforce and promote economic growth.
- The Government of B.C. could support heritage building retrofits in urban and rural municipalities seeking to align climate targets with historic preservation goals.

Pathway 3: Collaboration and engagement

Formalize partnerships among governments, Indigenous communities, industry, and researchers; co-develop a practical roadmap.

Why it matters: Shared standards and demand signals accelerate adoption and equity.

Specific actions:

- The Government of B.C. and the Government of Canada could promote more collaborations between governments,

industry, research community, and Indigenous communities to create inclusive and effective housing solutions that address a wide range of needs and priorities.

- The Government of B.C. could collaborate with builder associations on targeted education and outreach on embodied carbon and the benefits of low-carbon materials.
- The Government of B.C. and local governments could support collaborative projects (e.g., partnering with BC Housing, research community, governments, industry) to produce a practical roadmap that tackles the economic, technical, environmental, and social dimensions of housing.
- National partners like CMHC and NRCan can provide funding and alignment with provincial housing and climate goals.

> *"Meeting this moment requires bold, coordinated leadership that turns the housing boom into a driver of climate solutions."*

Pathway 4: Data, benchmarks, and adaptive management

Expand performance data sharing; embed CleanBC indicators for sustainability, affordability, and community well-being.

Why it matters: Measurement creates accountability and continuous improvement.

Specific actions:

- The Government of B.C. and BC Housing could encourage further collaboration between the research community and industry to generate robust evidence on the performance of sustainable housing strategies, materials, and technologies.
- CleanBC could include benchmarks and indicators that track sustainability, affordability, and community well-being.

Today's affordability challenges will only intensify if new homes are not built to be climate-smart, climate-adaptable, and future ready. Meeting this moment requires bold, coordinated leadership that turns the housing boom into a driver of climate solutions—realigning B.C.'s housing ambitions as a pathway to emissions reduction and resilience, not a trade-off between them.

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CLEAN ENERGY CANADA

Insights Series: CleanBC Review

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Pathways to Accelerating Household Clean Technology Adoption Across British Columbia

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Foreword

The Pacific Institute for Climate Solutions (PICS) was created in 2008 with an endowment from the Government of British Columbia to support evidence-based climate policy. This investment in our university-based network was groundbreaking and remains a core strength of the organization.

In fulfilment of PICS' mandate, this Insights Series elevates leading evidence at a pivotal moment for climate policy in B.C. Drawing on academic expertise from across the province, the series is designed to inform the 2025 independent review of CleanBC, British Columbia's plan to reduce greenhouse gas emissions and combat climate change.

When CleanBC was launched in 2018, climate action was a public and political priority. While concern about climate change remains widespread, it has increasingly been overshadowed by more immediate pressures, such as rising costs of living, strained public services, and growing geopolitical instability. Intensifying climate impacts exacerbate each of these challenges, which increases the complexity and opportunity for bold climate solutions. Now is not a time to retreat from ambition. Rather, it is a time for integrated solutions and public policy that unlock energy transformation, reduce climate risk, and increase prosperity at local, regional, and global scales.

The Insights Series highlights the deep connections between climate action and other top issues facing British Columbians: housing, affordability, economic competitiveness, Indigenous reconciliation, regional economic development, and fiscal efficiency.

B.C.'s climate leadership can be renewed—not by repeating the strategies of the past, but by evolving CleanBC to meet the realities of today.

Territory acknowledgement: At the University of Victoria, where the Pacific Institute for Climate Solutions (PICS) is hosted, we acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day

PICS and its university network have campuses across the province known as British Columbia. We respect and acknowledge the many unceded traditional territories and Nations where PICS universities stand including: xʷməθkʷəy̓əm (Musqueam) • Sḵwx̱wú7mesh Úxwumixw (Squamish) • səl̓ilw̓ətaʔɬ (Tsleil-Waututh) • q̓íc̓əy̓ (Katzie) • kʷikʷəƛ̓əm (Kwikwetlem) • Qayqayt • Kwantlen • Semiahmoo • Tsawwassen • Stó:lō • Syilx (Okanagan) • Dakelh (Carrier) territory: Lheidli T'enneh, Lhtako, Nazko, Lhoosk'uz • ?Esdilagh, a Tsilhqot'in Nation • Dane-zaa territory: Doig River, Blueberry River, and Halfway River • Tsimshian territory: Kitsumkalum, Kitselas, Lax Kw'alaams, and Metlakatla • and Gitwinksihlkw, a Nisga'a Village.

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The number of households in B.C. with heat pumps increased by approximately 80 per cent from 2017 to 2022, from an estimated 142,000 to 254,000, supported by B.C.'s CleanBC Better Homes rebate programs. *iStock*

Executive summary

B.C. households are on the front lines of both climate change and the affordability crisis. The energy used in homes determines monthly bills but may also contribute to provincial emissions. Addressing both challenges starts at the doorstep, with cleaner, more energy- and cost-efficient household technologies.

Public appetite for clean, cost-saving home technologies is strong and growing. Clean Energy Canada's 2024-25 market research shows that many British Columbians are ready to invest in solutions that cut both emissions and energy bills. In Metro Vancouver, nearly 70 per cent of residents say their next vehicle could be electric, more than 60 per cent view heat pumps positively, and close to 60 per cent want their next home to be "energy smart."

The problem is not public interest, but it is the practical barriers that get in the way. British Columbians understand the value of clean technologies, but many households are held back by structural challenges. The most significant of these is the upfront cost. While 72 per cent of residents believe electric vehicles are cheaper to own than gas vehicles over time, most households still cannot afford the higher initial price tag.

> *"Public appetite for clean, cost-saving home technologies is strong and growing."*

Renters and people living in apartments or townhomes face additional hurdles. They often lack the authority to make upgrades, have limited access to home charging, and are constrained by strata regulations. These barriers affect a significant portion of the population: one in three British

Columbians rent, and nearly half live in multi-unit buildings.

Finally, knowledge gaps and misinformation are persistent barriers. Many residents still hold exaggerated fears about electric vehicle battery replacement or misunderstand how heat pumps work—both of which dampen adoption.

To move forward, climate action needs to shift from merely convincing British Columbians on the benefits of clean technologies to dismantling the frictions that stand in the way of uptake. British Columbians are ready to make the switch. With the right mix of affordability measures, regulatory updates, renter-inclusive supports, and trusted, hands-on guidance, the province has a clear opportunity to scale household adoption, deliver real energy savings to families across B.C., and reduce emissions, all while building durable support for CleanBC's broader climate goals. This paper outlines sets of recommendations to increase adoption of technologies that will improve affordability and reduce emissions.

Our high-level pathways for this increased uptake are:

- Increase rebates, targeted low-interest loans, and asset-secured borrowing to address upfront cost of new household technologies; and encourage the federal government to allow more affordable EVs into the Canadian market.
- Strengthen multi-unit residential building standards and expand rebates in order to ensure renters and apartment dwellers are able to add cost-saving technologies.
- Promote knowledge and counter misinformation about clean technologies.
- Modernize building and electrical codes and invest in EV charging infrastructure to make EVs easier to use and more accessible.

The appetite for affordable clean technologies is already there. By tackling the practical barriers that still stand in the way, B.C. can empower more households to take action and build lasting momentum for a cleaner, more affordable future.

Interest in EVs continues to be strong, but cost is a barrier. *iStock*

Background

British Columbia households directly account for 23 per cent of provincial greenhouse gas emissions, above the national average of 17 per cent.[1] Connecting British Columbians with clean technologies (e.g., EVs, home space and water heating and cooling, rooftop solar and battery storage) not only addresses emissions but also builds support for climate action as homeowners and renters have the opportunity to directly access and interact with these technologies, plus enjoy the lower household energy costs they provide. Globally, households have become important investors in the energy transition, accounting for nearly 60 per cent of energy-investment growth in advanced economies with strong policy support.[2]

British Columbia has been leading the adoption of some household clean technologies in Canada, supported by both its incentive programming through CleanBC and strong regulatory policy for EVs. With EVs representing 23 per cent of new vehicle sales in 2024, B.C. exceeded the national share of 15 per cent and was second only to Quebec (33 per cent).[3] B.C.'s market share was comparable to that of the global market (22 per cent).[4] Meanwhile, seven per cent of households in B.C. used a heat pump in 2022, an adoption level that is closer to the Canadian average of six per cent, with higher ownership in Quebec (10 per cent) and each of the Maritime provinces (10 to 32 per cent).[5]

The last year has yielded many changes in policy and context that have negatively influenced clean technology adoption at least in the short-term. EV uptake slowed down to 19 per cent in the first quarter of 2025, coinciding with a pause in the federal rebate in January.[6, 7] Other recent changes to home technology rebates in B.C. include a pause in the provincial EV rebate in May 2025, and EV chargers and home batteries by Tesla ineligible for rebates as of March.[8, 9] A provincial sales tax exemption for used EVs ended in April.10 For home heating and cooling, a rebate for central ducted heat

pumps ended in April and a rebate for dual fuel heat pumps was halved in May.[11, 12] At the same time, the Government of B.C. introduced heat pump rebates for income-qualified apartment renters and condo owners in July.[13] However, the cancellation of B.C.'s consumer-facing carbon tax as of April 2025 removed a nudge for B.C. households to adopt EVs and heat pumps.[14]

> *"A rebate for dual fuel heat pumps was halved in May."*

Given the high level of public interest in household clean technologies, better understanding the barriers British Columbians are currently facing to adoption along with the policy options and tools to help address them will be key to public acceptance and buy-in for a renewed CleanBC plan. Clean Energy Canada has undertaken a research project over the course of 2024-2025 examining key household-level clean technologies for:

- transportation (electric vehicles and home chargers)
- home heating and cooling (heat pumps, electric hot water heaters, smart thermostats)
- rooftop solar and household battery storage

As EVs and heat pumps are the most popular household clean technologies and contribute the most to reducing greenhouse gas emissions, they are a focus of many of our recommendations.

To understand what motivates urban and suburban British Columbians to adopt clean technologies, Clean Energy Canada partnered with Abacus Data on first-of-its-kind market research to better understand the next adopters of clean technologies, their barriers, and the solutions they need to help them make the switch. We drew on market research conducted with 1,500 participants in the Metro Vancouver area between November 2024 and January 2025. Metropolitan areas have the greatest density and size of population who face similar climates, barriers, and opportunities. A focus in these areas can help government design cost-effective policies that have the greatest possible impact and attract a broad cross-section of the population with similar levels of interest in adoption.

Using this market research, we developed five distinct adopter groups, ranging from the highly motivated to the not-at-all-interested. Overall, respondents are quite open to clean technologies: 69 per cent are inclined to buy an EV as their next car, 61 per cent have or positively view heat pumps, and 59 per cent say it's important their next home is energy smart.

To build a clear menu of policy options, Clean Energy Canada also conducted a jurisdictional scan across Canada and additional international research to identify best practices as to how leading jurisdictions are overcoming these challenges.

A professional solar panel crew installs panels on the roof of a house. *iStock*

Pathways

This market research identified the following four key barriers to clean technology adoption along with actions the Government of B.C. could take to address these barriers.

Barrier #1: upfront costs

Upfront cost was the number one barrier to adoption identified in our research, for both EVs and heat pumps, across every group. Some 86 per cent of respondents identified it as a major or minor barrier to choosing an EV, while 76 per cent said installation costs were a barrier when considering a heat pump.

On the other hand, 65 per cent understood that a household with clean technologies would pay a smaller monthly energy bill than the fossil-fuelled alternative. For EVs, 72 per cent recognized that owning an EV would end up being cheaper overall than owning a similar gas car, and yet only the most motivated adopters were willing (or able) to spend more money upfront to buy an EV. Put simply, upfront cost remains a barrier even for those who already understand that the electric option will save them money down the road.

> *"Upfront cost was the number one barrier to adoption identified."*

Although upfront costs have decreased and economies of scale are making clean technologies more competitive, a price gap still exists. A previous Clean Energy Canada analysis found that while all EVs we analyzed were considerably cheaper than gas cars over a 10-year period, none were cheaper upfront without the inclusion of government rebates.[15] Similarly, clean technologies like heat pumps, heat pump water heaters, and

solar panels could save many households money over time but come with an upfront price premium. In our survey, 80 per cent of respondents agreed that governments should help make clean technologies more affordable through incentives, zero-interest loans, and investments in public charging (only 11 per cent opposed such efforts).

Recommendations to the Government of B.C. to address upfront costs include:

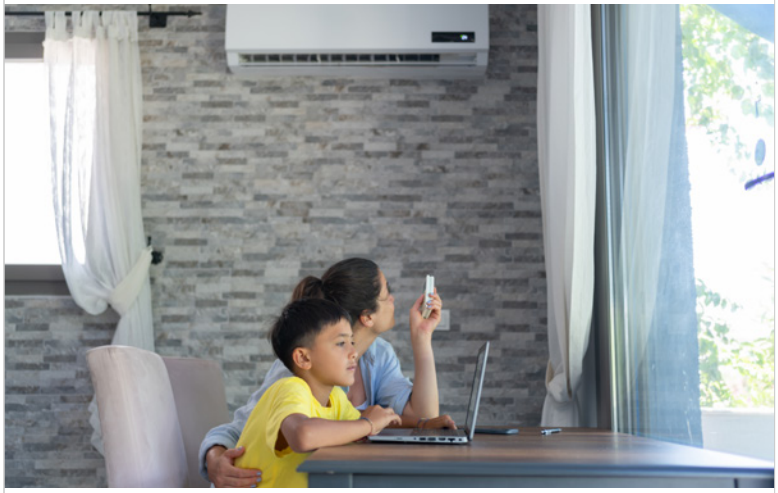
» **Ensure a selection of affordable EVs are available to British Columbians by 2030:**
Several polls have shown the vast majority of Canadians wish to pay less than $40,000 Manufacturer's Suggested Retail Price (MRSP) for an electric or gas-powered new car.[16, 17] A policy package to achieve this should include:

- ***Restart cost-effective and targeted Go Electric rebates of up to $2,500 for new EVs:***
Rebates increase household adoption and incentivize companies to bring affordable EVs to the B.C. market. B.C.'s EV rebate program has helped put nearly 195,000 zero-emission vehicles on the province's roads.[18] Going forward, existing price caps (e.g., $50,000 for sedans and SUVs and $70,000 for vans and pickup trucks) should be maintained but lowered annually until the sedan and SUV price cap reaches $40,000 by 2030 to help drive down prices. To help move the burden from public investment, carmakers should be required to offer matching discounts of $2,500 for their vehicles to be eligible without increasing MSRPs. An additional government-funded rebate of $500 should be offered for EVs assembled in or made with Canadian critical minerals, components, batteries, or parts. Existing income requirements should be reconsidered to ensure working families can access the rebates.

- ***Adjust the 2030 and 2035 sales targets and add flexibility in the Zero-emission Vehicle (ZEV) mandate:***
Making small adjustments to the 2030 targets to help automakers weather this temporary storm and lowering the 2035 requirement to ensure the policy is not equivalent to a ban on gas-powered vehicles while maintaining a long-term market signal that B.C. is committed to going electric. Any additional flexibility added in the regulation should be designed to achieve other EV-related goals, such as delivering more affordable EVs and building out B.C.'s charging network. Conventional hybrid vehicles should not be eligible for credits under B.C.'s ZEV mandate. Ultimately, ZEV mandates are an affordability measure, with studies showing that they drive down EV prices.[19, 20]

- ***Work with the federal government to reduce Canada's trade barriers to EV imports:***
Few factors drive prices down like competition. Canada's 100 per cent tariff on Chinese EVs exacerbates an uncompetitive market at the expense of consumers. With a much lower tariff on Chinese EVs, Europe enjoys more affordable electric options, with only modest market share going to Chinese cars.[21] Vehicles approved for roads in Europe should likewise be approved in Canada, opening the door to more compact models. Doing so would open Canada's vehicle market to fill important market gaps, drive innovation and ultimately make our auto sector more competitive. While B.C. cannot directly control this issue, it can help raise it with the federal government at the one-year review of the China Surtax Order (2024) in fall 2025.[22]

» **Maintain and improve incentives for other household clean technologies:**
The number of households in B.C. with heat pumps increased by approximately 80 per cent from 2017 to 2022, from an estimated 142,000 to 254,000 supported by B.C.'s CleanBC Better Homes rebate programs.[23] Incentives should be maintained and expanded for heat pumps,



Seven per cent of households in B.C. used a heat pump in 2022, an adoption level that is closer to the Canadian average of six per cent. *iStock*

EV home charging, rooftop solar power, battery storage systems, and other big-ticket items where upfront cost is likely to be a barrier, even if they eventually pay back their initial investment through savings. Incentives should be: funded through innovative financing (see below); broadly accessible, including to middle-income households in high cost of living areas; and scaled to the performance of equipment (while requiring proper sizing), so households are incentivized to install the most efficient models.

- **Offer new, innovative financing methods:** In addition to incentives, creative financing can also ease the upfront and ongoing costs of going electric, in some cases spreading out the cost in such a way that borrowers experience net savings straight away. Opportunities for B.C. include:
  - Offer low or zero-interest 10-year loans up to $40,000 that can be used for a range and combination of upgrades, from heat pumps, to rooftop solar, to heat pump water heaters and even smart thermostats, similar to what the federal government did through its now-ended Greener Homes Loan program.[24]
  - Assist all provincial local governments to offer Property Assessed Clean Energy (PACE) programs, allowing homeowners to pay for upgrades through higher property taxes over a set period, tying the upgrade to the property rather than their personal credit.
  - Initiate a program similar to Manitoba's, which provides financial support for the installation of ground-source heat pumps ($75 a month with no upfront cost).[25]
  - Work with financial institutions to offer Home Equity Lines of Credit (HELOC) to finance solar installations, leveraging the equity in their homes.
  - Initiate leasing systems to avoid upfront costs on homeowners.

Barrier #2: housing type

One third of British Columbians rent their homes, with 65 per cent of renters based in Metro Vancouver.[26] Renters often lack the agency to make clean technology upgrades, and 86 per cent of renters in our survey said that renting their home was a barrier to adopting a heat pump.

Smart thermostat. *iStock*

There are additional challenges when it comes to effecting change in rental buildings. Tenants typically pay monthly energy bills but do not usually have a say in the installation of more efficient energy technologies. Property owners, meanwhile, would bear the costs of making improvements, but they do not always benefit directly from the cost savings and quality-of-life benefits. This "split incentive" problem can hinder widespread adoption of clean technologies in rental units.

Similarly, 44 per cent of British Columbia households reside in apartment buildings, with different levels of access to various technologies and a sometimes limited ability to make required infrastructure changes, even when residents own their homes.[27] Three-quarters (73 per cent) of those living in apartments and townhomes said that access to home charging was a barrier to EV adoption, while 57 per cent said they did not have the ability to make heat pump installations (compared to 46 per cent of those in detached homes).

Recommendations to the Government of B.C. to empower renters and apartment dwellers include:

- **Introduce EV-readiness requirements for new homes:** Requiring new homes, including apartments, to be constructed with heat pumps and EV chargers or the necessary wiring for easy installation ensures renters have access to new technologies in a cost-efficient manner. Because this approach primarily benefits individuals moving into newly built residences, the policy will

help more British Columbians the sooner the policy is implemented. The City of Vancouver, for example, has put in place a requirement for all new development permit applications that 100 per cent of residential parking stalls, except visitor stalls, must be EV-ready.[28] In fact, more than thirty B.C. municipalities, accounting for 79 per cent of the provincial population, have adopted EV readiness requirements for new buildings in their bylaws. But a piecemeal approach led by municipalities is not the best option for anyone: residents, charging station providers, developers, or our climate. And varied and sometimes contradictory regulations add complexity and bureaucratic red tape, delaying installations. The Government of B.C. should move forward with a province-wide 100 per cent EV readiness requirements in new builds via changes to the B.C. building or electrical code or a zoning bylaw mandate.

- **Expand rebates for renters:** The Government of B.C. recently announced rebates for the purchase and installation of heat pumps in individual suites in multi-unit residential buildings (MURBs) that both renters and owners can access.[13] This new rebate is a step in the right direction that should be expanded to other clean technologies, including EV chargers.

- **Introduce regulatory requirements for rental units:** Energy efficiency standards for rental units could lower operating costs for renters (a measure the U.K. has had in place for years).[29] Additionally, maximum temperature rules for rental units could literally save lives and also incentivize the installation of heat pumps. Vancouver, for example, requires that all permanently installed A/C systems are heat pumps in detached homes.[30]

- **Continue offering government support for stratas:** Almost half (44 per cent) of British Columbia households reside in apartment buildings, with the share at 59 per cent in Metro Vancouver.[27] Therefore, B.C. should maintain the funding support it already provides not only for individuals, but also for stratas undertaking larger building-wide upgrades necessary to electrify their heating and cooling systems or install charging in parkades.[31, 32]

Barrier #3: knowledge gaps

Limited knowledge and poor-quality information are affecting new technology adoption. Specifically, 22 per cent of homeowners said they were interested in installing a heat pump in the future, while an additional 25 per cent were interested but needed more information (another 14 per cent said they already had one). Overall, knowledge of heat pumps remains relatively low, with only around half of British Columbians aware of key facts, such as heat pump efficiency in cold weather or cost benefits. Encouragingly, after receiving information about heat pumps, that 22 per cent jumped to 34 per cent who said they would like to install one at some point. While interest in heat pumps is growing, educating consumers about their benefits, and addressing knowledge gaps is essential for increasing adoption.

> *"Limited knowledge and poor-quality information are affecting new technology adoption."*

The knowledge gap is less extreme with EVs but still apparent. After receiving more information about EVs, respondents' intention to purchase one as their next vehicle increased from 69 per cent to 72 per cent. In terms of poor-quality information, it is no secret that anti-EV memes run rampant online. Somewhat surprisingly, the second-most cited barrier for respondents was potential battery replacement costs. In reality, the battery replacement rate for modern EVs is less than 1 per cent, and nearly all of these replacements happen under warranty.[33] Similarly, older Tesla models that have now been on the road for many years have experienced just 12 per cent range declines after 320,000 kilometres of driving.[34] And yet, 53 per cent said this was a major barrier for them, compared to 36 per cent who said the same about a lack of public charging infrastructure—a concern more grounded in reality.

Recommendations to the Government of B.C. to address knowledge gaps in clean technology solutions include:

- **Develop a home electrification resource hub:** Social media and search engines are primary sources of information for British Columbians interested in home upgrade projects The Government of B.C. could run and advertise electrification resource hubs (an easy-to-use

website and app) that answer common and technical questions and connect users with local vendors and applicable incentives, providing all the information one would need when making and acting on a decision. As an example to build on, B.C. recently introduced a Home Energy Planner that includes individualized household energy scores, recommended upgrades, and the resources to get started.[35]

- **Offer or fund awareness-raising events:** Seeing is believing—and understanding. The Government of B.C. should re-launch its Emotive Community Outreach Incentive Program (COIP), which supported communities and local governments in delivering EV awareness campaigns.[36] Additional innovative initiatives for other clean technologies should also be considered. For example, programs like "Energy Neighbour" in Toronto help individuals navigate complex installation processes, while the U.S. Department of Energy under Biden was supporting in-home "heat pump parties" (think Tupperware parties) to help homeowners showcase their upgrades to interested neighbours.[37–39]

- **Train vendors:** People will struggle to sell what they do not fully understand. There are ways to educate. Electric Mobility Canada, for instance, hosts a national training program that aims to equip car sales staff with the knowledge they need to answer questions about EVs and sell them effectively.[40] Similarly, the Heating, Refrigeration and Air Conditioning Institute of Canada offers heat pump training to installers and hosts an annual heat pump tradeshow and conference.[41, 42] The Government of B.C. should fund dealership and contractor training to ensure those interacting directly with potential household clean technology buyers are well equipped to answer questions and provide relevant information. Training could also include equipping contractors with a comprehensive understanding of the rebates available and applicable to their customers to lower barriers to access them.

Barrier #4: infrastructure and electrical concerns

Sometimes, a home or building needs electrical upgrades to support new technologies. This could include a new 200-amp electrical panel or wiring for a 50-amp plug. When it comes to multi-unit residential buildings, the infrastructure challenges can be even greater—and more costly—for the stratas or building managers navigating them.

In some cases, the cost may not be as high as homeowners initially think. For example, adding a home energy management system can eliminate the need for a more expensive electrical panel upgrade. And the best solution may even be an old-fashioned one: keeping it simple. For example, 71 per cent of homeowners who live in houses and townhomes (and who do not currently drive an EV) said they drive less than 50 kilometres a day. These drivers could comfortably manage using only Level 1 charging, which plugs into a regular outlet, requiring no additional electrical work. Likewise, mini-split heat pumps offer a simpler solution for homes without ducts and can be combined with existing heating systems like electric baseboards to further simplify and lower the cost of installation. Yet many may not be aware of these options.

> *"Adding a home energy management system can eliminate the need for a more expensive electrical panel upgrade."*

Finally, insufficient public charging continues to be a real barrier for many people, cited as a major or minor barrier by 74 per cent of respondents. Similarly, the largest survey of EV drivers in Canada, conducted by the CAA, has found a lack of public charging to be one of the more notable concerns among people with actual experience driving EVs (nevertheless, nine in 10 intend to get an EV again).[43]

Recommendations to the Government of B.C. to address infrastructure and electrical concerns include:

- **Modernize building and electrical codes:** The cheapest way to add EV charging or a heat pump to a home is to install these features when the home is first built. Many places already require EV charging readiness in

new construction and efficient heating systems. The Government of B.C. should include these requirements in its building code, streamlining the process for builders and future homeowners. Homeowners sometimes are required to make unnecessary panel upgrades due to electrical codes mandating a maximum capacity that will not actually be used. Ontario recently allowed home energy management systems to be included in panel size calculations and B.C. should adopt the same methodology for calculating minimum electrical panel capacity.[44]

- **Expand government grants and zero-interest loans:** Programs that reduce the cost of upgrading will make it easier for homeowners to make the switch. This support is especially crucial for stratas facing costlier, more complex upgrades. The CleanBC EV rebate for home chargers could be expanded to include the costs of panel upgrades.

- **Educate consumers, stratas, installers, and municipalities about simpler solutions:** From Level 1 charging to a home energy management system in lieu of a costlier electrical panel upgrade, consumers need not be upsold where easier, effective solutions exist that could meet their needs. This can include older apartment buildings as well, where the electrical challenges of a Level 2 system are considered cost prohibitive.

- **Invest in charging infrastructure:** The Government of B.C. should develop an EV charging strategy that sets clear deployment targets for both public and private charging infrastructure that are aligned with any updates to the Government of B.C.'s ZEV sales targets and puts an emphasis on home charging in MURBs to ensure all B.C. drivers have the option of fueling their vehicles with clean, affordable B.C. electricity at home. The strategy should also seek to improve public charging infrastructure in rural areas, which would further enable those British Columbians driving the farthest distances to help them make the switch and benefit from the larger absolute cost savings that accrue from high annual mileage.

An induction cooktop can save families on their energy bills, and improve indoor air quality compared to gas stoves. *iStock*

B.C.'s EV rebate program has helped put nearly 195,000 zero-emission vehicles on the province's roads. *iStock*

Conclusions

Household-level clean technologies not only help reduce B.C.'s greenhouse gas emissions but also build support for climate action and lower households' energy costs. However, enabling the next wave of clean technology adopters in the province will require more than selling people on their benefits. As many British Columbians are already sold on clean technologies, the Government of B.C. should focus on systematically breaking down the barriers keeping would-be EV drivers and heat pump owners from doing what they already want to do. Informed by our first-of-its-kind market research involving a 1,500-person survey of Metro Vancouver residents, this report offered several recommendations for how the Government of B.C. can help British Columbians make the switch to clean technologies.

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