



# 2022 Climate Change Accountability Report

May 2023

 **BC Hydro**  
Power smart

This Climate Change Accountability Report for the period January 1, 2022 to December 31, 2022 summarizes our emissions profile and the total offsets to reach net-zero emissions for buildings, fleet and paper emissions required by the Carbon Neutral Government Regulation. The report also documents our broader greenhouse gas management plan, our approach to managing climate change risks, the actions we have taken in 2022 to reduce our greenhouse gas emissions, and our plans to continue reducing emissions in 2022 and beyond.

By June 30, 2023 BC Hydro and Power Authority's 2022 Climate Change Accountability Report will be posted to our website at **bchydro.com**

### **Executive sign-off:**

May 27, 2023

A handwritten signature in black ink, appearing to read 'Chris O'Riley', with a stylized, cursive script.

Chris O'Riley, President & CEO

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# 1. Overview

## In 2022, we continued to take significant climate actions to reduce our greenhouse gas emissions and to support our customers to transition from fossil fuels to low carbon energy alternatives

Globally, climate change continues to be a defining issue of our time. With attention to climate on the rise, individuals are taking action as they rethink their own environmental impact, and they expect the same of the companies they interact with. At BC Hydro, we've seen climate change accelerate and decarbonization increase in urgency which is leading to a societal transition towards sustainable energy. Overall, the energy transition is pushing our province and our world toward a carbon-neutral economy, for which our low carbon energy is both a solution and an enabling force.

BC Hydro's mission is to safely provide our customers with reliable, affordable and clean electricity. As a Crown Corporation, we have an important role to play in supporting the climate actions and targets of government. Our refreshed five-year strategy provides a vision for the company that focuses on a cleaner and more sustainable future through electrification. Our vision celebrates our low carbon and renewable energy advantage and our environmental stewardship role in British Columbia.

The energy we supply to our customers can have a significant positive impact on climate change and the environment by supporting the reduction of greenhouse gas (GHG) emissions. Our approach includes strategies and plans that address both climate adaptation, which ensures our power system is resilient, and mitigation which reduces our greenhouse gas emissions and enables our customers to do the same. Our GHG Management Plan is a pillar within our mitigation approach and targets GHG reductions across all areas of our operations where emissions exist. The specific measures and targets for GHG reduction identified in the five-year strategy will help make a significant positive impact on climate change. Our plan aligns with the Provincial government's CleanBC objectives and **2030 roadmap**, and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

Climate change is already impacting how our system operates and increasing the demand for low-carbon energy. To withstand these impacts and manage increasing incidents of disruption and uncertainty, we need to be more resilient and agile than ever before. Our **Climate Change Adaptation Plan** describes how we're continuing to evolve our assessment and understanding of the risks of climate change, while also maintaining robust adaptation practices that we'll continue to progress as we learn more.

Unusual weather patterns related to climate change are expected to continue in the years ahead and we're constantly adapting to these evolving conditions. Our system is designed and operated to perform safely across a wide range of conditions and extreme events, and our employees are highly trained and experienced to adapt quickly to changing conditions. In the latter half of 2022, dry conditions affected water levels at some BC Hydro locations in the Lower Mainland and Vancouver Island; however, the flexibility and storage at our bigger facilities allowed the province's electricity to keep running. Tackling a problem like climate change is a big undertaking, but our teams have proven that they are prepared to respond to extreme and uncertain conditions.

In addition to taking action to make significant reductions in our GHG emissions at BC Hydro, we're also building on our already strong conservation program, Power Smart, by introducing measures to help our customers reduce their own GHG emissions. We will continue to help customers make smart energy management choices by supporting them with low rates, and investing in tools and programs.

Finally, our **Electrification Plan** outlines how we'll energize the province by helping new and existing customers electrify and reduce their carbon footprint. It gives us the opportunity to have our largest and most meaningful impact toward achieving a sustainable, low carbon future, in the economy and in broader society because of the reach and affect it can have on emission reductions. Our plan encourages and incentivizes residents and businesses to switch from fossil fuels to low carbon electricity. It also fosters economic development in British Columbia and is expected to result in an additional 3,100 gigawatt hours of load and reduce 930,000 tonnes per year by the end of fiscal 2026. Our energy has the potential to make a significant difference in the fight against climate change, both within B.C. and beyond by displacing more carbon intensive energy sources.



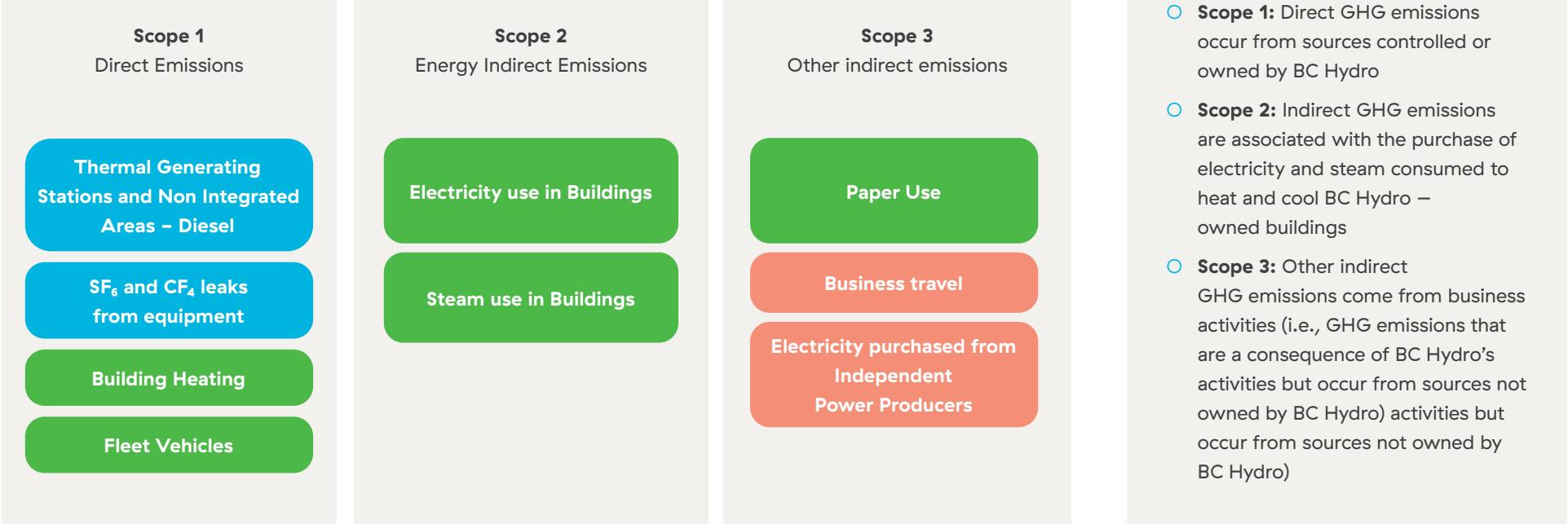
Seton Lake from above

# 2. Our Emissions

## We monitor and report on our emissions

Our **GHG Management Plan** includes emissions we are required to report under the **Canadian Environmental Protection Act**, **BC Greenhouse Gas Industrial Reporting and Control Act**, and **BC Climate Change Accountability Act**. We also report on emissions that we are not required to screen and report by regulation, such as emissions from Independent Power Producers (IPPs), corporate air travel and facilities with emissions under regulatory reporting thresholds. Our GHG emissions are verified by a third party as required by the Greenhouse Gas Reporting Regulation.

Figure 1 – Our greenhouse gas emissions and associated reporting requirements

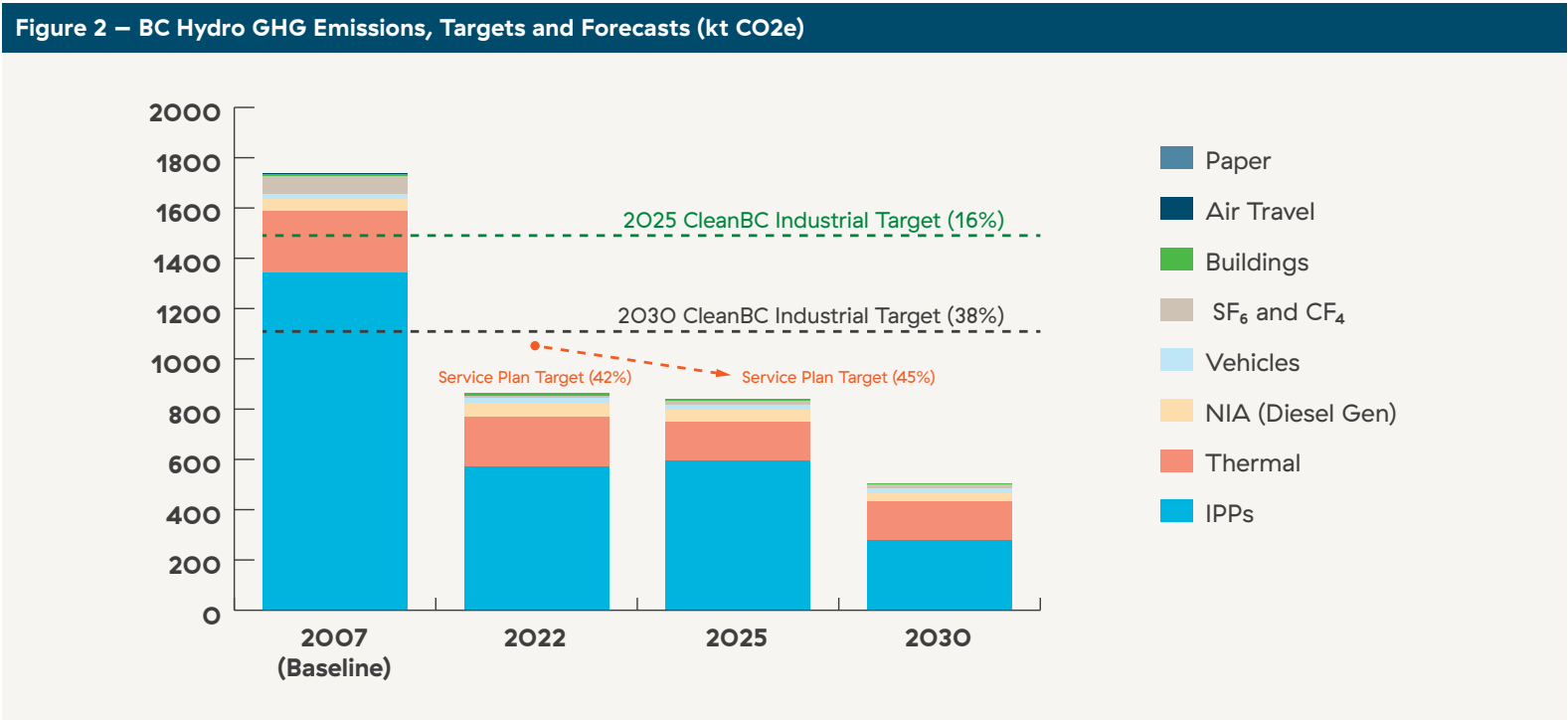


- Required by: Carbon Neutral Government Regulation
- Required by: Canadian Environmental Protection Act, BC Greenhouse Gas Industrial Reporting and Control Act
- Other GHG Emissions Tracked by BC Hydro that are not required by any regulation

1 IPP emissions are not included in our emission reports submitted to regulators since IPPs report on their own emissions directly. We do include IPP emissions in our GHG Management plan since our decisions directly affect provincial GHG emissions.

We include Scope 3 emissions from Independent Power Producers, paper and corporate air travel in our emission report since they are either significant, easy to quantify and/or required by the Carbon Neutral Government Regulation. BC Hydro purchases a wide variety and significant amount of other Scope 3 goods and services from suppliers to deliver electricity that are not included in our emission report. As a result, our supply chain team has started to engage key suppliers about their GHG emissions. Activities include a survey of a selection of our largest suppliers and discussions in executive and senior-level relationship meetings. We are learning where different companies are in terms of measuring and reporting emissions, and their plans to reduce emissions. This will help us prioritize and identify options to work with our suppliers on this issue going forward.

In 2022, we continued our flexible work model for office-based workers which provides employees who want to and whose work allows for it, the opportunity to work from home some of the time. This flexible work model helps to reduce GHG emissions as workers travel less to and from the office, however we have not quantified or reported on these reductions since they are outside the scope of our GHG reduction plan.



**In 2022, we achieved a 50% reduction in our emissions compared to our baseline, and we continue to be on track to exceed the 2025 and 2030 Provincial CleanBC reduction targets for industry**

Our Greenhouse Gas (GHG) emissions are some of the lowest in the North American electric industry, with our direct emissions contributing less than 1% of the total industrial GHG emissions in British Columbia. While we’re already a low emitter, we want to be leaders in the fight against climate change by continuing to reduce our emissions even further.

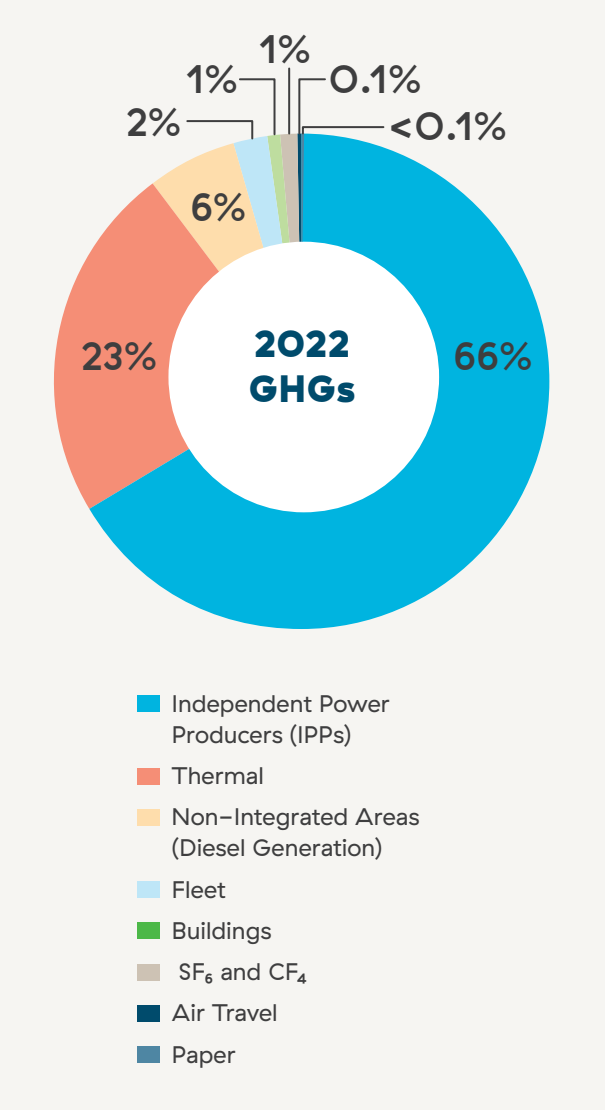
We have set ambitious, achievable reduction targets. Our GHG Management Plan forecasts reductions of 52% by 2025 and 71% by 2030 compared to the Provincial CleanBC industry sector targets, of 16% and 38–43% respectively. We are on track to meet our forecasted reductions and continue to introduce additional measures to reduce emissions and update our forecasts.

We also set a reduction target each year as part of our Annual Service Plan to ensure that we have measures and actions in place that will help us meet our 2025 and 2030 reduction goals. Our Service Plan target is to reduce emissions by 45% by 2025, including a 42% reduction target in 2022 (relative to our baseline year, 2007).

Although the overall building portfolio and GHG emissions have increased by 52% since baseline due to the temporary Site C construction workers camp, the emissions from our core buildings portfolio have decreased by 16% since baseline. It is expected the Site C buildings emissions will decrease significantly starting in 2025 when construction is substantially complete and the camp is decommissioned to achieve the provincial reduction target for public service organization buildings.

Non-integrated area emissions increased from 2021 and were 14% above baseline. This variance is a result of normal changes in year-over-year electricity demand based on influencing factors such as weather and community growth. We’re taking a collaborative approach, working with communities in these areas to identify and move projects forward, and increase their supply of low carbon and renewable energy. Emissions are expected to decrease once these community projects are brought online (refer to Section 3.3 for more details).

**Figure 3 – BC Hydro 2022 GHG Emission Distribution**





**Table 1 – BC Hydro GHG Emissions Summary**

GHG Category	Baseline	2021	2022		2025		2030	
		Actual	Actual	Change from Baseline	BC Hydro Forecast	BC Hydro Forecast Reduction	BC Hydro Forecast	BC Hydro Forecast Reduction
	k tCO <sub>2</sub> e	k tCO <sub>2</sub> e	k tCO <sub>2</sub> e	%	k tCO <sub>2</sub> e	%	k tCO <sub>2</sub> e	%
<b>Buildings</b>	7.4	11.0	11.3	52%	6.3	–15%	3.7	–50%
<b>Fleet</b>	22.3	20.9	20.6	–8%	22.1	–1%	19.7	–12%
<b>SF<sub>6</sub> and CF<sub>4</sub></b>	70.4	13.7	10.2	–86%	15.0	–79%	15.0	–79%
<b>NIA (Diesel Gen)</b>	46.3	47.0	52.8	14%	44.1	–5%	30.4	–34%
<b>Thermal</b>	246	135	199	–19%	157	–36%	155	–37%
<b>IPPs</b>	1,339	833	569	–57%	592	–56%	276	–79%
<b>Air Travel (domestic)</b>	2.4	0.3	1.1	–52%	1.4	–40%	1.4	–40%
<b>Paper</b>	0.2	0.1	0.1	–76%	0.1	–40%	0.1	–40%
<b>Totals</b>	<b>1,73</b>	<b>1,061</b>	<b>865</b>	<b>–50%</b>	<b>839</b>	<b>–52%</b>	<b>503</b>	<b>–71%</b>
<b>Provincial Target (CleanBC)</b>					1,457	–16%	1,076	–38%
<b>Amount Plan exceeds Clean BC Target</b>					619	–36%	573	–33%
<b>BC Hydro Service Plan Target</b>				–42%	954	–45%	–	–

**Notes:**

- 1) Baseline year is 2007 except as follows
- 2) Fleet, buildings and paper baselines are based on 2010 as 2007 data is unavailable
- 3) Air Travel (domestic) baseline is based on 2019 as 2007 data is unavailable
- 4) Emissions are reported on a calendar year basis, consistent with regulatory reporting requirements.
- 5) Due to rounding, numbers may not sum up exactly as shown
- 6) IPP emissions are calculated using the latest available emission factors at the time. The IPP 2025 and 2030 forecasts were prepared using the 2019 emissions factors that were in effect when the GHG Plan was developed.
- 7) BC Hydro Service Plan reduction target was 42% for 2022 compared to baseline and will increase by one percent a year until it reaches 45% in 2025.

 GHG Emissions decreased from baseline

 GHG Emissions increased from baseline

## 3. Key areas of GHG emissions

### 3.1 Buildings

**GHG emissions from our core buildings portfolio were 16% less than baseline**

BC Hydro owns or leases over 270 buildings in more than 80 municipalities across British Columbia. There have been a number of retrofit, upgrade and new construction projects underway in 2022 in our buildings portfolio, for which we follow an integrated design process with energy efficiency, GHG emission reduction and high-performance building elements in mind.

Our design standards include energy efficiency targets, low carbon systems and considering electric options first for our buildings. The lower energy use intensity translates into more energy efficient and low carbon footprint buildings. We will continue to install low carbon heating and cooling systems in our new facilities and to upgrade existing building systems where such projects are feasible. The priority for any capital asset replacement and electrification will be for those building systems that are at or close to the end of useful life. We review and implement technology that is available for the electrification of buildings, including air source and water source heat pumps for space heating and domestic hot water, heat recovery systems, and carbon dioxide heat pump hot water heaters.



Victoria district office

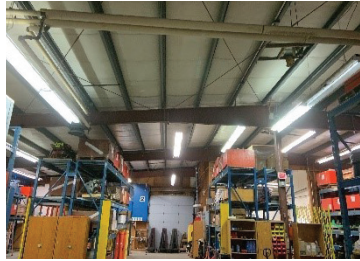


Dunsmuir corporate office, Downtown Vancouver

**The following are examples of high energy-efficient design and low carbon systems that have been implemented.**



We implemented a corporate-wide LED lighting upgrade in 2022 across several facilities including in our Surrey Campus, Dunsmuir, Nanaimo, Prince George, and Victoria offices. Old energy-intensive high-bay down lights were retrofitted with highly energy-efficient LED fixtures. Lighting controls were added or improved with additional daylight harvesting strategy that dims down perimeter lights when there are enough natural lights. Other measures included upgrading central low-voltage lighting controls and adding smart modules.



At our Surrey Construction Services building, six gas-fired unit heaters were replaced with new electric unit heaters. A gas-fired boiler was upgraded to a 98% high-efficiency condensing boiler which has five times more capability of meeting smaller heating loads than older draft boilers. This can result in less emissions and higher operational performance. A total reduction of 11 tonnes CO<sub>2</sub>e was achieved in 2022 and these upgrades will save approximately the same quantity each year.



Re-commissioning to improve property energy and operational performance at Edmonds office facility continued in 2022. System operational optimization such as demand-based temperature and pressure controls and lowering fans, pumps and heating energy are a few highlights of seven major measures implemented. The measured energy savings totalled about 700,000 kWh. Zonal temperature and human comfort also improved.



The Edmonds Operation Centre building underwent a thorough HVAC and roof upgrade in 2022. All 13 gas-fired rooftop units (RTUs) were replaced with heat pump rooftop units. Three of the RTUs are equipped with energy recovery cores. These systems pre-heat the fresh air to the building by using freely available warm space air before it is exhausted. Only partial top-up heat may be required in winter from the back-up gas burners inside the RTUs. The roof insulation was also improved with a new 5" insulation. This achieved a total reduction of 94 tonnes CO<sub>2</sub>e in 2022 and will save approximately the same quantity each year.



The Surrey Material Management Business Unit (MMBU) building was upgraded to highly energy-efficient heating, ventilation, cooling and lighting systems. We installed an Energy Recovery Ventilator, LED lighting, and high-efficiency boilers, and unit heaters were part of the retrofit project. A new electric domestic hot water heater was installed to displace the gas used by an old domestic hot water heater. All metal halide lighting fixtures in the large warehouse area were replaced with LED fixtures.

Although the overall building portfolio and GHG emissions have increased by 52% since baseline due to the temporary Site C construction workers camp, the emissions from our core buildings portfolio have decreased by 16% since baseline. We expect the Site C buildings emissions will decrease significantly starting in 2025 when construction is substantially complete and the camp is decommissioned to achieve the provincial reduction target for public service organization buildings.



## 3.2 Vehicles

### GHG emissions from our fleet were 8% below baseline

BC Hydro's Fleet Services is responsible for the acquisition and lifecycle management of our fleet assets. Fleet Services manages over 3,000 vehicles, trailers, and pieces of equipment that support our operations. 93% of the BC Hydro sedans are either zero emission or electric-gas hybrid vehicles, and the remainder are heavy-duty vehicles. These heavy-duty vehicles (such as bucket trucks) weigh greater than 3,900 kg and are required to maintain our power system infrastructure on a day-to-day basis, as well as being required for exceptional emergency work including power restoration caused by weather events (storms, for example). While technologies for reducing GHGs in heavy-duty vehicle categories are not readily available, BC Hydro is testing technologies, such as Electric Power Take Off systems, to advance our knowledge and experience with non-GHG emitting alternatives.

Starting during the pandemic and continuing through 2022, our fleet services has experienced significant supply chain issues that decreased the availability of GHG-reducing alternatives (example: gas-electric hybrid half-ton pickup trucks). Even with this challenge, we were able to achieve emission reductions in 2022 relative to 2021.

In 2022, we took the following actions to improve our fleet emissions by:

- Continuing to pilot 30 zero-emission sedan and suburban vehicles, including two hydrogen fuel cell sedans, and five battery electric half-ton pickup trucks (EVs).
- Adding 39 gas-electric hybrid sedans, vans and SUVs for a total of 250 and 18 gas-electric hybrid half-ton pickup trucks for a total of 29 to reduce emissions from light-duty vehicles accounting for under a third of our fleet's GHG emissions.
- Preparing for the addition of Electric Power Take Off systems on bucket trucks, which will be introduced in 2023.
- Implementing a telematics program to address unproductive idling and harsh driving behaviours to improve fuel economy.

Fleet emissions in 2022 were lower than 2021 and 8% below the baseline.



Our first zero emissions light-duty pickup truck



### 3.3 Non-integrated areas

#### Non-Integrated Area emissions were 14% above baseline

The Non-Integrated Area (NIA) supplies electricity generation and distribution to 27 off-grid communities, many of which are Indigenous communities. NIAs have approximately 8,000 customers, mostly residential and some commercial. NIAs are supplied by approximately 50% clean and renewable resources such as stored hydro, run-of-river hydro and solar, with the remainder supplied by diesel generation.

In the past few years, new sources of funding for clean energy projects from provincial and federal agencies have driven increasing interest in, and development of, renewable energy for NIAs. We're taking a collaborative approach, working with communities in these areas to identify and move projects forward, and increase their supply of low carbon and renewable energy. In addition to helping meet climate change objectives, these projects provide an opportunity to advance reconciliation with Indigenous communities.

Specific activities currently underway include:

- Developing a long-term resource plan framework, informed by multiple ongoing working groups and project-specific experiences with NIA communities.
- Creating eight working groups with Indigenous communities to advance the first ten community energy projects as well as community energy plans, load forecasts, and resource assessments to support diesel reduction activities.
- Sharing data and information with project developers to size and plan for energy project integration into BC Hydro's isolated NIAs.
- Receiving Natural Resource Canada funding to advance a solar/battery-based demand response and diesel reduction pilot on Haida Gwaii.
- Providing subject matter expertise to communities who are developing energy projects.
- Coordinating with Provincial and Federal Government agencies to align funding programs and policies.
- Exploring the impacts of new and emerging technologies on existing operations.
- Implementing Demand Side Management (DSM) programs in 10 of our 14 NIAs.



Solar panels for Tli Yahda Energy's 2MW Solar Farm ready for installation at Masset airport, May 2023

While we work with communities to advance energy projects and support other diesel reduction activities in NIAs such as demand-side management initiatives, we're also preparing for an overarching strategy focused on Non-Integrated Areas, focusing on the pillars of:

- Clean Energy (e.g. clean energy projects, small scale solar, etc).
- Reliability (e.g. distribution reliability improvements).
- Affordability (e.g. customer rate design options).

We have allocated resources, established internal governance and are implementing changes across the organization to support NIA diesel reduction across the province. As we implement our strategy, we continue to consult with the Provincial government and Indigenous communities.

BC Hydro's five-year strategy includes implementing a plan and pursuing agile solutions to reduce diesel use in Non-Integrated Areas.

Non-integrated area emissions increased from 2021 and were 14% above baseline. This variance is a result of normal changes in year-over-year electricity demand based on influencing factors such as weather and community growth. Emissions are expected to decrease once community low carbon and renewable energy projects are brought online.



Clayton Falls Hydroelectric Site

## 3.4 Thermal Generation

### BC Hydro thermal power generation emissions were 19% lower than baseline

BC Hydro owns and operates thermal plants in Price Rupert (46 MW) and in Fort Nelson (73 MW).

Prince Rupert Thermal Generating Station primarily serves a local load and is a back-up for the integrated system in Northwest British Columbia.

Fort Nelson Thermal Generating Station serves the local Fort Nelson area load and is connected to the Alberta Electric System Operator (AESO) grid—it's not part of our integrated grid. Fort Nelson operates to meet local load and demand from AESO.

Fort Nelson Generating Station operated more in 2022 and as a result emissions were higher than in 2021 but 19% lower than baseline. The 2022 increase is attributed to less maintenance outages relative to 2021.



Prince Rupert Thermal Generating Station



Fort Nelson Thermal Generating Station



### 3.5 SF<sub>6</sub> and CF<sub>4</sub> insulating gases

#### SF<sub>6</sub>/CF<sub>4</sub> emissions were 86% below baseline

Sulphur hexafluoride (SF<sub>6</sub>) and carbon tetrafluoride (CF<sub>4</sub>) are potent greenhouse gases used in electrical equipment worldwide. SF<sub>6</sub> and CF<sub>4</sub> have 23,500 and 6,630 times more global warming potential than CO<sub>2</sub>, respectively. Equipment leaks can result in the release of these gases to the atmosphere.

Since 2007, SF<sub>6</sub> and CF<sub>4</sub> releases have decreased by 86% through established maintenance programs and targeted equipment repair and replacements. Through the use of the SF<sub>6</sub> tracking app, leaks are identified sooner to prioritize repairing or replacing leaking equipment.

Our practice is to seek alternatives to SF<sub>6</sub> and CF<sub>4</sub> insulated equipment by using more environmentally-friendly solutions where these are viable, reliable, safe and at a reasonable cost. Some examples from 2022 include:

- A dry-air medium-voltage switchgear system was installed at Capilano Substation instead of adding 240 kg of SF<sub>6</sub> used in traditional equipment.
- We have been evaluating recently emerging alternative technologies for a new indoor station using a structured decision-making approach considering safety, cost, environmental benefits including GHG aspects and operational requirements.
- An established program continues to replace 25kV/15kV SF<sub>6</sub> containing circuit breakers with a dry air model.
- We have supply contracts in place and in progress for the procurement of non-SF<sub>6</sub> alternatives.

In 2022, we also updated our SF<sub>6</sub> environmental standard and program to reflect our updated SF<sub>6</sub> and CF<sub>4</sub> release reduction target, refining governance and guiding principles.

BC Hydro currently has non-SF<sub>6</sub> equipment in applications up to 287 kV. Looking ahead, there are proposed regulations in Europe and California that we expect to expedite the availability of non-SF<sub>6</sub> equipment. There are also a range of technologies currently available and emerging to replace SF<sub>6</sub> equipment including high voltage applications. Non-SF<sub>6</sub> equipment alternatives are expected to be more widely available from multiple suppliers for up to 145 kV by 2025 and up to 550 kV by 2030.

SF<sub>6</sub>/CF<sub>4</sub> emissions were 86% below baseline. The decrease from 2021 was attributed to improved gas tracking and on-going leak repairs and equipment replacements.



A 230 kV Gas Insulated Switchgear (GIS) Unit  
in Horsey Substation



Capilano Substation  
Dry-air medium-voltage switchgear system



### 3.6 Paper

Emissions from paper were 76% below baseline

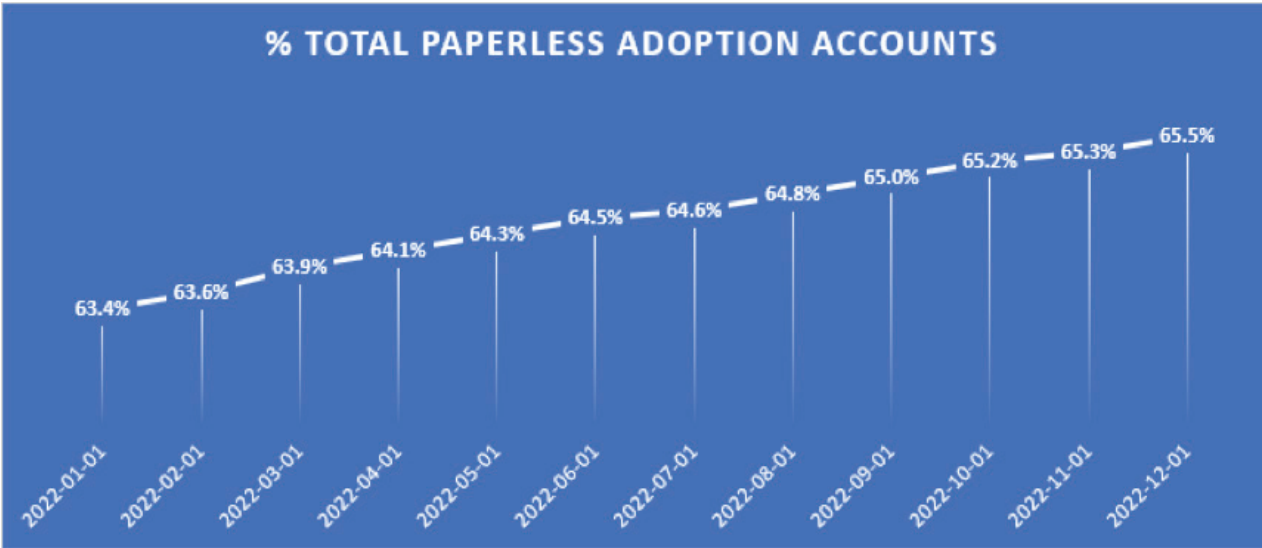
Although GHG emissions from paper use account for a small fraction of our emissions and we continue to have one of the highest rates of paperless billing among those surveyed by Electricity Canada, we continue to implement improvement actions. In 2022, we continued with network printers and photocopiers set to double-sided printing by default and we held workshops to promote electronic signatures and stamps to reduce printing.

Our paper use reduction actions are not limited to direct paper use; we also promote using less paper for our customers and suppliers. For example, our customer invoicing services are provided by a third party company and by introducing paperless campaigns we encourage everyone to reduce their paper use. In 2022, paperless billing adoption increased from 63.4% to 65.5%. We set targets for each fiscal year (April 1 to March 31) and achieved our target again as an additional 63,259 accounts transitioned to paperless billing last year.

In 2022, BC Hydro introduced additional campaigns to reduce paper consumption related to our business. Examples include:

- Approximately 11,000 customers in various communities across B.C. with the lowest paperless conversion rate for online billing were mailed a ‘Go Paperless Today’ letter via Canada Post.
- Continued messages were distributed with bills to go paperless to reduce waste.

In 2022, emissions from direct paper use were 76% below baseline but higher than in 2021. Our 2022 result is lower than the pre-pandemic levels and is attributed to our employees transitioning to a more digital environment given our flexible work model for office-based workers.



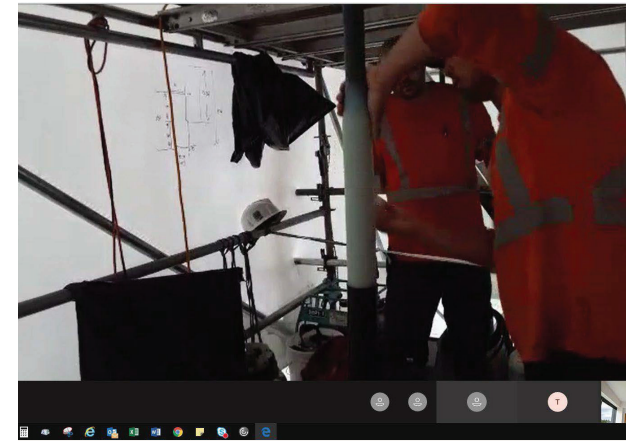
## 3.7 Corporate travel

### Air travel emissions were 52% below baseline

Our GHG emissions from air travel remained low in 2022 at 52% below baseline. Over the course of the pandemic, we adopted new technology, skills and practices that have helped us connect virtually with colleagues, First Nations, regulators and stakeholders from across the province, nationally and internationally. As we look to incorporate these learnings into the future of our work, we're reducing travel budgets resulting in cost savings and emission reductions. Our emissions are higher than the pandemic period (2020 and 2021) but still substantially lower than pre-pandemic levels. There was an overall increased amount of flights which is consistent with pandemic restrictions easing in 2022.

We will continue to prioritize virtual options first before travelling, recognizing that some travel will continue to be required given the work we do. We also learned that holding large events on a virtual or hybrid platform increases participation, and we intend to continue this practice as it benefits not only GHG emission reductions and cost management, but also broader engagement.

Air travel emissions were higher than in 2021 but still 52% below baseline with virtual meetings and training sessions well implemented.



An overseas video call for our Camosun Substation project.

## 3.8 Independent Power Producers

### IPP emissions were 57% below baseline

In 2022, emissions from Independent Power Producers (IPPs) represented 66% of our total direct and indirect GHG emissions as summarized on Table 1. Although we do not own or operate IPP facilities, our electricity purchase agreements with IPPs can directly influence the use and operation of these facilities, which presents a key opportunity for reducing GHG emission in our overall GHG Management Plan.

The McMahon gas-fired thermal cogeneration facility is the largest source of GHG emissions within BC Hydro's portfolio of IPP contracts. McMahon Cogeneration operates as a baseload facility which means it is continually operating to produce steam for an adjacent industrial facility and electricity for sale to BC Hydro, and as a result it's a significant source of GHG emissions. Island Generation, located on Vancouver Island, operates as a dispatchable on-demand power supply facility and was only operated for its maintenance purposes in 2022.

Between 2007 and 2022, GHG emissions related to purchases of electricity from IPPs were reduced by 57%, from approximately 1.34 million tCO<sub>2</sub>e to approximately 0.57 million tCO<sub>2</sub>e. Emissions from these sources are anticipated to decrease further as we work to achieve our 2030 reduction goal. The forecast reduction in emissions from IPPs contributes significantly to achieving targets set in our GHG Management Plan.

We have set an objective to reduce GHG emissions. As IPP contracts expire, we will look to acquire electricity from low carbon or renewable resources to replace electricity from existing higher emitting resources.

In calendar year 2022, the GHG performance of our IPP portfolio is summarized as follows:

- 81.6% of delivered energy from IPPs came from non-GHG emitting resources, such as hydro, wind and solar generation facilities and 11.6% of delivered energy came from biomass, for a total of 93.2 % clean or renewable as defined in the Clean Energy Act.
- GHG emissions from IPPs were reduced by 57% compared to baseline.
- Emissions from IPPs were 31% lower than in 2021, primarily because the Island Generation thermal generation plant was only operated for its required maintenance in 2022, whereas in 2021 it was operated for reliability reasons while repairs were completed to transmission lines damaged during the heat dome.



SunMine, in Kimberley B.C., provides 1 Megawatt peak production, enough to power about 250 homes, and was the first solar project in B.C. to sell power to the BC Hydro grid





With the timing and duration of the extreme drought conditions in fall 2022, it was identified that millions of salmon eggs already in the gravel, as well as ongoing migration and spawning activity could be impacted by low reservoir levels. Emergency pumping initiated in October helped to maintain water levels such that downstream fish habitat could remain wetted, protecting incubating eggs. Fisheries and Oceans Canada's target of 250,000 Pink salmon upstream of their hatchery fence was surpassed, however, the river flow remained very low for normal movement of Coho and Chinook salmon.

A key part of managing the water is the continuous planning and monitoring that is done by the teams in Generation System Operations. They work closely with our Environment and Indigenous Relations teams, external Agencies and others to communicate and inform decision making. The data and expertise they apply is key to modelling and understanding the risks in different timeframes and adjusting as conditions evolve. Our facilities have limits on how much water they can store and discharge. The goal is to understand those limits and uncertainties in the forecasts, and balance our operations as best as possible.

The Pacific Climate Impacts Consortium (PCIC) is a non-profit research organization housed at the University of Victoria which conducts independent, peer-reviewed quantitative studies on the impacts of climate change and climate variability in the Pacific and Yukon region. BC Hydro has been a funding partner in the Consortium since 2007 and we recently renewed our support agreement with PCIC for another four years to continue the development of future projections of climate and hydrology, incorporating the latest climate change science and research. The peer-reviewed science provided through BC Hydro's partnership with the Pacific Climate Impacts Consortium provides a solid foundation to continuing to grow our understanding of how climate change may impact our business that is transparent to regulators, governments, stakeholders, and customers.

Unusual weather patterns related to climate change are expected to continue in the years ahead and we are constantly adapting to these evolving conditions. Our system is designed and operated to perform safely across a wide range of conditions and extreme events, and our employees are highly trained and experienced to adapt quickly to changing conditions. Our report **How BC Hydro is Adapting** identifies some of the ways that we have been preparing for climate change impacts, including:

- Continuously working to improve our weather and inflow forecasting. For example, all coastal watersheds can now be forecasted down to the hour, which improves the forecast accuracy for extreme events. BC Hydro's hydrology team, including meteorologists, provide weather and inflow forecasts to our planners to prepare for these situations.
- Expanding our hydroclimate monitoring technology. This includes custom-made solutions that have been designed in-house, as well as upgrading snow survey stations to automated, real-time snow and climate stations. Recent BC Hydro hydroclimate data are published in near-real time on **Hydrometeorologic Data (bchydro.com)**, and historic climate data are published in the Pacific Climate Impacts Consortium's Data Portal at [pacificclimate.org/data](https://pacificclimate.org/data).
- Investing in capital projects—like spillway gate replacements—that will increase the resiliency of the system to climate change.



Low water levels at the Comox Dam on Vancouver Island

## 5. Electrification

### We are advancing electrification by supporting our customers

Electrification is the process of transforming our society and economy to end our reliance on the fossil fuels that are driving the climate crisis and instead use low carbon and renewable grid electricity. The provincial government has set a target of reducing climate-changing emissions by 40 percent below 2007 levels by 2030. If we want to meet this ambitious goal, we need to use clean electricity instead of fossil fuels to power our economy and lives.

Launched in 2021, BC Hydro's Electrification Plan covers five fiscal years (F22–F26) and describes the actions that BC Hydro is taking to support climate action by encouraging customers to switch away from fossil fuels, and attract new businesses – mostly those who have their own climate targets and are looking at where their source electricity can be cleaner. We are also looking at ways to make it easier and faster to connect customers to our grid. The Plan allocates \$260 million for incentives, studies, and programs.

More detail on our Electrification Plan can be found at: **Electrification plan (bchydro.com)**

Some recent highlights include:

- **Electric Vehicle Charging Infrastructure:** BC Hydro is committed to meeting customers' needs with more Fast charging stations around the province. Since 2020, we've installed 133 chargers at 81 sites, increasing the number of chargers by 60% and the number of locations by 20%. By 2025, we want to grow these numbers to 325 chargers at 145 sites.
- **Investment in Grid Infrastructure:** We continually monitor and upgrade our distribution system to meet our customer's growing needs for electricity. In the past five years, we have constructed 35 new distribution feeders. An additional 18 distribution feeders are under construction. We are implementing measures to address localized capacity constraints including updating our feeder loading planning criteria in high growth areas, implementing feeder level Demand Side Management, and advancing voltage conversion work to 25 kV in 12 kV areas.
- **Customer Connections:** We're also working to improve customer connections. Last year we connected 33,100 customers which is a 15% increase over previous years. On the distribution side we've been implementing process improvements, a review of our extension policy, hiring more people, and looking at different ways to deliver work. On the transmission side, we're assessing the overall demand for electricity in **B.C.'s northwest** to determine where to invest in the transmission system. This will help our current and future industrial customers electrify their operations while continuing to support economic growth.
- **Electricity Rates:** An important part of our plan is to offer electricity rates to support customers in making the choice to switch away from fossil fuels. In February 2023, we filed an optional residential time-of-use rate with the BC Utilities Commission to encourage customers to shift their electricity from peak hours to other times of the day when more capacity is available.
- **Customer Programs:** We also have 17 active programs and initiatives that we either fund or manage on behalf of the province to help encourage **residents, businesses, and industry** to switch from fossil fuels to cleaner electricity, **locate their business in BC**, and **connect to our grid**.

## 6. Demand-side management

### We continued to support energy conservation and to help our customers make smart choices in managing their energy consumption

In addition to pursuing electrification, BC Hydro also supports demand-side management initiatives, which help customers reduce or manage their electricity use through energy efficiency and conservation and/or shifting the timing of their electricity consumption. Energy efficiency and reducing energy usage wherever possible is an important part of the Clean BC plan. Through these activities, we provide customers with bill saving opportunities, while also helping to offset the need for future energy and capacity resources, lowering the demand on BC Hydro's transmission and distribution infrastructure and reducing our overall costs.

BC Hydro has been building a conservation culture and helping customers save energy and money for over 30 years. In fiscal 2023, we spent approximately \$76 million on demand-side management initiatives, saving over 600 GWh per year — the equivalent of powering approximately 60,000 homes. Energy efficiency is an important component of the Province's CleanBC plan, and supporting these initiatives continues to be a priority for us. We plan to increase demand-side management activity further over the coming years.

Some fiscal 2023 highlights include:

- Our industrial program provides small to large industrial customers an opportunity to reduce their electricity consumption and costs through a suite of offers including training tools, coaching and funding to help customers implement and sustain energy management activities, as well as financial incentives to implement energy saving capital projects. In fiscal 2023, the program helped industrial customers save over 130 GWh per year.
- Our commercial program, which helps large and small businesses make their operations more energy efficient, delivered approximately 50 GWh per year of energy savings in fiscal 2023. The program includes a social housing retrofit offer to provide support for lower income customers living in social housing.
- Our residential home renovation rebate program, which helps customers reduce their home heating costs by improving their home's envelope and upgrading their electric resistance heating to a heat pump, saw its highest level of participation since its inception in 2014. In fiscal 2023, close to 6,000 customers received rebates under this program, including over 5,200 rebates for heat pumps installed. The program also introduced a qualified contractor list to ensure quality installation of heat pumps, and we worked with industry to grow that list to more than 400 heat pump installer companies.
- The retail program expanded its online marketplace to help our customers compare different products with an energy efficiency score as well as their retail price and lifecycle cost, with links then provided to nearby retail partners that sell the products. In fiscal 2023, this online marketplace had over 275,000 customer visits
- In fiscal 2023 we spent over \$7 million on our low income conservation program to help low-income customers save over 8 GWh of electricity, lowering participants' annual electricity bills by over \$900,000. The program also expanded a technical trial to install heat pumps in manufactured homes.
- We continue to expand our Non-Integrated Area conservation program, which enables customers and Indigenous Nations in the Non-Integrated Areas to implement projects that save energy and money, while reducing greenhouse gas emissions from diesel-generated electricity. In fiscal 2023 we introduced a new direct installation program offer to support energy upgrades in commercial buildings. In addition, we expanded our partnership with the Coastal First Nations Indigenous Climate Action Network to extend support for Climate Action Coordinator positions to all remote Indigenous communities in BC. These positions bring capacity to their Nations to enable implementation of energy efficiency projects and diesel reduction initiatives.

## 7. Emissions and offset summary table for buildings, fleet and paper

**Table 2 – BC Hydro 2022 GHG Emissions and Offsets Summary**

<b>GHG emissions created in calendar year 2022</b>	
Total Emissions ( tCO <sub>2</sub> e)	32,639
Total BioCO <sub>2</sub>	768
Total Offsets ( tCO <sub>2</sub> e)	31,871
<b>Adjustments to offset required GHG emissions reported in prior years</b>	
Total Offsets Adjustment ( tCO <sub>2</sub> e)	0
<b>Grand total offsets for the 2022 reporting year</b>	
Grand Total Offsets ( tCO <sub>2</sub> e) to be Retired for 2022 Reporting Year	31,871
Offset Investment (\$25 per tCO <sub>2</sub> e)	\$796,775

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, BC Hydro is responsible for arranging for the retirement of the offsets obligation reported above for the 2022 calendar year, together with any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy ensuring that these offsets are retired on the Organization's behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on its behalf plus GST.



