

2022 Climate Change Accountability Report







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Message from the Minister



This fall's extended drought has once again made it increasingly clear that the global climate crisis is real and present in British Columbia. We are experiencing the devastating impacts of severe weather patterns, bringing record-breaking heatwaves, unprecedented wildfires, extreme flooding and severe droughts, all within the last two years.

It's a bracing reality that needs strong, coordinated action from all levels of government to reduce climate pollution, and to change the way we plan and develop our communities and our economy by incorporating future climate impacts into every decision we make as a society. The economic and human costs of climate change are significant and will only worsen without continued

focus and action. We must invest in new opportunities for people in the clean economy that will reduce costs in the long-run and make our communities stronger and more resilient than before.

B.C. continues to champion solutions and accelerate work already underway in order to meet our climate targets. Last year, our government released the CleanBC Roadmap to 2030 – a substantial expansion of our previous commitments to build a cleaner, better future for everyone. It will mean we reach 100% zero-emission vehicle sales earlier. All new buildings will be emissions free by 2030. Methane emissions from the oil and gas sector will be cut 75% by that same year, and the sector will cut emissions by at least 1/3 by 2030. Emissions from natural gas utilities will be capped and cut nearly in half. Renewable fuels produced in B.C. will double. More people will be able to choose public transit and active transportation to get to where they need to go. And we backed up these commitments with record investments in CleanBC as part of Budget 2022.

The climate change accountability reporting process allows us to guide our work, share our progress, and see where we need to make improvements. Through last year's reporting, it became clear that stronger action was needed. With the revised CleanBC plan, which was informed by advice from the independent Climate Solutions Council, we made measurable, actionable adjustments, to ensure we are meeting our goals.

This year's report details progress made on several fronts. Electric vehicle sales continued to climb faster than our expectations. We continue to expand our electric charging highway with more than 3,000 public charging stations in place as of the end of 2021. We launched a new program to support local governments and Modern Treaty Nations to take climate action in their communities. And we've eliminated the largest fossil fuel subsidy in the province by moving to a new system that benefits the public interest and our environment.

On top of that, our government has made clean options more affordable for people with incentives for electric vehicles, heat pumps and other home efficiency improvements. The previously announced increases for the climate action tax credit for 2021/22 took effect. And we moved forward with major new low-carbon infrastructure – including new milestones toward construction of the Broadway Subway and the new Surrey Langley SkyTrain.

We have an ambitious and complex plan, and we are committed to implementing it with the urgency that the changing climate demands. In June of this year, we released the Climate Preparedness and Adaptation Strategy to build a better, more resilient future for people and communities across the province. The plan is supported by more than \$500 million and is part of a larger \$2.1 billion effort to help communities recover from the devastating impacts of last year's flooding and prepare ourselves from future risks.

By working together with Indigenous peoples, all levels of government, people and businesses, we're taking actions to help ensure we're better prepared for the climate challenges ahead.

There is clearly more work to do, and we're committed to ensuring we take strong action, measuring our progress, and adjusting where needed to meet our climate targets and build a better province for everyone.

George Heyman
Minister of Environment and Climate Change Strategy





1. Executive Summary

The 2022 Climate Change Accountability Report is the third official report since the requirement was brought in under the [Climate Change Accountability Act](#). It includes a range of information detailing progress across a suite of policies, programs and legislation implemented during the previous year.

In 2020, B.C.'s net emissions were down compared to 2019 and the base year of 2007 by 4% and 3% respectively, and our per capita greenhouse gas (GHG) emissions were also down by 5% and 19% respectively. Transportation-related emissions declined in 2020 compared to 2019, although this is largely attributable to the impacts of the COVID-19 pandemic, and this sector continues to account for the largest share of B.C.'s emissions. An important consideration when viewing these results is that this reporting period (to December 2020) only partially covers the start-up phase of CleanBC – launched in December 2018. Many policies and programs, including those announced as part of the 2021 [CleanBC Roadmap to 2030](#) (Roadmap), are expected to reduce emissions in the coming years.

The latest modelling on our progress to targets is showing a small gap in meeting our 2030 target that is attributable to improvements made in the model and regular changes in the federal National Inventory Report and the Provincial Inventory. Government remains committed to implementing the Roadmap and the small gap is not a result of any changes to commitments.

Highlights from 2021/22 include:

- Launching the CleanBC Roadmap to 2030, which includes a wide range of accelerated and expanded actions across the economy to help meet B.C.'s climate commitments and build a cleaner economy
- In 2021, B.C. had the highest rate of zero-emission vehicle (ZEV) uptake in North America, with ZEV sales representing 13% of all new light-duty vehicle sales in the province. At the end of 2021, B.C. had more than 3,000 public charging stations – an increase of 50% from 2020
- Releasing a draft Climate Preparedness and Adaptation Strategy in June 2021, outlining proposed actions to help people and communities prepare for a changing climate (final strategy released in June 2022)

- As of March 2022, CleanBC Better Homes and Better Buildings has provided 35,315 residential retrofit rebates, approved pre-registrations for 445 residential new construction projects, disbursed 149 incentives, and approved 264 capital incentives for commercial, institutional, and multi-unit residential building energy efficiency and fuel-switching projects
- CleanBC Better Homes introduced a stand-alone income qualified program in February 2022. The program provides high-value incentives to low- and moderate-income households and is complementary to current residential and income-qualified rebates
- Launch of new programs under the CleanBC Remote Community Energy Strategy to reduce the use of diesel for electricity generation and heating in remote communities
- Development of a new climate action program for local governments and Modern Treaty Nations (launched in May 2022)
- Expansion of the CleanBC Plastics Action Plan to support the first nine projects under the CleanBC Plastics Action Fund
- Establishing the Regenerative Agriculture and Agritech Network to guide the transition to more climate resilient and low carbon agriculture
- Supporting farmers to adapt to climate change with 34 new Beneficial Management Practices projects
- Opened a new B.C. Hydrogen Office in March 2022 to expand hydrogen development and streamline projects from proposal to construction
- Launched the B.C. Centre for Innovation and Clean Energy to accelerate the commercialization and scale-up of B.C.-based clean energy technologies

Many of the activities highlighted here and throughout the report support the objectives of the Roadmap to advance market readiness for decarbonization pathways through targeted supports, regulations and other policies.





2. Progress to our Targets

In October 2021, British Columbia released the CleanBC Roadmap to 2030 – setting out a strengthened plan to meeting the Province’s legislated climate action targets. The *Climate Change Accountability Act* sets targets to reduce GHG emissions to 40% below 2007 levels by 2030, 60% by 2040 and 80% by 2050.

We’ve also set an interim target for 2025 (16% below 2007 levels) and 2030 emission reduction targets (below 2007 levels), expressed as ranges, for the following economic sectors:

- Transportation, 27-32%
- Industry, 38-43%
- Oil and gas, 33-38%
- Buildings and communities, 59-64%

Building on the CleanBC plan, which was launched in late 2018, the Roadmap expands and accelerates our actions to meet our climate targets and supports a clean and inclusive economy for people – shifting away from fossil fuels towards clean, renewable energy and promoting energy efficiency and innovative technologies. It includes a faster timeline to reach 100% ZEVs with supports for people and businesses, a stronger carbon tax, more support for renewable fuels, a new zero-carbon standard for buildings, highest efficiency standard for all new space and water heating equipment and measures to support industry and our broader economy.

The Roadmap is designed to strengthen action in areas already showing positive results, as well as supporting those areas at the earlier stages of transition. Each action is based on how affordable and available clean solutions are in each sector – known as ‘market readiness’.

The Roadmap is meant to be updated as we move forward to ensure we stay on track to meet our targets and reflect emerging markets and technologies. The policies outlined in the Roadmap were developed in 2021 with the most recent emissions projections and knowledge of technologies and measures that we can take to reduce emissions. This annual accountability report brings transparency to this approach – so that we can see what is working, where we need to recalibrate, where we need to put extra effort, and how we need to correct our course.

As we move forward and adjust our plans to meet our targets, we know how important it is to work together. We will continue working closely with local governments, the federal government, industry, civil society partners and the independent Climate Solutions Council. And we will collaboratively implement CleanBC and the Climate Preparedness and Adaptation Strategy with Indigenous peoples to support resilient communities and clean economic opportunities, in accordance with our commitments in the *Declaration on the Rights of Indigenous Peoples Act* Action Plan.

The following section provides updates on our progress including:

- B.C.'s 2020 emissions (the latest data available)
- B.C.'s emission estimates for 2021-2024, 2025 and 2030
- Climate-related revenues and spending

B.C.'S 2020 EMISSIONS

B.C.'s GHG emissions reporting is largely based on the National Inventory Report produced by the federal government. The [latest GHG data for British Columbia](#) is for 2020, due to the 16-24 months required to collect, verify and review figures from the federal government. B.C. reports both gross (total) emissions and net emissions, which include sequestration from B.C.-based forest management carbon offsets.

B.C.'s gross emissions for 2020 were 64.6 million tonnes of carbon dioxide equivalent (MtCO₂e). That's down 5% (-3.3 MtCO₂e) from 2019 and down 1% (-0.9 MtCO₂e) from 2007, the baseline year for B.C.'s legislated targets.

Our net GHG emissions were 63.5 MtCO₂e. That's down 4% (-2.7 MtCO₂e) from 2019 and down 3% (-2.0 MtCO₂e) from 2007.¹ The decline in emissions from 2019 was expected as the COVID-19 pandemic kept people home and upended much of daily life as we knew it.

An important consideration when viewing these results is that this reporting period (to December 2020) only partially covers the start-up phase of CleanBC – launched in December 2018 – with many policies and programs expected to reduce emissions still to be implemented in the coming years.

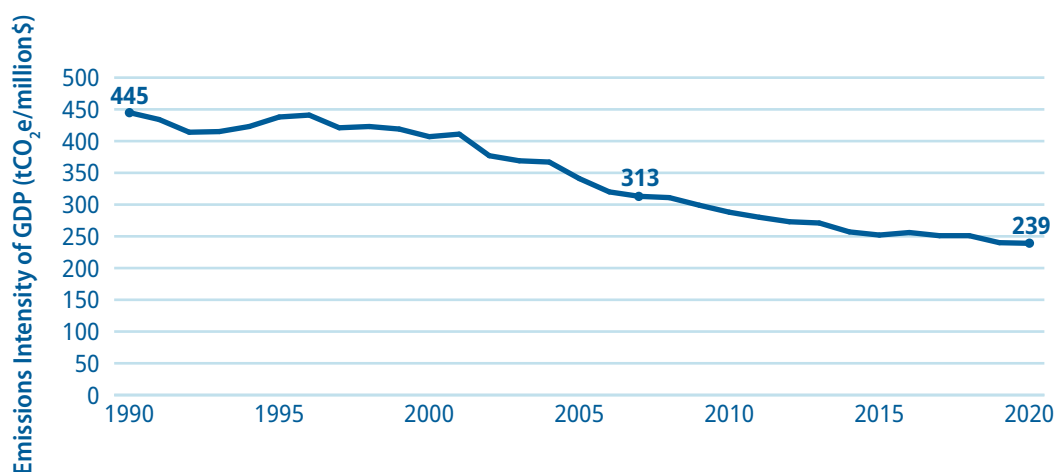
¹ Net emissions are gross GHG emissions (as reported in the B.C. Provincial Inventory) less the carbon offsets from B.C. forest management projects that have been verified under B.C. government regulated offset standards. These offsets totaled 1.1 MtCO₂e in 2020.

Economic Transition

B.C.'s approach to reducing GHG emissions focuses on building a cleaner economy that generates new jobs, and new economic opportunities, so it is helpful to examine our GHG emissions in the context of our growing population and economy.

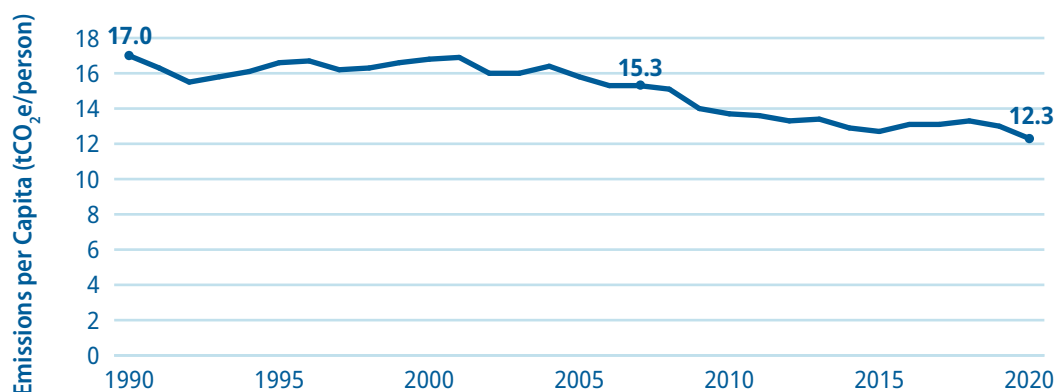
Between 2007 and 2020, our net GHG emissions declined by 3% while GDP grew by 27%. That means the net GHG intensity of our economy – a measure of net emissions per dollar of economic output – has fallen by 24%.

Net GHG Intensity of B.C.'s Economy



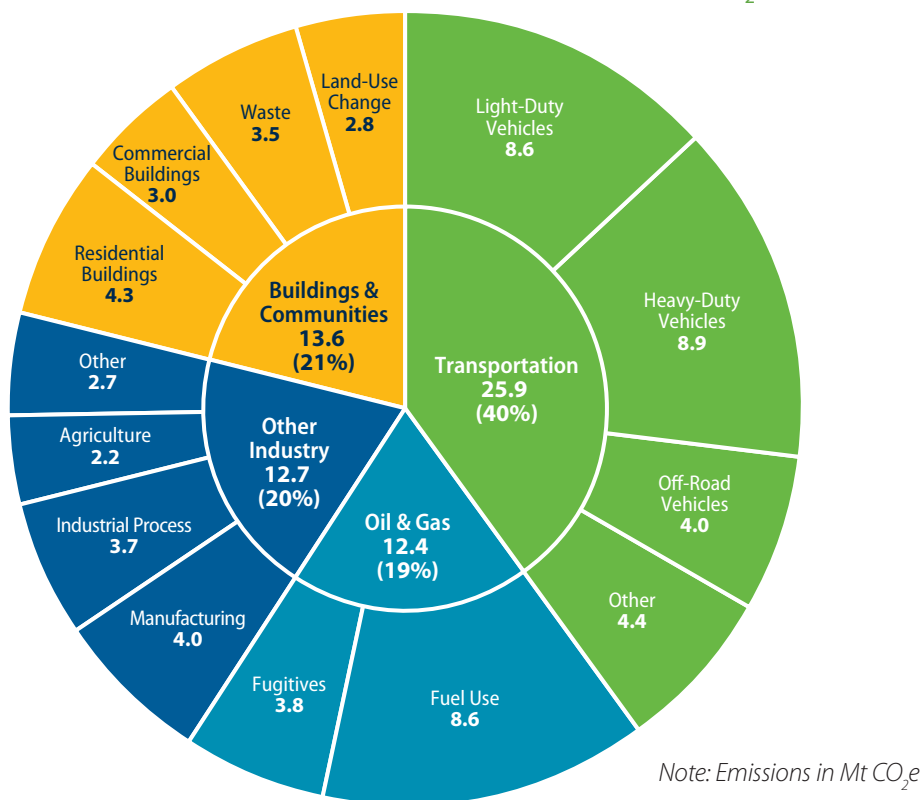
Net GHG emissions per person have also declined by roughly 19% between 2007 and 2020 – from 15.3 tonnes to 12.3 tonnes of CO₂e – and are down 5% compared to 2019.

Net GHG Emissions Per Capita



Sector-specific Emissions

B.C.'s 2020 Gross Emissions by Sector – 64.6 Mt CO₂e



Transportation continued to account for the largest share of B.C.'s emissions in 2020 and while we saw a reduction from 2019 (-8%), much of this was likely due to the impacts of COVID-19. Compared to 2007, transportation emissions are still 12% higher, driven by heavy-duty vehicles (+24%) and light-duty vehicles (+2%).

Emissions in the industrial sector, excluding oil and gas, were down 9% from the previous year and 8% compared to 2007. One driver of these reductions is lower industrial output that was experienced during the pandemic. Emissions from the oil and gas sector were almost unchanged from 2019, but down 7% from 2007, which can be attributed to declining carbon intensity in natural gas production.

Emissions in the buildings and communities sector^{2,3} were also almost unchanged from 2019, but were down 10% compared to 2007 levels, driven by lower emissions from waste (-27%) and to a lesser degree more stringent building codes and equipment standards.

Additional information and updated CleanBC modelling can be found in the [Provincial Forecast](#). Additional information on past emissions trends and methodology can be found in the [Provincial Inventory](#) section of our website.

² Land-use change emissions are included in the buildings and communities sector because 85% of their total is from forest land converted to 'settlement' (infrastructure, municipal development, resource extraction activities, or recreation), from the decay of wood from converted forest land, or from burning firewood. Only 15% is from conversion to cropland.

³ This sector includes waste, deforestation, and residential, commercial, and institutional buildings.

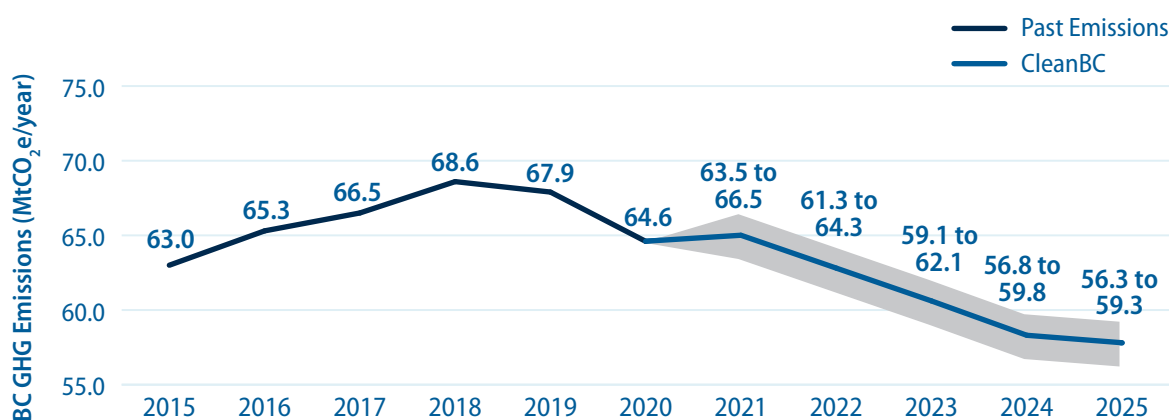
B.C.'S EMISSIONS ESTIMATES

Consistent with our commitments under the *Climate Change Accountability Act*, B.C. estimates GHG emissions for the years ahead, based on the best available data and real-world trends in areas such as fuel prices, economic growth and technological costs.

Near-term Outlook to 2025

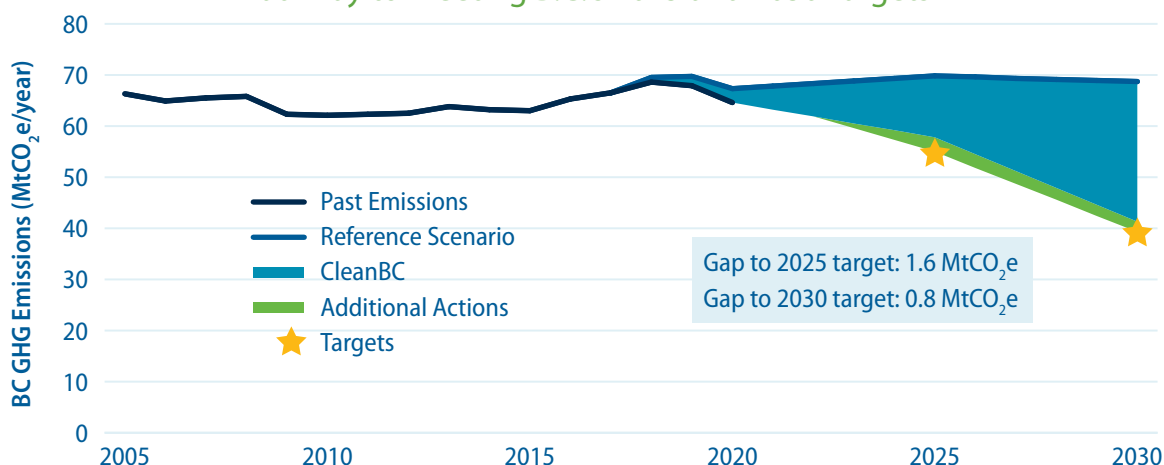
B.C.'s near-term outlook estimates emissions for the four years after the most recently available GHG data (2020), and for 2025. The outlook suggests that emissions are likely to rebound to a degree in 2021 as economic activity (including air travel and road transportation) returns closer to pre-COVID-19 levels. Emissions then continue following a downward trajectory, as CleanBC policies strengthen their impact.

GHG Emissions Forecast from 2021 to 2025



CleanBC Projections to 2025 and 2030

Pathway to Meeting B.C.'s 2025 and 2030 Targets



Each year, we update our forecasting model with the most recent data and revise our estimates. Appendix 1 includes modelled emissions reductions forecasted for 2030 by Pathway. Based on current commitments, we expect to see a gap of approximately 0.8 MtCO₂e towards our 2030 target of 39.3 MtCO₂e. This would

bring B.C. 97%, of the way to our 2030 emissions target. The 2030 gap is due to regular annual changes in the National Inventory Report and the Provincial Inventory, and improvements to forecasting that are reflected in the modelling. The commitments in the Roadmap have not changed.⁴ For the 2025 target, the model estimates that we will achieve 85% of the target (a gap of 1.6 MtCO₂e).

The forecasts include reductions from B.C. utilities purchasing renewable natural gas (RNG) produced and used outside of B.C. This accounts for 1.2 MtCO₂e of emissions reductions for both the 2025 and 2030 targets in the model outputs. The 1.2 MtCO₂e represents 5% of the total reductions needed to achieve the 2030 target and 12% of total reductions needed to achieve the 2025 target. The purchase of out-of-province RNG and how to account for it in B.C.'s annual progress to targets is under consideration.

While the focus of the Roadmap continues to be on the imperative of meeting our 2030 targets, the progress to our 2025 and 2030 targets is also foundational to achieving our 2040 and 2050 targets. Many of the actions in the Roadmap (e.g., the strengthened *Zero-Emission Vehicles Act* and highest efficiency equipment standards) will lead to continued declines in emissions post-2030, and provide the starting point for future plans to meet those longer-term targets. Projections to 2040 and 2050 are inherently more uncertain and will depend on factors such as post-2030 government policy and technology development. Future versions of the annual accountability report will incorporate longer-term forecasts once they can effectively incorporate these types of uncertainty.

The table below provides an update on our forecasted emissions pathway toward our sectoral targets for 2030. The same modelling indicates that full implementation of the Roadmap is sufficient to achieve the transportation, industry, and oil and gas sectoral targets. The modelling for the buildings and communities' target currently achieves between 61-66% of the sectoral target. The reason for the gap is that emissions from buildings are forecast to provide a modest contribution to reductions in 2030 with significant reductions projected post-2030, while deforestation emissions, which are included in this sector, are not expected to decline significantly under the Roadmap. While the other sectors are projected to meet their targets, further work is needed to implement B.C.'s Roadmap commitments.

Progress to Sectoral Targets⁵

Sector	2030 target change from 2007	2030 projection (MtCO ₂ e)	2020 emissions change from 2007
Transportation	-27-32%	-30%	+11.7%
Buildings and Communities	-59-64%	-38%	-9.9%
Oil and Gas	-33-38%	-32%	-7.2%
Other Industry	-38-43%	-39%	-8.4%

These forecasts assume the full implementation of announced emissions reduction measures (Appendix 1). It is possible that internal and external factors will lead us to reduce emissions by more than our target but it is important to highlight the factors that could revise these projections downwards, including:

- Policy stringency and/or timing lagging what was committed to in the Roadmap
- New large industrial projects with significant emissions not accounted for in Roadmap emissions forecasts and without planned measures to mitigate emissions

⁴ Model forecasts in the CleanBC Roadmap to 2030, released in Oct. 2021, estimated our commitments achieving 100% of the 2030 target.

⁵ 2030 projections for the sectoral targets do not include post-modelling adjustments because of uncertainty of how they're attributed to Oil and Gas and Other Industry. Reductions from out-of-province RNG have been split between Buildings and Communities, and Other Industry.

2. Progress to our Targets

- External factors being less conducive to the shift away from fossil fuels than anticipated in Roadmap modelling (e.g., lower prices for gasoline or higher prices for electric vehicles). There have been and likely will be events outside of our control that will impact the implementation of the Roadmap, reinforcing the importance of having a flexible design and legislative accountability mechanism to track and report progress

If several of these risks materialized together, B.C.'s projected progress to the 2030 target could be significantly impacted.

Our best bet to minimize these risks and meet our targets, even for those risks that are not in our control, is to stick to the plan in the CleanBC Roadmap. Appendix 2 includes the Roadmap implementation plan with the estimated timing of key decisions, which are subject to government approval. To achieve our legislated targets and avoid a larger gap emerging, government will continue to work towards meeting this timing and policy stringency.

Given that we are currently projecting small gaps to our targets, Government will be exploring the following options to address them:

- Increasing the stringency of existing Roadmap commitments
- Pursuing emission reduction opportunities in sectors for which there are fewer targeted measures in the CleanBC Roadmap (e.g., agriculture and forest management)

Each of these options are expected to come with challenges relating to their affordability, acceptability, and/or achievability, which is why it is important to follow through on existing commitments.

CLIMATE-RELATED SPENDING

A price on carbon pollution is one of the most effective and economically efficient ways to reduce GHG emissions. The table below outlines the Province's total carbon tax revenues and the incremental carbon tax revenues resulting from rate increases above \$30 per tonne for 2020/21 through 2022/23. The carbon tax revenue forecast in the last two years of the fiscal plan doesn't yet reflect the commitment to meet or exceed the federal carbon price benchmark, and it will be updated once decisions on the Province's commitment to meet or exceed growth in the federal benchmark have been made.⁶

Carbon Tax Revenues, Illustrating Tax Increase Impacts, by Fiscal Year

\$ millions	Actual 2020/21	Actual 2021/22	Forecast 2022/23
Carbon tax rate, \$ per tonne	\$40	\$45	\$50
Total carbon tax revenue	1,683	2,011	2,261
Annual revenue growth	1	328	250
Revenue growth due to base (i.e., changes to consumption)	1	92	28
Revenue growth due to rate increases	–	236	222
Revenue growth due to rate increases – Cumulative Totals*	414	650	872

* Cumulative total of incremental carbon tax above \$30/tonne since increases started in 2018

Note: The carbon tax did not increase in 2020/21, therefore revenues associated with a cumulative rate increase are nil between 2019/20 to 2020/21.

⁶ In 2020, the federal government announced it was increasing the federal carbon price by \$15/tonne annually from \$50/tonne in 2022 to \$170/tonne in 2030.

The table below outlines expenditures for carbon tax rebates and measures to reduce GHG emissions and climate change risks for each fiscal year. The single largest component of carbon tax spending is the Climate Action Tax Credit for low and moderate income families. Climate-related spending includes CleanBC operating and capital spending by sector (e.g., transportation, buildings, industry), Climate Preparedness and Adaptation Strategy spending, and government programs. Other operating spending includes the First Nations Clean Energy Business Fund, Beneficial Management Practices program for climate-related on-farm upgrades, and Forest Enhancement Society of B.C.

Government spent a total of \$1.4 billion on climate-related initiatives in 2021/22. Based on investments announced in Budget 2022 and previous budgets, government spending on climate-related initiatives is expected to total approximately \$1.9 billion in 2022/23.

Climate Investments

Climate Action Initiatives	Sum of Actuals 2021/22	Forecast 2022/23
OPERATING INVESTMENTS (\$ MILLIONS)		
Cleaner Buildings and Communities	87.53	93.79
Cleaner Government and Public Sector	13.69	19.59
Cleaner Industry	119.87	176.02
Cleaner Transportation	81.21	51.32
Climate Preparedness and Adaptation	245.42	113.62
Climate Action Tax Credit	325.00	363.00
Other Tax Measures*	7.00	53.00
Other Climate Spending	112.99	85.04
Transit Projects	130.20	144.85
TOTAL	1,122.91	1,100.22
CAPITAL INVESTMENTS (\$ MILLIONS)		
Cleaner Government and Public Sector	59.53	73.27
Cleaner Transportation	7.00	6.16
Transit Projects	239.63	701.50
TOTAL	306.16	780.93
GRAND TOTAL	1,429.08	1,881.16

Note: Amounts in each year are not cumulative and totals may not add due to rounding. Amounts are not audited. The list may not capture all climate-related spending by government and this presentation may expand in subsequent reports.

The Greenhouse Carbon Tax Relief Grant program was previously included in our reporting but has been removed from our calculation of climate investments because it provides carbon tax relief without encouraging emissions reductions.

** Includes PST Exemption on used ZEVs, e-bikes and heat pumps, among others. Some exemptions (e.g., PST) are largely point-of-sale exemptions – they can only be estimated unlike expenditures provided through other taxes.*



3. Getting Results

This chapter offers an overview of B.C.'s climate action in 2021/22, and actions being planned for 2022/23 – including our progress in preparing for, and adapting to, the impacts of a changing climate.

For more information on CleanBC programs, see the [Mitigation and Climate Preparedness and Adaptation tables](#), which outline the actions we've taken as part of CleanBC commitments in the previous fiscal year (April 1, 2021 – March 31, 2022), as well as our proposed actions in 2022/23. Appendix 3 includes a list of indicators with the most current data that we are using to monitor progress.

CLIMATE PREPAREDNESS AND ADAPTATION

In June 2022, B.C. released its Climate Preparedness and Adaptation Strategy, outlining actions to help people and communities prepare for a changing climate. The strategy strengthens our capacity to anticipate and respond to sudden events like wildfires, floods and heatwaves, while also helping us prepare and respond to changes that happen more slowly, like rising sea levels, receding glaciers and shifting ecosystems.

The strategy responds to feedback from First Nations, Indigenous organizations, and public engagement; the [Preliminary Strategic Climate Risk Assessment](#) for B.C.; and the extreme weather events of 2021. It is supported by more than \$500 million in provincial funding – part of a broader B.C. investment of more than \$2.1 billion to help people and communities recover from recent disasters and prepare for climate impacts in the future.

Investing in climate resilience now will help to limit the human and economic costs of climate change down the road. For more information, see the [Climate Preparedness and Adaptation table](#).



Highlights from 2021/22 include:

Foundations for success: Partnerships, knowledge and decision-making

- Working closely with First Nations and Indigenous organizations to integrate Indigenous knowledge and perspectives on climate change, risks and adaptive measures into stewardship forums, land use planning and other shared initiatives
- Laying the groundwork for expanded climate monitoring, including agricultural weather monitoring
- Building adaptation skills for professionals, such as engineers, planners and resource managers, with 11 courses delivered by six B.C. universities and a new micro-credential for climate adaptation learning

Climate Preparedness and Adaptation Strategy



Safe and healthy communities

- Developing flood hazard mapping guidelines for B.C., supporting community-led floodplain mapping, and laying a foundation for future provincially coordinated mapping activities
- Increasing capacity for river forecasting, flood safety and storm surge modelling; improving hazard information and response coordination
- Developing a framework for a provincial flood risk assessment
- Conducting a comprehensive review of climate actions across the health system to identify progress, gaps and opportunities to prevent, prepare for and manage climate-related health risks
- Developing and piloting the BC Extreme Heat Alert Response System and releasing preparedness guides for the public and the provincial public service
- Implementing a comprehensive wildfire communications strategy including education, awareness and a Wildfire App
- Expanding the use of cultural and prescribed fire in partnership with First Nations, the forest industry and others, as part of a renewed focus on year-round risk reduction. The program was initiated in 2021/22 with 47 projects coordinated throughout the province

Resilient species and ecosystems

- Developing a draft Ocean Acidification and Hypoxia Plan to support the health and resilience of marine ecosystems and the communities and industries that depend on them
- Engaging with partners on the Watershed Security Strategy and Fund; this included releasing a discussion paper in early 2022 and establishing a B.C. – First Nations Water Table to discuss and identify shared strategic priorities

3. Getting Results

- Identified potential actions to incorporate climate adaptation and sustainability in B.C.'s contaminated sites framework. A discussion paper was developed to seek input in fall 2022 from Indigenous communities and partners
- Continuing to implement the Wild Salmon Strategy; in 2021/22, the BC Salmon Restoration and Innovation Fund supported 47 new multi-year projects in partnership with the federal government

Climate-ready economy and infrastructure

- Developing new tools and measures to keep our highways safe and resilient to extreme weather and other future climate change impacts through the Highway Infrastructure Climate Adaptation Program
- Supporting farmers to adapt to climate change through research, extension and adoption of Beneficial Management Practices that contribute to a cleaner, healthier environment. Thirty-four new climate adaptation-related Beneficial Management Practices projects were approved in 2021/22
- Completing a climate change risk assessment for BC Parks' infrastructure and cultural sites, including development of climate projections, decision-making tools and next steps to guide climate resilient decision making in BC Parks

Measuring progress

Climate change has wide-ranging impacts on our communities, economy, infrastructure, ecosystems, and health and wellness that are often complex and interconnected. How we track progress towards managing climate risks is equally complex and will require new approaches to assess progress and measure the effectiveness of our actions. Government is developing a comprehensive monitoring and evaluation framework for the Climate Preparedness and Adaptation Strategy. The framework is being developed in collaboration with program areas and our partners and will include metrics to track actions within the four pathways.



LOW CARBON ENERGY

CleanBC Roadmap Goals: Replace fossil fuels with clean energy, including more clean electricity, renewable natural gas, low-carbon (with a preference for zero or near zero carbon) hydrogen, and liquid biofuels.

Estimated Results: Current actions are estimated to reduce emissions by 14.1 Mt CO₂e by 2030.

Highlights on Cleaner Fuels

To decarbonize our economy and accelerate the shift in clean technologies in the buildings, transportation and industry sectors, we need to use energy more efficiently and replace fossil fuels with clean energy, including more clean electricity, renewable natural gas, low carbon hydrogen and liquid biofuels. In fall 2021, the Roadmap to 2030 included key commitments to increased clean fuel requirements; doubling the target for renewable fuels produced in B.C. to 1.3 billion litres by 2030; a cap on emissions for natural gas utilities with a variety of pathways to achieve it; and implementing a 100% Clean Electricity Delivery Standard for the BC Hydro grid.

In spring 2022, the new *Low Carbon Fuels Act* was passed. Regulations to increase the stringency of the Low Carbon Fuel Standard – one of the most effective measures to date for reducing GHG emissions – are under development. We're also working to develop legislation to require natural gas utilities to make investments or take action to cap the emissions of their buildings and industry customers by 2030, consistent with commitments in the CleanBC Roadmap. And BC Hydro continues its efforts to help more industries and buildings switch from fossil fuels to clean electricity. In 2021, the Crown corporation released its five-year electrification plan, with the goal of reducing GHG emissions by 900,000 tonnes per year by 2026.

In July 2021, the Province began implementing the B.C. Hydrogen Strategy with 63 policy actions to kickstart hydrogen deployment in B.C. This included opening a new BC Hydrogen Office in March 2022 to expand hydrogen development and streamline projects from proposal to construction. The office is working with federal and local governments to attract investments and simplify review and permitting processes, and to achieve key actions from the Province's Hydrogen Strategy.

In October 2021, the Centre for Innovation and Clean Energy was launched to accelerate the commercialization and scale-up of B.C.-based clean energy technologies. The centre's initial focus includes carbon capture, utilization and storage; low carbon hydrogen; and biofuels. B.C.'s \$35 million commitment to support the establishment of the centre was matched by the Federal government and Shell Canada.

The Innovative Clean Energy Fund is a key supporter of B.C.'s clean energy sector. During 2021/22, it supported an ongoing joint-call partnership with Sustainable Development Technology Canada. Since 2017, the partnership has provided approximately \$103 million to 16 projects focused on building our clean energy capacity in areas such as solar, ocean-tidal, geo-exchange and bioenergy solutions.

TRANSPORTATION

CleanBC Roadmap Goals: Making electric vehicles more affordable; shifting to renewable fuels; progressively more stringent vehicle and fuel standards; investing in charging and hydrogen refuelling stations; and taking an efficiency-first approach prioritizing lowest-cost modes through compact communities, active transportation and transit.

Estimated Results: Current actions are estimated to reduce emissions by 9.5 Mt CO₂e by 2030.

Highlights on Clean Vehicles

The Roadmap to 2030 brought in key commitments to accelerate requirements for ZEVs and set new standards for medium- and heavy-duty vehicles aligned with leading jurisdictions. To support the switch to ZEVs, the Province will complete B.C.'s Electric Highway by 2024 and set a target of 10,000 public electric vehicle charging stations by 2030. A comprehensive Clean Transportation Action Plan, which is targeted to be released in 2023 will support emission reductions by focusing on efficiency-first transportation options. Budget 2022 expanded the exemption of hydrogen fuel from motor fuel tax.

Accelerating the switch to ZEVs

B.C. is well on its way to achieving our 2026 light-duty ZEV targets. In 2021, there were 24,263 new ZEVs registered, representing 13% of all new light-duty vehicle sales in the province. We've completed engagement and are working towards updating the *Zero-Emission Vehicles Act* in 2023 to increase targets to 26% by 2026, 90% by 2030 and 100% by 2035. To help make electric vehicles more affordable and accessible, in February 2022 the Province introduced a five-year Provincial Sales Tax (PST) exemption for the purchase of used light-duty electric vehicles and increased the passenger vehicle surtax threshold for ZEVs.

We're also working to set new standards for medium- and heavy-duty vehicles, and continuing to offer rebates and incentives through the CleanBC Go Electric Commercial Vehicle Pilots and Specialty-Use Vehicle Incentive programs, which encourage businesses, non-profits, local governments, school districts and other public entities to replace their gas or diesel vehicles with electric or hydrogen fuel-cell options.

To support the growth of the broader ZEV sector, the Province continues to invest in education, training more electricians, expanding the ZEV automotive technician program, and implementing the Electric Vehicle Friendly certification, which lets people know which businesses are trained and qualified to work on electric vehicles. We also continue to support the broader sector through the CleanBC Go Electric Advanced Research and Commercialization program, which provided more than \$8 million to 17 B.C.-based projects in 2021. These included Harbour Air's world-leading work to turn its seaplanes into e-planes.



In 2021, B.C. had the highest rate of ZEV uptake in North America, with ZEV sales representing 13% of all new light-duty vehicle sales in the province. At the end of 2021, B.C. had more than 3,000 public charging stations – an increase of 50% from 2020.

Expanding B.C.'s public charging and fuelling network

At the end of 2021, B.C. continues to work towards the goal of 10,000 stations by 2030 with more than 3,000 public charging stations – an increase of 50% from 2020. Approximately 60% of the core network for the Electric Highway by 2024 of fast-charging sites is now in place. We also have four public hydrogen-fuelling stations, with three more under construction and 10 more in the development stage.

Hydra Energy is the first company deploying a hydrogen-as-a-service model to support the decarbonization of heavy-duty trucking. They are building a hydrogen refuelling station in Prince George, B.C. to supply 24 semi-trucks, which have been converted to co-combust hydrogen with conventional diesel.

CleanBC Go Electric Home and Workplace Charger Rebates have helped fund more than 3,100 home and workplace charging stations in 2021/22. And we're exploring policy options to better enable electric vehicle charging in strata buildings across B.C.

Making commercial transportation more energy efficient

The CleanBC Heavy-duty Vehicle Efficiency (HDVE) Program, a partnership with the BC Trucking Association, continues to support B.C.-based carriers to lower their GHG emissions. The program cost-shares fuel-saving equipment and trains drivers to adopt practices that lower their fuel consumption.

During 2021/22, the driver-training portion of the HDVE program helped reduce diesel consumption by 23.8 million litres, equivalent to 64.9 ktCO₂e emissions provincially or removing 13,766 passenger vehicles from North American roads. Heavy-duty commercial vehicles account for about 14% of B.C.'s total GHG emissions.



The electric vehicle maintenance training pilot program at Camosun College helps automotive technicians align their skills with the low-carbon economy.

Highlights on transit and active transportation

In September 2021, the Province made transit free for all children 12 and under, making life a little more affordable for families and helping a new generation of riders connect with public transit.

The Province and BC Transit are implementing a Low Carbon Fleet Program, which is a 10-year strategy to transition BC Transit's current diesel-based fleet to low-emission battery electric and compressed natural gas buses. In 2021/22, BC Transit added 54 compressed natural gas-powered buses to its fleet, with each bus reducing emissions by 8-15% compared to a diesel bus. BC Transit's first 10 heavy-duty battery electric buses, supplied by Proterra, will go into service in Victoria in 2023. Proterra will provide a loaner bus for BC Transit testing, operations and training purposes in late 2022.

In Metro Vancouver, TransLink released its first climate action strategy in January 2022, outlining its actions and commitments to achieve a climate-resilient and net-zero public transportation system. The initial strategies for aggressive decarbonization of the TransLink fleet have been integrated into their 2022 Investment Plan. The Province is contributing more than \$2.4 billion to the 2022 Investment Plan to advance key transit and infrastructure priorities, including the Surrey Langley SkyTrain and electrification of the bus fleet. Between 2022 and 2030, the agency plans to replace a third of the current diesel bus fleet with battery-electric buses, with more than 400 battery-electric buses in service by 2030.

Across B.C., work continued to implement Move. Commute. Connect., the Province's first active transportation strategy, supporting the Roadmap commitment to encourage more people to walk, cycle and take transit instead of driving. In 2021/22, 63 projects in Indigenous and local communities received more than \$14 million in grants for active transportation infrastructure. Investments in active transportation are increasing as part of the design of major projects such as the Surrey Langley SkyTrain, Pattullo Bridge Replacement and the Fraser River Tunnel projects.

The Province is also developing a Clean Transportation Action Plan and working to implement the following improvements, compared to 2020:

- Reduce the number of kilometres travelled in light-duty vehicles by 25% by 2030
- Increase the share of trips by walking, cycling and transit to 30% by 2030, 40% by 2040 and 50% by 2050
- Reduce the energy intensity of goods movement (tonne-kilometres) by at least 10% by 2030, 30% by 2040, and 50% by 2050



BUILDINGS

CleanBC Roadmap Goals: New and existing buildings are super-efficient, resilient and supplied with clean electricity or renewable fuels. The transition to low-carbon buildings is supported through enhanced energy efficiency and fuel-switching programs, energy information tools and new building codes and standards.

Estimated Results: Current actions are estimated to reduce emissions by 0.3 Mt CO₂e by 2030.

As fuel switching from natural gas furnaces to heat pump technologies is the most cost-effective option to reduce GHG emissions in buildings, heat pump market share is a primary indicator of market readiness for full scale decarbonization and progressively more stringent building regulations. The most recent data (2020) shows that the percent of households using heat pumps for primary and secondary heating has increased 180% since 2007. In 2021, BC maintained its rapid pace of heat pump installations of about 20,000, nearly double what it was a decade ago.

Highlights on Cleaner Buildings

In 2021, the CleanBC Better Homes and Better Buildings programs expanded incentives making heat pumps more affordable and homes and buildings more comfortable. More than 15,000 Better Homes rebates were disbursed to help save energy and lower GHG emissions. That's up 36% from the previous year.

The program expanded further in February 2022 with the CleanBC Better Homes Income-Qualified Program, which provides higher rebates – up to 95% – for energy saving upgrades for lower income households. And Budget 2022 introduced a range of measures to advance energy efficiency: a Clean Buildings Tax Credit to encourage retrofits for multi-unit residential and commercial buildings; a PST exemption for heat pumps; a higher PST for fossil fuel heating equipment; and new incentives to make heat pumps more affordable for northern and rural homeowners.

The Province consulted with gas utilities on phasing out incentives for conventional gas heating equipment and enhancing incentives for building-envelope improvements in 2022 and we are targeting regulations to be implemented in 2023.

B.C. continues to lay the foundations for home energy labelling, which will let buyers know how much energy a home uses. Work in 2021/22 focused on developing a virtual home energy rating and retrofit decision assistance tool.

The CleanBC Building Innovation Fund invested \$5 million in seven projects across the province to advance new energy-efficient and low-carbon technologies for B.C. homes and buildings. Funding was distributed to projects across several market sectors and included a variety of technologies and building solutions, such as high efficiency heating, ventilation and air conditioning systems, low carbon building materials, and innovative digital technology solutions.

3. Getting Results

The Province continues to engage with partners on revisions to the BC Building Code to make new buildings 20% more energy efficient as the next step towards net-zero energy ready by 2032 and help new buildings produce less operational GHG emissions as the first step towards zero-carbon buildings by 2030. These updates to the BC Building Code to require 20% improvements in energy efficiency for most building types and opt-in carbon pollution standards are anticipated by the end of 2022. The Province is also working on requirements to increase energy efficiency in existing buildings and to implement highest efficiency standards for new space and water heating equipment.

Mass timber construction – which avoids GHG emissions and stores embodied carbon – is also gaining ground in B.C. communities, with over 300 mass timber buildings completed or underway as of fall 2022.⁷ In 2021, the Province funded 12 additional mass timber research and demonstration projects and established an advisory council to help accelerate the adoption of mass timber building systems. The Mass Timber Action Plan, released in April 2022, shows that B.C. could have as many as 10 new mass timber manufacturers by 2035 as part of a vibrant low-carbon economy. This work helps to build the market for cleaner materials and supports the Roadmap commitment to develop a Low Carbon Building Materials Strategy by 2023.



Designed and built to Step 3 of the BC Energy Step Code, the Knox Centre in Sooke provides affordable housing to more than 40 families and seniors and supports the Province's goal of a net-zero, energy-ready Building Code by 2032.

⁷ [The State of Mass Timber in Canada \(arcgis.com\)](https://arcgis.com)

COMMUNITIES

CleanBC Roadmap Goals: Supporting local climate action to reduce emissions; create new opportunities in the clean economy; and prepare communities for future climate impacts.

Estimated Results: Current actions are estimated to reduce emissions by 0.6 Mt CO₂e by 2030.

Since 2008, virtually all of B.C.'s local governments have signed the BC Climate Action Charter, a voluntary agreement to work towards corporate carbon neutrality, measure community-wide emissions, and create complete, compact, and more energy-efficient communities. To address the challenges communities face in reaching their ambitious targets in taking climate action, the CleanBC Roadmap to 2030 committed to establishing a new local government climate action program, which is now in place.

The Roadmap also commits to developing a circular economy strategy and advancing the Plastics Action Plan to require more manufacturers to take responsibility for their products' eventual recycling, reuse or safe disposal.

Highlights on Cleaner Communities

In May 2022, B.C. launched a new climate action program for local governments and Modern Treaty Nations, providing up to \$25 million a year in keeping with commitments in the 2030 Roadmap. Building on previous programs, the Local Government Climate Action Program gives local governments and Modern Treaty Nations stable, predictable funding to support local climate action, help reduce emissions, create opportunities for people and prepare communities for future climate impacts.

The CleanBC Communities Fund, a partnership with the federal government, funded 14 infrastructure projects in 2022. In January 2022, B.C. and Canada committed up to \$134 million for additional projects as part of the third intake of the program.



The Kamloops Canada Games Aquatic Centre Rehabilitation Project, funded through the CleanBC Community Fund, was completed in winter 2020. Upgrades to the building are estimated to result in lifetime emissions reductions of 6,870 tCO₂e.

Remote Community Energy Strategy

The CleanBC Remote Community Energy Strategy is a multi-stakeholder initiative to reduce the use of diesel for electricity generation and heating in remote communities by 80% by 2030. In 2021, new programs were developed through engagement with Indigenous partners to support the capacity of Indigenous remote communities, and for the planning, development and implementation of diesel-displacing energy efficiency and renewable energy generation projects.

Reducing waste

The [CleanBC Plastics Action Plan](#) got a boost in 2021/22 with just under \$5 million invested to support the first nine projects under the CleanBC Plastics Action Fund, expanding our capacity to replace or recycle everything from automotive to food-grade plastics by more than 20,000 tonnes per year. A second round of investments, totalling nearly \$10 million, was [announced](#) in Budget 2022 with dedicated funding for businesses developing reuse systems, and for Indigenous-led projects.

Since its inception in 2019, the CleanBC Plastics Action Plan has removed more than 1,000 tonnes of marine debris and plastic from our shores through the Clean Coast, Clean Waters Initiative. Four additional Clean Coast projects have been approved for 2022/23.

Twenty-one local governments have now passed bylaws limiting single-use plastics and the Province has enacted a new regulation to make this kind of community action easier. Further, in November 2021, the *Environmental Management Act* was amended so the Province can move more quickly to remove plastic debris through phased-in provincewide product bans. The Province also set out a five-year action plan to expand B.C. recycling operations to include a variety of materials including mattresses and electric vehicle batteries by 2026. Meanwhile, the CleanBC Organics Infrastructure and Collections Program funded 23 new projects in December 2021. Launched in 2020, the program is providing nearly \$26 million over three years to help communities keep organic waste out of landfills.



INDUSTRY, INCLUDING OIL AND GAS

CleanBC Roadmap Goals: Encouraging more industrial facilities to connect to clean electricity; using more low-carbon fuels such as hydrogen; exploring how best to capture and safely store or use carbon; and reducing industrial methane emissions.

Estimated Results: Current actions are estimated to reduce emissions by 10.7 Mt CO₂e by 2030.

The Roadmap to 2030 commits to: a 75% reduction of methane emissions from the oil and gas sector by 2030; implementing programs and policies so that oil and gas emissions are reduced in line with sectoral targets; enhancing the CleanBC Program for Industry; and requiring new large industrial operations to submit plans to achieve net-zero emissions by 2050 and demonstrate how they align with government's 2030 and 2040 targets.

Highlights on Reducing Industrial Emissions

The CleanBC Program for Industry expanded in 2021, building on a three-year record of investing more than \$300 million from the Province, industry and partners to build our clean economy. The program invests a portion of the carbon taxes paid by industry into the CleanBC Industry Fund, to support GHG-reducing projects and increase opportunities for clean technologies, and the CleanBC Industrial Incentive Program, to encourage cleaner industrial operations.

In the oil and gas sector, a royalty review was completed with results announced in May 2022. These included eliminating outdated incentives, and introducing a transitional royalty system commencing in September 2022. The new royalty system will be fully in place by September 2024.



Teck Resources has received CleanBC Industry Fund funding for a pilot plant study to assess the feasibility and determine the appropriate technology and associated cost estimate for a carbon capture, utilization and storage facility at Teck's Trail Operations.



Windset Farms in Delta has received funding from the CleanBC Industry Fund to install a retractable thermal climate screen over one of its greenhouses to trap heat in low-light conditions. Estimated emission reduction is 24,480 tCO₂e through 2030.

As these changes take effect, the Province continues to engage with industry and other key partners to achieve our target of a 33-38% reduction in emissions from the oil and gas sector by 2030. In addition to being subject to the highest carbon price in North America, the sector is also subject to the regulations B.C. implemented in January 2020 to reduce emissions of methane from the oil and gas sector by 45% by 2025. The Province is well on track to meet the 2025 target and reduce or avoid oil and gas methane emissions by up to 10.9 megatonnes CO₂e.

B.C.'s regulations address methane emissions in the upstream oil and gas industry by requiring leak detection and repair, and putting emissions limits on certain equipment including pneumatic devices, compressor seals, glycol dehydrators, storage tanks and surface casing vents.

B.C. is also working with experts, industry, non-profits and environmental groups to make sure we have an accurate picture of methane emissions in the oil and gas sector. In addition to research sponsored under B.C.'s Methane Emissions Reduction Collaborative, the Province is leading work with academia and the United Nations Environmental Programme on a project that will improve quantification of fugitive methane emissions from the oil and gas sector.

By the end of 2022, the BC Oil and Gas Commission (the Commission) expects to complete a midterm review to determine the effectiveness of the methane regulations and to reflect B.C.-led research results. The Commission is proposing administrative and technical amendments to the regulations that will support clear expectations on compliance and industry's ability to achieve emissions reductions.

Advancing a provincial approach to Carbon Capture, Utilization and Storage

To further support carbon capture, utilization and storage (CCUS), in June 2022, the Province announced a study to map the best locations for carbon capture and storage in B.C.'s Northeast. It is a first step in developing a broader carbon management economy, helping to meet the Province's climate and economic development objectives.

The Province continues to explore opportunities to scale carbon management practices. This includes a mapping exercise for best locations for carbon capture and storage; assessing the potential of alternative storage approaches (e.g., to mineralize CO₂ from the atmosphere to store in rock and other materials); and working with interested parties to develop pathways to increase the use of CCUS and Negative Emissions Technologies.

BIOECONOMY – FORESTRY AND AGRICULTURE

CleanBC Roadmap Goals: The Province is supporting producers to increase GHG efficient practices and exploring measures to enhance carbon sequestration. By 2030, the province should be producing bioproducts at scale and providing high-quality jobs in the bioproducts sector.

Estimated Results: Current actions in this pathway, along with other measures, are estimated to reduce emissions by 0.4 Mt CO₂e by 2030.

The Roadmap to 2030 committed to support the forest-based bioeconomy and evaluate additional reforestation and forest management activities that sequester carbon and foster climate resilience. The Roadmap also committed to work with the agriculture sector to determine beneficial management practices to support GHG reduction practices, maximize carbon sequestration, and fill critical knowledge gaps.

Growing and Caring for B.C.'s Carbon Sinks

In Budget 2022, B.C. committed \$22 million over three years to store more carbon in our forests and develop innovative, forest-based products as part of a cleaner economy. The largest share of funding – \$15 million – is earmarked for enhanced forest management, recognizing that healthier trees live longer and store more carbon.

The balance of the funding is directed to expanding the Indigenous Forest Bioeconomy Program, which supports the development of everything from bioenergy to forest-based foods and beverages. Since 2019, the program has delivered 41 projects with 24 Indigenous communities and organizations throughout B.C., including 15 projects in 2021/22. A new Accelerator stream being added to the program in 2022/23 will help Indigenous partners commercialize and scale-up their products more quickly.



Meanwhile, ongoing reforestation, fertilization, tree improvement, road rehabilitation, and fibre utilization investments continued in 2021/22 through the Forest Carbon Initiative, which is expected to produce a carbon benefit of approximately 9 Mt CO₂e over seven years. Work continued to develop a Forest Carbon Offset Protocol, with clear pathways and policies for generating high quality carbon credits on Indigenous managed lands as well as Crown lands.

The Province completed a study on carbon reduction and sequestration in the agriculture sector, funding 75 projects to advance sustainable and climate-resilient farming practices. Another 51 projects are approved for 2022/23.

The Province is also developing a Regenerative Agriculture and Agritech strategy that will guide the transition to more climate resilient and low-carbon agriculture, among other benefits. This work is being guided by the Ministry of Agriculture and Food and the Food Advisory Group on Regenerative Agriculture and Agritech. In addition, this Advisory Group is working to establish the Regenerative Agriculture and Agritech Network to support the strategy's goals.

PUBLIC SECTOR LEADERSHIP

B.C.'s public sector, including ministries, health authorities, schools, post-secondary institutions and Crown corporations, plays an important role in meeting climate targets and building markets for innovative ideas and solutions. The Province has achieved net-zero (carbon neutral) operations across the public sector every year since 2010 and we continue to accelerate emissions reductions.

The Roadmap committed to factoring climate considerations into government decision-making, making zero-emission vehicles the default option for B.C. public sector fleets with ZEVs accounting for 100% of light-duty vehicles acquisitions by 2027, developing a comprehensive strategy to transform our existing buildings portfolio to a low-carbon and resiliency standard, and requiring all new public sector buildings to be zero-carbon by 2027.

Highlights from the Public Sector:

- Development of a new Environmental, Social and Governance Framework for capital investments. The framework will ensure climate considerations are factored into major public sector capital projects. This builds on the climate lens we have been applying to capital projects for public sector buildings since 2019
- \$6 million in additional funding to the Carbon Neutral Capital Program, bringing the annual total to \$56 million. The program supports projects that save energy and reduce emissions in health care facilities, post-secondary institutions and K-12 schools
- The public sector continues to find opportunities to transition its fleet to ZEVs, including:
 - More clean school buses. In fiscal year 2021/22, 18 school districts ordered an additional 34 electric buses, bringing the total across the province to 51. Each bus avoids about 17 tonnes of CO₂ emissions per year compared to a diesel bus
 - More EV charging stations. By the end of 2021/22, there were 152 electric vehicle charging stations at government buildings across B.C., and a new program was launched to expedite the transformation of the government's fleet to ZEVs, aiming for a 40% reduction in fleet vehicle greenhouse gas emissions by 2030 over 2010 levels
- Public sector organizations invested approximately \$15.5 million in carbon offsets, after reducing their emissions as much as possible. These investments support innovative emission reduction projects across the province in sectors such as forestry, agriculture, transportation, clean technology and others
- The Province built the first net-zero energy building in the government portfolio – an office space for the Ministry of Children and Family Development in Williams Lake, and opened the new Westhills ShareSpace in Langford – the Province's first fully mobile workspace for government employees



The Ministry of Citizens' Services completed a building retrofit to net-zero standards to support the Ministry of Children and Family Development's frontline service delivery in Williams Lake.



4. Working Together

CleanBC and the Roadmap to 2030 lay out a path to transform our society, moving from fossil fuels to clean energy and focusing our efforts on finding clean solutions that grow our economy while reducing our GHG emissions. Together with the StrongerBC Economic Plan, they create a vision for tomorrow. B.C.'s Economic Plan features two goals, clean growth and inclusive growth, that will shape our economy to work for everyone. This is complex work that relies on partnerships with other levels of government, Indigenous leaders and communities, business and industry, and others. The following section highlights our work with partners during 2021/22.

Shared Path with Indigenous Peoples

Throughout 2021 and early 2022, CleanBC programs and policies were developed through engagement with Indigenous peoples, advancing the Province's commitment to reconciliation.

Province-wide Indigenous engagement was conducted through multiple virtual sessions, including the Indigenous Climate Resilience Forum, an online multi-day event featuring community stories, breakout sessions and skills-building workshops. Virtual engagements sessions were also held with Indigenous communities in June-July 2021 and Feb-March 2022 on CleanBC Roadmap to 2030 development and implementation.

The Province also continued its ongoing discussions with the First Nations Leadership Council Technical Working Group on Climate Change, the Indigenous Climate Adaptation Working Group and the Climate Solutions Council, which includes representation from Indigenous communities. In 2022, the First Nations Leadership Council also released the "BC First Nations Climate Strategy and Action Plan." The Province, through the First Nations Leadership Council Technical Working Group on Climate Change, is working to identify areas of alignment and potential cooperation between this strategy and CleanBC.

The primary expectation voiced by Indigenous participants was that the Roadmap and the Climate Preparedness and Adaptation Strategy be grounded in the implementation of the *Declaration of the Rights of Indigenous Peoples Act*. Other comments included:

- Indigenous authority needs to go hand in hand with guardianship
- Funding should move from patchwork to strategic and multi-year to guarantee long-term job security
- Collaboration and learning from other communities and jurisdictions should be encouraged to help communities determine what might work best for them
- Climate education is crucial as are youth and stewardship programs

Engaging with Interested Parties

Throughout 2021/22, the Province engaged with interested parties on a variety of CleanBC initiatives, including:

- Five working sessions and two feedback sessions with business and industry to discuss Roadmap implementation, with a focus on clean energy and carbon pricing (May 2021 to March 2022)
- Nearly 200 public submissions through EngageBC on the draft Climate Preparedness and Adaptation Strategy. Feedback from public and partner engagement helped to prioritize actions in the strategy and to develop guiding principles for adaptation (June to August 2021)
- Public engagement and a public information webinar on B.C.'s draft Methane from Organic Waste Offset Protocol (June to August 2021)
- CleanBC Roadmap to 2030 engagement focused on policy options within each pathway through meetings, webinars, calls and online surveys with existing working groups and interested parties (June to August 2021)
- Engagement with B.C.'s coal mining operators on new ways of quantifying fugitive methane emissions from open pit coal mining to align with federal requirements (November 2021)
- Launch of the Indigenous Clean Energy Opportunities engagement process in November 2021 to support First Nations participation in the growing clean energy sector. Workshops in March 2022 brought together 52 First Nation representatives and 12 representatives from Indigenous organizations
- Webinar series with local governments, Indigenous communities and organizations on the CleanBC Communities Fund (February and March 2022)

Government Collaboration

B.C. is building and strengthening existing partnerships at home, across the country, and around the world to develop resilience to climate change, grow the economy and reduce emissions. This includes developing a comprehensive workforce readiness plan to address skill and talent shortages across all sectors and ensure that people can benefit from the jobs of tomorrow. The *Future Ready: Skills for the Jobs of Tomorrow* plan is expected to be released in 2022/early 2023.

B.C. continues to work closely with the Government of Canada and provincial and territorial partners to support greenhouse gas reductions and adaptation through the Pan-Canadian Framework and the Council of Canadian Ministers of the Environment. We also continue to seek federal/provincial/territorial and international partnerships across the themes of transportation, buildings, communities, industry and climate infrastructure. This includes:

- Participating in the federal government's strategic steering committees on hydrogen and associated working groups
- Working with the federal government, provinces and territories on the national ZEV working group
- Working with Canada to ensure that the National Adaptation Strategy, set for release later in 2022, complements B.C.'s Climate Preparedness and Adaptation Strategy
- Continuing to partner with the federal government in the Low Carbon Economy Leadership Fund, which supports the Forest Carbon Initiative, Organics Infrastructure Program, and Better Homes and Better Buildings programs
- Continuing to leverage federal funding for low carbon, resilient communities through the Investing in Canada Infrastructure Program, which supports projects such as transit expansions
- Working with Natural Resources Canada on the Regional Energy and Resource Tables initiative that is advancing policies and projects in the following areas of focus: electrification (infrastructure and end-use applications); low carbon fuels; carbon capture and storage; forest bioeconomy; and critical minerals
- Highlighting B.C.'s climate leadership through forums such as Climate Week New York, United Nations Climate Change Conference COP, and with international groups such as the Under2 Coalition, Transportation Decarbonization Alliance, Ocean Acidification Alliance, and International Zero-Emission Vehicle Alliance
- Continuing to partner with local governments and Modern Treaty Nations to find new ways to build capacity for climate action e.g., Local Government Climate Action Program
- Continuing to partner with the western U.S. through the [Pacific Coast Collaborative](#) (PCC). In 2021 the PCC launched [Climate Resilience on the Pacific Coast: a Framework for Collaborative Action](#) and a video highlighting the urgent need for leadership across the region. The PCC also launched a new [Low Carbon Construction Task Force](#) at COP26 for which work is underway.

Climate Solutions Council

The independent Climate Solutions Council provides strategic advice to the B.C. government on climate action and clean economic growth. The Council is a key partner, keeping us on track and accountable as we work towards our targets.

- From 2019 to 2022, the Climate Solutions Council has provided two annual reports and 17 letters of advice to government on topics ranging from B.C.'s emissions-intensive trade exposed industries, to carbon pricing, and the Climate Preparedness and Adaptation Strategy. You can read the reports and letters of advice on [the Climate Solutions Council website](#)
- This advice helped to shape the development and implementation of the Roadmap to 2030, the Climate Preparedness and Adaptation Strategy, and the annual Climate Change Accountability Report

In early 2022, the Province appointed a new Climate Solutions Council that continues the work of the previous Council. The Council is working on their 2022 annual report to be published in late 2022.

Appendix 1: CleanBC Roadmap to 2030

Greenhouse Gas Reductions by Pathway

Modelled GHG Reductions (Mt CO₂e) in 2030 are relative to a reference scenario. The reference scenario forecasts Provincial emissions in the absence of any CleanBC or Roadmap climate policies. This differs from the approach used in the CleanBC Roadmap to 2030, which calculated GHG reductions relative to CleanBC Phase 1.

GHG Reductions in 2030 (Mt CO ₂ e)		
Reduction of GHGs for Economy-Wide Initiatives		
Increase the price of carbon pollution	Meet or exceed the federal benchmark carbon price of \$170/t by 2030	-5.4
	Revise industrial carbon pricing in 2023	
Reduction of GHGs for Low Carbon Energy Initiatives		
Enhance the Low Carbon Fuel Standard	Require a 30% reduction in carbon intensity of fuels by 2030	-14.1
	Expand to include marine and aviation fuel	
	Double production capacity for made-in-B.C. renewable fuels to 1.3bn litres	
Reduce emissions from natural gas	New GHG cap for natural gas utilities with a variety of compliance options	
Increase benefits of electrification	Implement a 100% Clean Electricity Delivery Standard by 2030	
	Align with B.C. Hydro's electrification plan	
	Provide clean electricity to planned natural gas production in the Peace region	
	Increase access to clean electricity for large operations with new transmission lines and interconnectivity to existing lines	
Reduction of GHGs for Transportation Initiatives		
Accelerate ZEV adoption	By 2030, ZEVs will account for 90% of all new light-duty vehicle sales in the province	-9.5
	New ZEV targets for medium- and heavy-duty vehicles to be developed in alignment with California	
	Continue to provide purchase rebates for light-duty vehicles, and expand incentives for clean bus and heavy-duty vehicle purchases	
	Expand the charging network with home, work and public fast-charging stations and additional hydrogen fuelling stations	
Other transportation actions	Reduce distances travelled by light-duty vehicles by 25% relative to 2020	
	Encourage increase in mode shift to walking, cycling and transit to 30% by 2030	
	Reduce the energy intensity of goods movement by 10% relative to 2020	
	Increase tailpipe emissions standards for light duty and heavy-duty vehicles sold after 2025	

Reduction of GHGs for Buildings & Communities Initiatives

New carbon pollution standard in BC Building Code	Carbon pollution standards introduced for new buildings in 2024, with zero-carbon new construction by 2030	-0.9
Highest efficiency standards	After 2030, all new space and water heating equipment sold and installed in B.C. will be at least 100% efficient (i.e., electric resistance heating, heat pumps, and hybrid electric heat pump-gas systems)	
Reduce waste and turn it into a clean resource	Help communities to achieve 95% organic waste diversion for municipal waste	

Reduction of GHGs for Industry Initiatives

Reduce methane emissions	Introduce regulations to reduce methane emissions from the upstream oil and gas sector by 75% by 2030 (relative to 2014) and to nearly eliminate methane emissions in oil and gas, mining, industrial wood waste and other sectors by 2035	-10.7
Enhance CleanBC Program for Industry	Enhance industry program to reduce GHGs and support a strong economy	
Make new industrial operations 'net-zero ready'	New large industrial development to submit plans to achieve net-zero emissions by 2050 and show how they align with interim 2030 and 2040 targets	
Reduce oil and gas sector emissions	Implement programs and policies so that oil and gas emissions are reduced in line with sectoral targets (reduction of 33-38% below 2007 levels by 2030)	

Reduction of GHGs for Other Measures

Other measures include reducing agricultural and deforestation emissions and utilizing funding announced in the federal emissions reduction plan	-0.4
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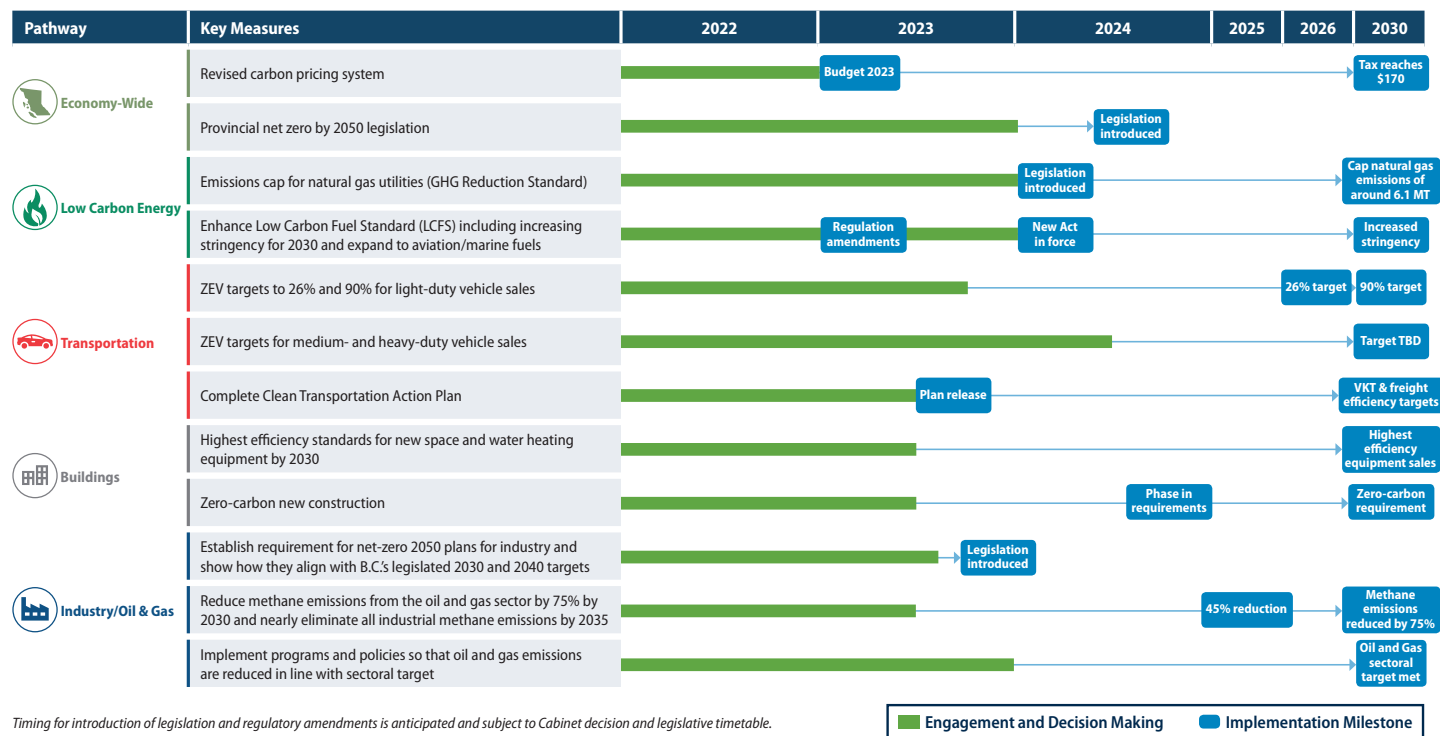
TOTAL GHG MTCO₂E REDUCED IN 2030

28.6

The legislated target for 2030 is 39.3 MtCO₂e (or a reduction of 29.4 MtCO₂e from the 2030 reference case). Modelling demonstrates that B.C.'s climate plan achieves 97% of the 2030 target.

Note: Individual pathway reductions do not add up to the total because of interaction effects between policies that target the same emissions. Policy overlap may increase the likelihood that emissions reductions will occur but may also increase policy compliance costs. Policies may also span multiple sectors, beyond where they are categorized in this appendix. For example, the emissions reduction estimate for the GHG cap for natural gas utilities (categorized under low carbon energy) includes reductions in both industry and buildings.

Appendix 2: CleanBC Roadmap to 2030 Implementation Plan



Appendix 3: List of B.C. Indicators

Category	Indicator	Measure	Historical	Previous Year	Most Recent	% Change from Historical	% Change from Previous Year	Period
Economic Transition	Net GHG intensity of the economy	tCO ₂ e/\$million GDP	312.6	240.5	238.8	-23.6%	-0.7%	2007-2020
	Net GHG emissions per person	tCO ₂ e/British Columbian	15.3	13	12.3	-19.2%	-5.1%	2007-2020
	Net provincial GHG emissions	Million tCO ₂ e	65.5	66.1	63.5	-3.0%	-4.0%	2007-2020
Transportation	Electric vehicle sales	Percentage of ZEV as a proportion of light-duty vehicle sales	0%	9.4%	13%	+26,314.9%	+38.3%	2011-2021
	Electric vehicle registrations	Light-duty ZEVs registered in B.C.	97	54,469	79,587	+81,948.5%	+46.1%	2011-2021
	Charging stations ¹	Percentage of 2040 public fast charging requirements complete	1%	7%	10.5%	+950.0%	+50.0%	2016-2021
	Renewable fuel content ²	Percent renewable content in transportation fuels	3.9%	9.7%	10.5%	+169.2%	+8.2%	2010-2021
	Renewable fuel supply ²	Million liters of biofuel supplied	326.4	794.3	900.9	+176%	+13.4%	2010-2021
	Annual public transit ridership	Average number of transit trips taken per British Columbian	51	24	35	-31.4%	+45.8%	2007-2021
Buildings	Residential heat pumps	Percentage of households with heat pumps as primary or secondary heating	3%	10%	7%	+180%	-28% ³	2007-2020
	Better Buildings fuel-switching projects	Lifetime million gigajoules of natural gas expected to be displaced from approved CleanBC fuel-switching projects	2.2	2.2	2.7	+25%	+25%	2019-2022
	Clean electricity	Percentage of households that use clean electricity as primary heating	36%	Not available	41%	+13.9%	Not available	2007-2020
	Energy intensity of residential buildings	Gigajoules of energy use per square metre of floorspace for residential buildings	0.7	0.5	0.5	-20.7%	+0.2%	2007-2019
	Energy intensity of commercial buildings	Gigajoules of energy use per square metre of floorspace for commercial buildings	1.3	1.1	1.1	-10.9%	+2.7%	2007-2019
	Energy intensity of affordable housing	Gigajoules of energy use per square metre of floorspace for provincially owned affordable housing stock	0.8	0.7	0.8	-6.3%	+7.1%	2010-2021

Category	Indicator	Measure	Historical	Previous Year	Most Recent	% Change from Historical	% Change from Previous Year	Period
Waste	Municipal solid waste disposal	Kilograms of waste disposed per British Columbian	703	501	499	-29%	-0.4%	2007-2020
	Organic waste	Percentage of population covered by an organic waste restriction	3%	74%	74.1%	+2,370%	+0.1%	2007-2021
	Landfill gas capture	Percentage of landfill methane flared, used or oxidized	25.0%	39.9%	41.4%	+65.5%	+3.8%	2007-2020
Industry	GHGs from industry	Million tCO ₂ e from large industrial reporters in British Columbia	19.2	17.7	17.9	-6.8%	+1.1%	2012-2021
	Industry investment to reduce GHGs	Millions committed by industry to emission reduction projects through the CleanBC Industry Fund	39	49	91.3	+134.1%	+86.3%	2019-2021
	Methane emissions from oil and gas ⁴	Million tCO ₂ e of fugitive and vented methane emissions reported from the upstream oil and gas sector	1.9	1.7	1.0	-44.5%	-37.0%	2014-2020
Public Sector	GHGs from B.C. Public Sector	Kilotonnes of CO ₂ e reported by the B.C. Public Sector ⁵	846	783	737	-12.9%	-5.9%	2010-2021
	Progress to reduce building emissions from 2010 baseline	Kilotonnes of CO ₂ e from public sector buildings (weather-normalized) ^{5,6}	691	627	551.4	-20.2%	-12.1%	2010-2021
	Progress to reduce fleet emissions from 2010 baseline	Kilotonnes of CO ₂ e from public sector fleets	154.5	143.5	154.6	+0.1%	+7.8%	2010-2021

¹ Estimated based on the number of completed stations versus forecast needs for 2040.

² Indicators for renewable fuel supply and renewable fuel content were updated this year to reflect a new baseline of 2010, which was the first year of the Renewable & Low Carbon Fuel Requirements Regulation.

³ This reduction may be overstated as a result of changes in BC Hydro's Residential End Use Survey methodology, and to inconsistencies resulting from multiple data sources.

⁴ Venting and fugitive methane emissions data collected under *Greenhouse Gas Industrial Reporting and Control Act* differs slightly from last year's Climate Change Accountability Report due to data improvements, including removing natural gas distribution emissions in each year as they are not an upstream source.

⁵ Changes in historical data used in last year's report are due to retroactive updates to emission factors.

⁶ Building emissions are weather-normalized to account for each year's weather impact on heating and cooling demand.

Note: Many of these indicators don't currently have targets. Further work is needed to determine what the targets should be, and in some cases targets may not be appropriate.





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