



BC Hydro 2021 Climate Change Accountability Report

May 2022

 **BC Hydro**
Power smart

This Climate Change Accountability Report for the period January 1, 2021 to December 31, 2021 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 2021 to reduce our greenhouse gas emissions, and our plans to continue reducing emissions in 2022 and beyond.

By June 30, 2022 BC Hydro's 2021 Climate Change Accountability Report will be posted to our website at **bchydro.com**.

Executive sign-off:

May 27, 2022

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

Chris O'Riley, President & CEO

Table of Contents

- 1. OVERVIEW 3
- 2. OUR EMISSIONS 6
- 3. KEY AREAS OF GHG EMISSIONS 7
 - 3.1. BUILDINGS 7
 - 3.2. VEHICLES..... 8
 - 3.3. NON-INTEGRATED AREAS..... 9
 - 3.4. THERMAL GENERATION..... 10
 - 3.5. SF₆ AND CF₄ INSULATING GASES..... 11
 - 3.6. PAPER 12
 - 3.7. CORPORATE TRAVEL..... 13
 - 3.8. INDEPENDENT POWER PRODUCERS 14
- 4. CLIMATE RISK MANAGEMENT 15
- 5. ELECTRIFICATION 17
- 6. BC HYDRO DEMAND-SIDE MANAGEMENT 19
- 7. 2021 GHG EMISSIONS AND OFFSETS SUMMARY TABLE..... 20

1. Overview

In 2021, we continued to take significant climate actions to reduce our greenhouse gas emissions and to support our customers

Climate change is one of the most challenging global issues that we face as a society today. We are already experiencing its impacts in our province with increased wildfires, flooding, sustained temperature extremes and drought—all of which can affect our power system.

BC Hydro's mission is to safely provide our customers with reliable, affordable and clean electricity throughout British Columbia. As a Crown Corporation, we have an important role to play in supporting the climate actions and targets of government. Our five-year strategy provides a refreshed vision for the company that focuses on a cleaner and more sustainable future through electrification. Our vision celebrates our clean energy advantage and our environmental stewardship role in B.C. Sustainability is about making the best choices with available resources; this means leveraging our clean electricity for all British Columbians.

Our clean electricity can make 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 adaptation (ensuring we have a resilient power system) and mitigation (reducing our greenhouse gas emissions and enabling our customers to do the same). Our Greenhouse Gas (GHG) Management Plan is a pillar within our mitigation approach and targets GHG reductions across all areas of our operations where emissions exist and our use of Independent Power Producers (IPPs). The specific measures and targets for Greenhouse Gas 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).

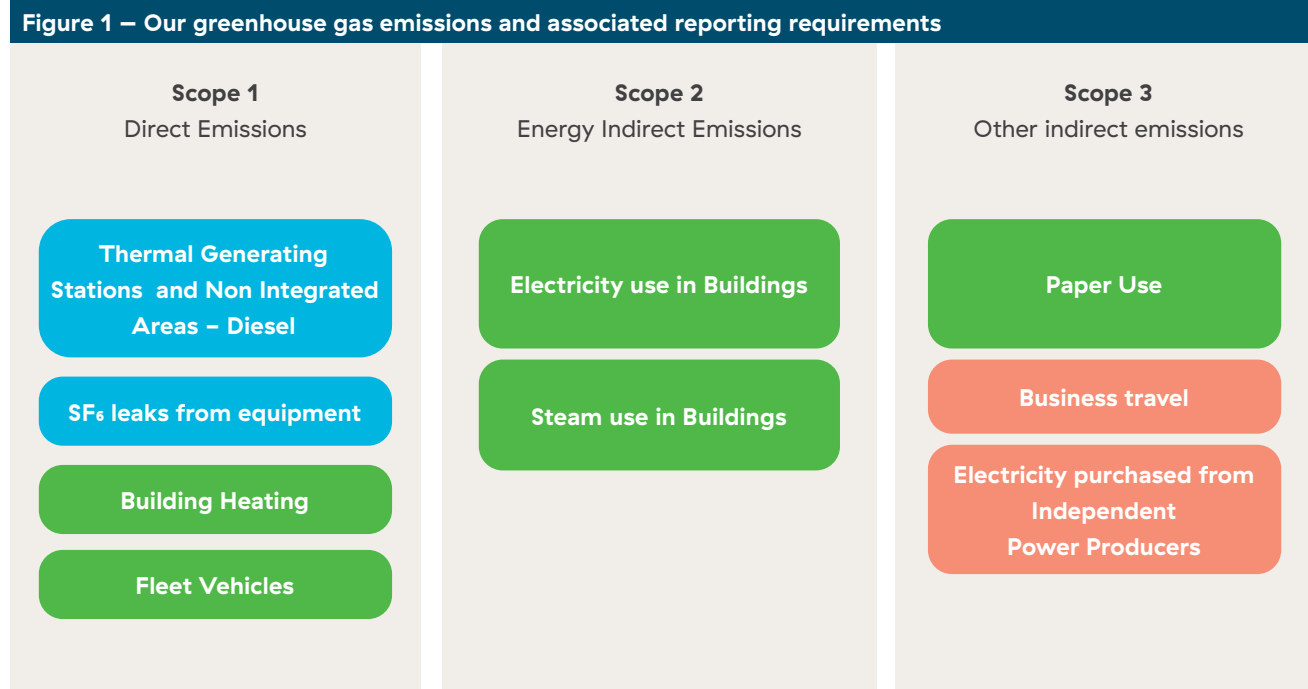
In addition to taking action to make significant reductions in our GHG emissions at BC Hydro, we're also building on our already strong conservation and efficiency program, Power Smart, by introducing measures to help our customers reduce greenhouse gas emissions. We will continue to help customers make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

And finally, our Electrification Plan gives us the opportunity to have our largest and most meaningful impact on the environment, in the economy and in broader society because of the reach and affect it can have on emissions reductions. Our **Electrification Plan** encourages and incentivizes residents and businesses to switch from fossil fuels to clean electricity. The plan also fosters economic development in British Columbia and is expected to result in an additional 3,100 gigawatt hours of load and greenhouse gas emission reductions of 930,000 tonnes per year by the end of fiscal 2026— this is the equivalent of taking about 200,000 cars off the road. Our clean energy has the potential to make a significant difference to the health of the environment, both within B.C. and beyond by displacing more carbon intensive energy sources.

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* and British Columbia's Carbon Neutral Government Regulation. We also report on emissions that we are not required to report by regulation¹, such as emissions from Independent Power Producers (IPPs) and air travel. Our GHG emissions are verified by a third party as required by the Greenhouse Gas Reporting Regulation.



- **Scope 1:** Direct GHG emissions occur from sources controlled or owned by BC Hydro
- **Scope 2:** Indirect GHG emissions are associated with the generation of purchased energy
- **Scope 3:** Other indirect GHG emissions come from business activities (i.e., GHG emissions that are a consequence of BC Hydro's activities but occur from sources not owned by BC Hydro)

- Required by: Carbon Neutral Government Regulation
- Required by: *Canadian Environmental Protection Act*, *BC Greenhouse Gas Industrial Reporting 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 plan since our decisions directly affect provincial GHG emissions.

In 2021, we achieved a 39% 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 for ourselves. 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 forecast reductions.

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, starting with a 41% reduction target in 2021 (relative to our baseline year, 2007).

In 2021, we relied on gas-fired thermal generation from an Independent Power Producer (IPP) to facilitate repair work on the 500kV cables serving Vancouver Island from the Lower Mainland. It is likely that the cables were affected by the heat dome in June—a tangible example of climate change affecting our system. This severe weather event demonstrated our need to ensure a resilient power system and reliable supply of power, and further underlined the importance of reducing our emissions to mitigate climate change. The need to rely on gas-fired IPP energy in this instance resulted in an increase in our indirect GHG emissions as compared to emissions in 2020. To the extent these incremental emissions impact our service targets, the actions in our GHG management plan will allow us to make up any difference in the coming years.

Figure 2 – BC Hydro GHG Emissions, Targets and Forecasts (kt CO₂e)

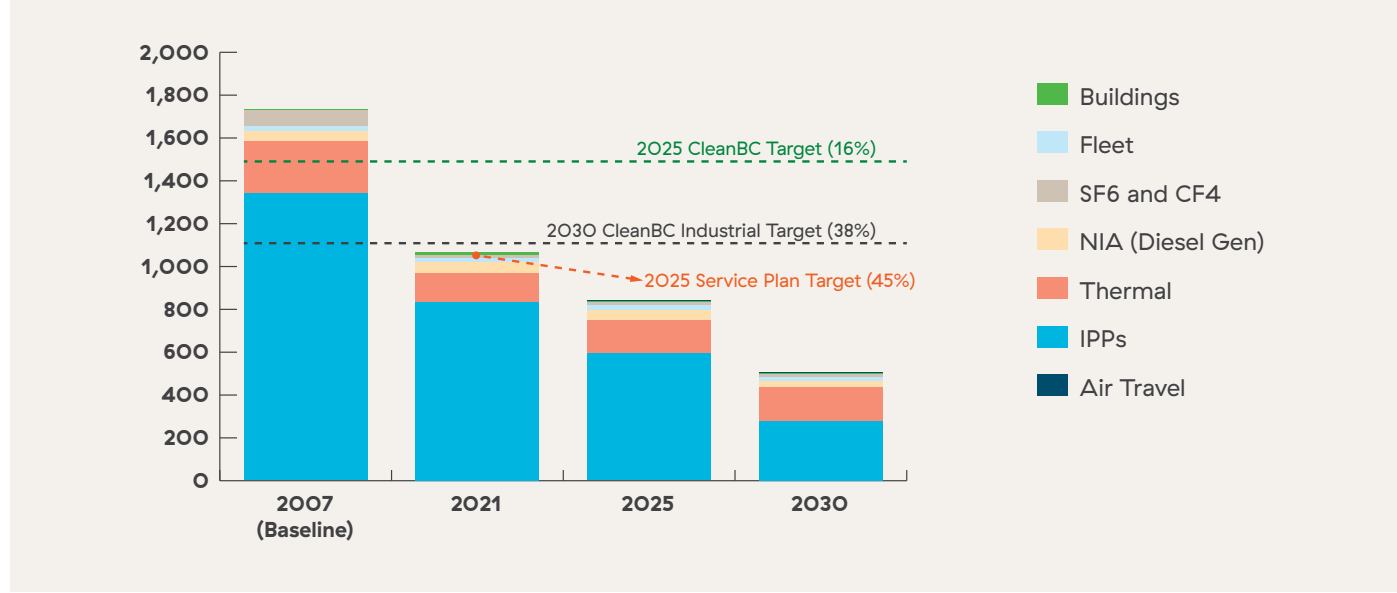


Figure 3 – BC Hydro 2021 GHG Emission Distribution

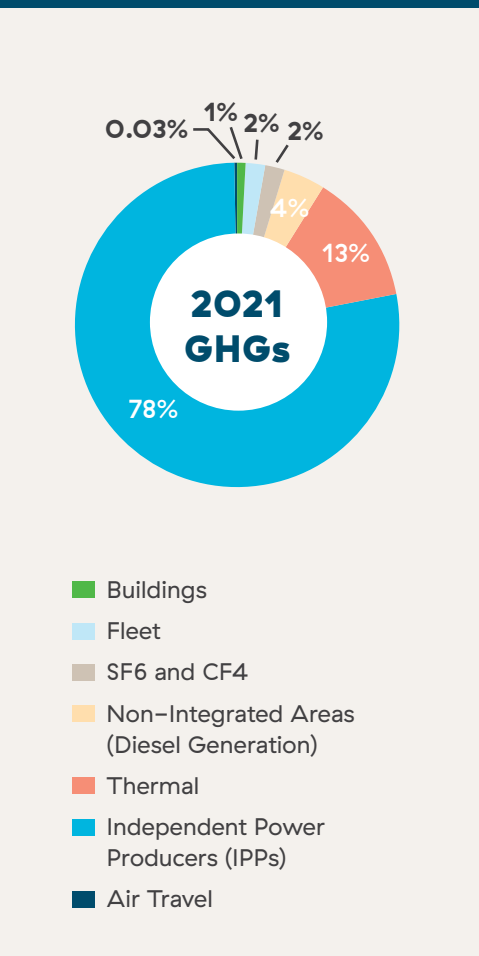


Table 1 – BC Hydro GHG Emissions Summary

GHG Category	Baseline	2020	2021		2025		2030	
		Actual	Actual	Change from Baseline	BC Hydro Forecast	BC Hydro Forecast Reduction	BC Hydro Forecast	BC Hydro Forecast Reduction
	ktCO ₂ e	ktCO ₂ e	ktCO ₂ e	%	ktCO ₂ e	%	ktCO ₂ e	%
Buildings	7.4	11.4	11.0	49%	6.3	-15%	4.6	-38%
Fleet	22.3	20.6	20.9	-6%	22.1	-1%	19.7	-12%
SF6 and CF4	70.4	10.5	13.7	-81%	15.0	-79%	15.0	-79%
NIA (Diesel Gen)	46.3	44.8	47.0	1%	44.1	-5%	30.4	-34%
Thermal	246.2	162.1	134.8	-45%	157.4	-36%	155.1	-37%
IPPs	1,339.4	595.0	833.4	-38%	592.2	-56%	276.4	-79%
Air Travel (domestic)	2.4	0.5	0.3	-87%	1.4	-40%	1.4	-40%
Paper	0.2	0.1	0.1	-78%	0.1	-40%	0.1	-40%
Totals	1,734.7	844.9	1,061.2	-39%	838.6	-52%	502.7	-71%
Provincial Target (CleanBC)					1,457.1	-16%	1,075.5	-38%
Amount Plan exceeds target					618.6	-36%	572.8	-33%
BC Hydro Service Plan Target (F26 – 45%)					954.1	-45%	-	-

Notes:

- 1) Baseline year is 2007
- 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

■ GHG Emissions decreased from baseline

■ GHG Emissions increased from baseline

3. Key areas of GHG emissions

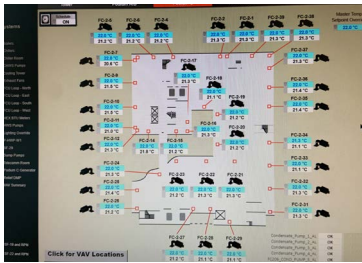
3.1 Buildings

GHG emissions from our core buildings portfolio were 14% less than baseline.

BC Hydro owns and leases over 280 buildings in more than 80 municipalities across British Columbia. There have been numerous retrofits, upgrades and new construction in our buildings portfolio, for which we follow an integrated design process with energy efficiency, GHG emissions reduction and high performance building elements in mind.

Our design standards have evolved to include energy efficiency targets, low carbon directions and considering electric options first for our buildings. We will continue to install low carbon heating systems in our new facilities and explore options for upgrading our existing buildings where it makes financial and technical sense. The priority for any capital asset replacement and electrification will be for those building systems that are at or close to end of their useful life.

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



The Edmonds facility's building automation system was upgraded to include remote access capability, long term trend log, and smart building analytics.

GHG reduction and energy conservation measures were identified and implemented which yielded a higher occupant comfort, systems efficiency and an overall 2.4% reduction in energy use.



At our Dunsmuir building two 315 tonne variable speed chillers were installed with full integration with the building automation system. The magnetic bearings and variable speed drives deliver superior efficiency and reduce maintenance requirements relative to conventional oil-lubricated chillers. Fluorescent pot light fixtures were upgraded to LED fixtures to save electricity and to reduce maintenance costs.



The Long Beach field office was completed in 2021. The project followed an integrated design process to include a low carbon systems approach. The building is heated by electricity with backup propane for very cold days, which will result in lower emissions.



The Surrey Fleet Services building underwent a thorough HVAC upgrade in 2021. The five large gas fired rooftop units were replaced with electric heat energy recovery ventilators. This system pre-heats the fresh air to the building by using freely available space air before it gets exhausted. New infrared tube heaters with more efficient heat distribution were installed. New ceiling fans also help circulation of air for a higher occupant comfort.



The Lower Mainland South building was upgraded to highly energy-efficient heating, ventilation, cooling and lighting systems. A new electric domestic hot water heater was installed to displace the gas use by an old domestic hot water heater. The new infrared ceiling tubes with more efficient heat distribution were installed. All metal halide lighting fixtures in the truck bays were replaced with LED fixtures.

Although the overall building portfolio and GHG emissions have increased since baseline due to the temporary Site C construction camp, this temporary increase of emissions is balanced against the project's operating value as a long term source of clean, renewable and cost-effective electricity. Emissions from our core buildings portfolio have decreased by 14% since baseline.

3.2 Vehicles

GHG emissions from our Fleet were 6% below baseline.

BC Hydro's Fleet Services is responsible for the acquisition and life-cycle management of our fleet assets. Fleet Services manages over 3,000 vehicles, trailers, and pieces of equipment to support our front line operations. 93% of our light duty fleet sedan vehicles are either zero emission or hybrid-electric. 70% of the GHGs emitted from our Fleet are from non-Light Duty Vehicles such as bucket trucks that are required to respond to, restore, and maintain our power system infrastructure. While technologies for reducing GHGs in this vehicle category are not readily available, we are utilizing pilots as a means of supporting technology development. We are also leveraging programs to increase the efficiency of BC Hydro's fuel consumption.

Our Fleet GHG emission reduction plan includes investing in more zero emissions and electric-hybrid vehicles when these options are commercially available and meet operational requirements including:

- Incorporating new and existing commercially available technologies such as hybrids, electric vehicles on light duty pickup trucks and Sport Utility Vehicles (SUVs);
- Further piloting green fleet products in all vehicle classes such as using electric aerial equipment on heavy trucks; and,
- Implementing a telematics program that will provide actionable operational data related to fuel use, vehicle use and unproductive idling.

In 2021, the following GHG reduction actions were undertaken:

- Continued to pilot hydrogen Fuel Cell Electric Vehicles purchased in 2020.
- Ordered 17 new hybrid light duty half-ton pickup trucks.
- Purchased 18 hybrid mid-size SUVs. Performance tracking and review underway.
- Planned to purchase five electric light duty half-ton pickup trucks. Based on our historical statistics and manufacturer's fuel economy, each Zero Emission Vehicle (ZEV) pickup will eliminate an estimated 7.3 tCO₂e annually. We have identified operational groups that will pilot these ZEVs as quickly as possible.

Fleet emissions in 2021 were comparable to 2020 and 6% below baseline.



Toyota Mirai



Ford F150 Hybrid

3.3 Non-integrated areas

Non-Integrated Area emissions were 1% 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 clean 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:

- Working with Indigenous communities on the development of community energy plans, load forecasts, and resource assessments to support clean energy development
- Sharing data and information with project developers to size and plan for clean energy project integration into BC Hydro's isolated NIAs
- Providing subject matter expertise to communities on the development of clean 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
- Active Demand Side Management (DSM) programs in 10 of our 14 NIAs
- Working with 6 NIAs on specific clean-energy diesel reduction projects

While we work with communities to advance clean energy projects and support other diesel reduction activities in NIAs such as demand-side management initiatives, we are also preparing for an overarching strategy focused on NIA diesel reduction.

We are allocating resources, establishing governance and developing a strategy to support NIA diesel reduction across the province.

As we develop our strategy and set targets, we will consult with the Provincial Government and Indigenous communities.

Non-integrated area emissions increased from 2020 and were 1% above baseline. This variance is a result of normal changes in year-over-year electricity demand based on influencing factors such as weather.



Kwadacha Aatse Davie School Solar System by Green Sun Rising Inc.

3.4 Thermal Generation

BC Hydro thermal power generation emissions were 45% lower than baseline.

BC Hydro owns and operates two thermal generation plants in Fort Nelson and Prince Rupert.

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 grid—it's not part of our integrated grid. We anticipate that as escalating carbon price will gradually reduce the operation of the Fort Nelson plant.

Fort Nelson Generating Station operated less in 2021; as a result emissions were less than in 2020 and were 45% lower than baseline.



Prince Rupert Thermal Generating Station



Fort Nelson Thermal Generating Station

3.5 SF₆ and CF₄ insulating gases

SF₆/CF₄ emissions were 78% below baseline.

Sulphur hexafluoride (SF₆) and carbon tetrafluoride (CF₄) are potent greenhouse gases used in electrical equipment worldwide. SF₆ and CF₄ have 22,800 and 7,390 times more global warming potentials than CO₂, respectively. Equipment leaks can result in the release of these gases to the atmosphere.

Since 2007, SF₆ and CF₄ releases have decreased by 78% through established maintenance programs and targeted equipment repair and replacements. Our practice is to seek alternatives to SF₆ and CF₄ insulated equipment by using more environmentally friendly solutions where these are viable, reliable, safe and at a reasonable cost. For example, 15 SF₆-free medium voltage circuit breakers were installed in fiscal year 2022 and we are working on pilot installations on higher voltages that will further reduce SF₆ gas use.

In fiscal year 2022 we repaired 25 SF₆ leaks on equipment and implemented a SF₆ tracking App, training 192 gas handlers to improve gas tracking.

SF₆/CF₄ emissions were 78% below baseline. The increase from 2020 was attributed to a one-time retroactive adjustment for SF₆/CF₄ leaks from a gas insulated switchgear system quantified during 2021 maintenance activities.



High Voltage Circuit Breaker



Medium Voltage Circuit Breaker

3.6 Paper

Emissions from paper were 78% below baseline.

Although GHG emissions from paper use accounts for a small fraction of our emissions, we continue to implement improvement actions. In 2021, we continued with network printers and photocopier set to double-sided printing by default and we held workshops to promote electronic signatures and stamps to reduce printing.

We continue to have one of the highest rates of paperless billing among those utilities surveyed by Electricity Canada and we exceeded our Fiscal 2022 target for paperless billing (63.5%). We improved from 60.9% in Fiscal 2020 to 63.9% in Fiscal 2022 with 96,582 additional accounts transitioning into paperless billing. This was a result of our on-going messaging to go paperless and a targeted initiative. In June 2021 we emailed 75,000 papered accounts with \$5 gift card to convert to paperless, resulting in 2,334 accounts converting.

In 2021, emissions from paper were 78% below baseline and 23% lower than 2020 with pandemic restrictions still in effect and staff working remotely.

3.7 Corporate travel

Air travel emissions were 87% below baseline.

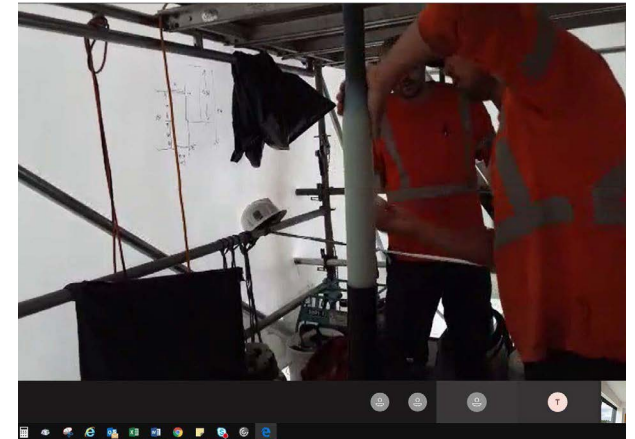
Our GHG emissions from air travel remained low in 2021 and 87% below baseline. Over the course of the pandemic, we adopted new technology, skills and practices that have helped us connect virtually with colleagues, First Nations, regulators and stakeholders from across the province. As we look to incorporate these learnings into the future of our work, we're considering how we can sustain the practices that made us more effective and resulted in cost savings and emission reductions.

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.

In 2022, we initiated our flexible work model for office-based workers which will provide employees who want to and whose work allows for it, the opportunity to work from home some of the time. This will reduce GHG emissions with workers travelling less to and from the office.

We've also had success using virtual options in the field. On a project at Camosun Substation, transmission cable crews used virtual meeting software to broadcast the installation to the overseas cable manufacturer for quality assurance. Typically, the manufacturer would have been on site at the substation to oversee the installation for warranty purposes, in this case the supplier was located overseas and would have had to travel from Japan.

Air travel emissions were less than 2020 and 87% below baseline with virtual meetings well implemented and some pandemic travel restrictions still in effect.



An overseas video call for our Camosun Substation project.

3.8 Independent Power Producers

IPP emissions were 38% below baseline.

In 2021, IPPs represented 78% of our total direct and indirect GHG emissions. 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, thus presenting a key opportunity for reducing GHG emission in our overall GHG Management Plan.

The largest sources of GHG emissions from IPPs with BC Hydro are from two gas-fired thermal generation facilities: McMahon Cogeneration and Island Generation. McMahon Cogeneration operates as a baseload facility which means it is continually operating to produce electricity, and as a result it's a significant source of GHG emissions. In contrast, Island Generation, located on Vancouver Island, operates as a dispatchable on demand power supply facility and in recent years it has generally been used on an infrequent basis. Island Generation was used to a greater extent in 2021 because it was required to provide reliability support while repairs were made to submarine transmission cables that provide power to Vancouver Island.

Between 2007 and 2021, GHG emissions related to purchases of electricity from IPPs were reduced by 38%, from approximately 1.34 million tCO₂e to approximately 0.83 million tCO₂e.² Emissions from these sources are anticipated to decrease further as we work to achieve our 2025 and 2030 reduction goals. The forecast reduction in emissions from IPPs contributes significantly to the achievement of targets set in our GHG Management plan.

We have set an objective to reduce GHG emissions through clean electricity. As new IPP resources are required in the future, we would look to acquire electricity from clean or renewable resources to meet that need.

In 2021, the GHG performance of our IPP portfolio is summarized as follows:

- 76% of delivered energy from IPPs came from non-GHG emitting facilities, such as hydro, wind and solar generation facilities.
- Indirect GHG emissions from IPPs were reduced by 38% compared to baseline.
- Indirect emissions from IPPs were 40% higher than in 2020.
- We needed Island Generation to operate approximately 10 times more than in 2020, resulting in a 0.21 million tCO₂e increase in our indirect GHG emissions.



The 15 MW Zonnebeke Wind Project reached commercial operations in March 2021, and was developed as a partnership between West Moberly First Nations and Natural Forces. Photo by Natural Forces.

² Total emissions, including direct and indirect emission (buildings, paper, fleet, direct industrial emissions and IPPs), are 1.6% of total industrial emissions reported by the Province (2019).

4. Climate risk management

We continued to strengthen our adaptation plans and stakeholder relationships in response to challenging weather events.

British Columbia experienced one of its worst years for storms in 2021. The year began with a series of intense windstorms. In late June, a heat dome resulted in record high temperatures and record electrical summer demand.

The heat combined with below-average precipitation the preceding fall and winter, resulted in severe dry conditions that were ideal for wildfires. Wildfires burned almost 870,000 hectares land in B.C. in the Okanagan, the Cariboo, the far southeast, and the eastern side of the Rocky Mountains. Tragically, the wildfire in 2021 reached the community of Lytton and damaged property beyond livability including the electrical infrastructure.

The end of the year saw the devastating impact of an atmospheric river that resulted in high winds, mudslides and severe flooding. Over 219,000 customers in parts of the Lower Mainland, Vancouver Island and the Interior were out of power.

Throughout and across all of these weather-related events, our emergency response team and field crews were instrumental to restoring power to communities throughout the province.

Recognizing the increase in severity and frequency of extreme weather events, we're continuing to work on our Climate Change Adaptation Plan that outlines actions to prevent, detect, manage, and respond to climate change. For example, in 2021, we leveraged existing tools such as our Geographical Information System to include climate data, advanced our Climate Change Vulnerability Study, and further improved our Wildfire Mitigation Strategy.

In 2021, we strengthened relationships with communities, and we worked closely and collaboratively with municipalities, industry, researchers, and other levels of government on climate change actions aimed at building resiliency and mitigating climate related risks.



Photos of the severe flooding due after an atmospheric river weather event.

We are:

- A member of the City of Vancouver’s technical advisory group for the Sea2City Design Challenge that is looking at adaptation processes for sea level rise beyond 1 meter;
- On the technical advisory group for B2E Zero Emission Building Exchange, part of Metro Vancouver Zero Emissions Innovation Centre;
- Participating in the Sunshine Coast Regional District’s Climate Change Adaptation Project which is conducting a risk assessment and vulnerability study of the region;
- Working with the National Research Council to study impacts from flooding;
- Collaborating with Technical Safety BC with their focus on climate related impacts to current and new technologies;
- Collaborating with the Community Energy Association on topics related to local government awareness with respect to energy efficiency, community energy planning and EV charging mobility; and
- Working closely with municipalities most impacted by the 2021 severe weather events to restore power.

We continue to investigate the application of new technologies like energy storage to increase the resilience of our electrical infrastructure.



Electrical meters that were removed from flood-affected buildings following the atmospheric river weather event.

5. Electrification

We continue to advance electrification to reduce provincial GHG emissions.

The Province's CleanBC climate action plan put B.C. on a path to reduce GHG emissions, build a low-carbon economy, and make life more affordable. While almost all the electricity we produce is from clean or renewable resources, when it comes to the energy we consume in our homes and buildings, cars and industrial operations, nearly three-quarters of the energy used comes from fossil fuels. The CleanBC Plan includes actions to increase the adoption of electric vehicles and switch from fossil fuels to electricity, but to help the Province meet its climate goals, customers must increase their use of clean electricity even more. That's why we published an **Electrification Plan** in September 2021.

Electrification refers to switching from fossil fuels like gasoline, diesel and natural gas to clean electricity. BC Hydro has been supporting electrification initiatives since 2016, but our Electrification Plan aims to increase awareness of existing programs and further address barriers to electrification with new programs. It offers customers the support, tools and incentives to choose clean electricity over the fossil fuels that are currently being used to power homes, businesses, industries and vehicles across the province.

Our **Electrification Plan** encourages and incentivizes residents and businesses to switch from fossil fuels to clean electricity. The plan also fosters economic development in British Columbia and is expected to result in an additional 3,100 gigawatt hours of load and greenhouse gas emission reductions of 930,000 tonnes per year by the end of fiscal 2026— this is the equivalent of taking about 200,000 cars off the road.

To get there, our \$260 million Electrification Plan focuses on attracting new customers and encouraging existing customers to make the switch from fossil fuels to clean electricity in three key areas: buildings, transportation and industry.

- Buildings: Residential and commercial buildings in B.C. represent almost 11 per cent of the province's total emissions —mostly due to heating. We're encouraging a shift towards renewable energy by introducing new heat pump rebates and working with different levels of government and standard-making bodies to increase energy efficiency standards and standards that advance electrification for builders and developers.
- Transportation: Cars, trucks and other transportation equipment account for about 40 per cent of B.C.'s greenhouse gas emissions. One way BC Hydro plans to encourage clean transportation is by expanding its fast charging network. BC Hydro's goal is to have 325 charging stations at 145 sites across the province by the end of 2025 as well as introducing new programs to support commercial fleets, including large trucks and buses, to switch from carbon-emitting gasoline and diesel to clean electricity.
- Industry: This sector accounts for about 40 per cent of greenhouse gas emissions, from sources like compressors in the natural gas sector, diesel engines in mining and forestry, and process heat in the forest products industry. Much of this could be powered by clean electricity, and BC Hydro will provide incentives to businesses interested in making the switch. Our Electrification Plan also includes incentives to attract new clean industry to B.C., including hydrogen production, carbon capture, synthetic fuel production and data centres. BC Hydro's Electrification Plan includes about \$190 million for new incentives, energy studies and other programs to encourage customers to make the switch. Finally, BC Hydro plans to spend about \$50 million to attract new customers that are looking to power their businesses with clean electricity. This includes new clean tech and hydrogen production facilities. And, we will work hard to make connecting to our system easier and more efficient for all of our customers.

One example where we're partnering with a business to electrify their operation is supporting Creative Energy's plan to decarbonize their steam generation plant in Downtown Vancouver. At this site, Creative Energy burns natural gas to produce steam that heats over 200 buildings, including St. Paul's Hospital, BC Place Stadium, Rogers Arena, the Vancouver Central Library, the Vancouver Convention Centre, and BC Hydro's Dunsmuir building. Creative Energy is planning to electrify their baseload steam generation to meet the needs of their customers for clean energy. The project will reduce nearly 40,000 tonnes of CO₂e per year and is expected to be one of the largest thermal fuel switch projects in Canada.

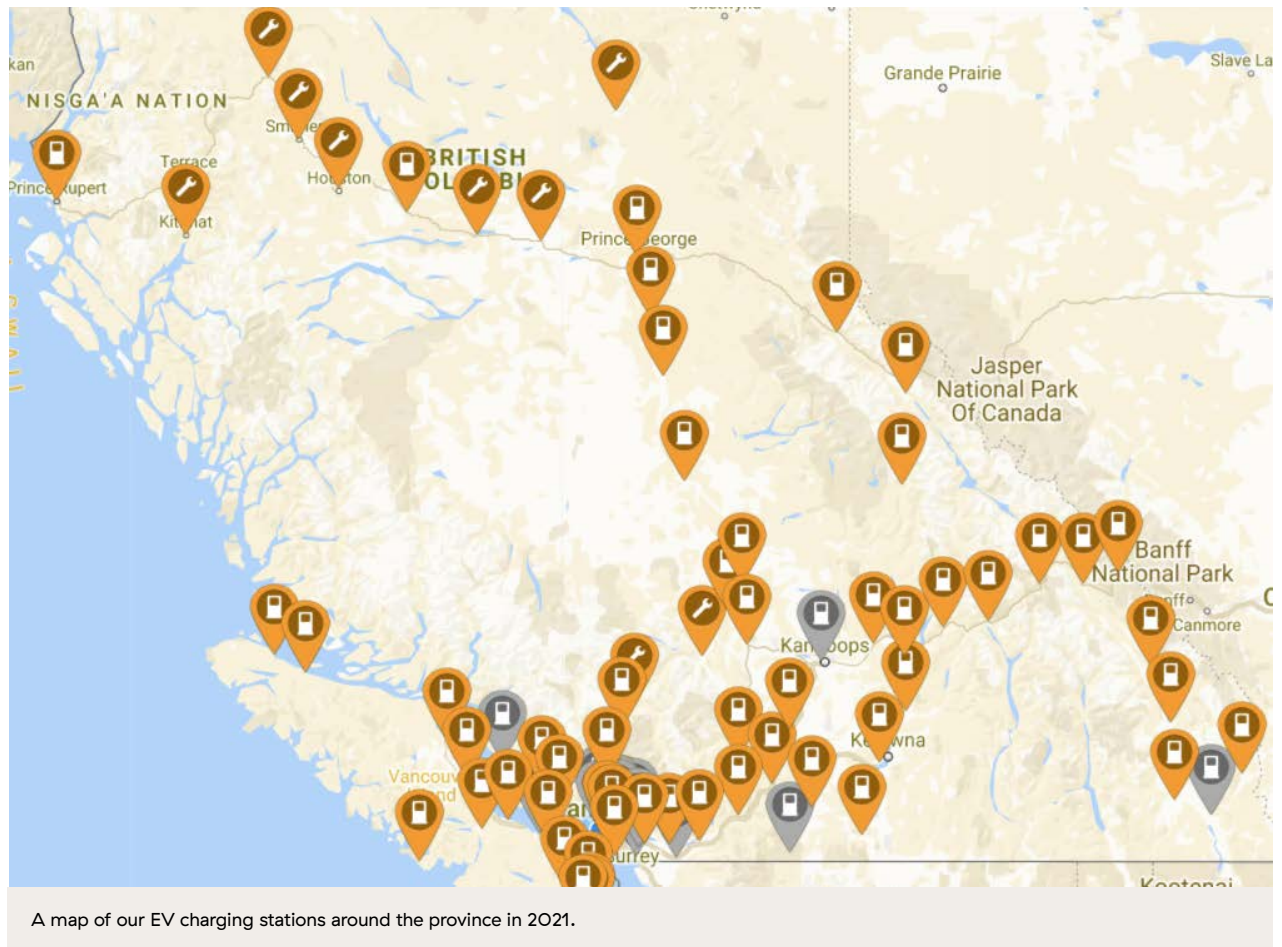
Supplying power to the Creative Energy project will require construction of a 1.2 km 69kV transmission circuit from Murrin Substation (MUR) to Creative Energy's site at 720 Beatty Street. This will also provide electrical capacity for further decarbonization of their steam production as part of future phases. We intend to connect our Dunsmuir BC Hydro building to the new electrified generating plant once it is in service.

Current fast charging stations

We continued to promote electric vehicle adoption across the province

Electric vehicles (EVs) and plugin hybrid electric vehicles (PHEVs) are projected to become lower cost alternatives to conventional vehicles for most drivers within the next decade, even without additional economic incentives. EV charging infrastructure is an essential component to achieving a highly electrified transportation sector in B.C. and BC Hydro will play a key part – either through Direct Current Fast Charging (DCFC) infrastructure expansion or enabling reliable electricity supply to potential fleet charging depots.

As part of the effort to actively remove barriers and support the wider adoption of EVs, we have focused on building out a network of public DCFC stations, covering all major and minor highways, and major roads across British Columbia. By December 2021 we had 99 charging stations operational in our fast charging network. At least 25 more stations will be installed by the end of June 2022.



Our EV network map

(<https://electricvehicles.bchydro.com/charge/public-charging/our-fast-charging-network>)

6. BC Hydro demand-side management

We continued to support energy conservation and the switch to more environmentally friendly energy sources.

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. Through these activities, we provide customers with bill saving opportunities, which in turn reduces our overall costs and helps meet our future resource needs.

BC Hydro has been helping customers save energy and money for over 30 years. In fiscal 2022, we spent over \$85 million on demand-side management initiatives, saving over 650 GWh per year – the equivalent of powering approximately 65,000 homes. Supporting these initiatives continues to be a priority for us, which is why we plan to invest \$296 million between fiscals 2023 and 2025 on demand-side management.

Some fiscal 2022 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 2022, the program helped industrial customers save over 150 GWh per year.
- Our commercial program, which helps large and small businesses make their operations more energy efficient, delivered over 60 GWh per year of energy savings in fiscal 2021. The program also 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 2022, the program saved approximately 9 GWh per year and close to 3,800 customers received rebates for heat pumps installed under this program. In the coming year, BC Hydro will continue to increase customer awareness through education and promotion, expand industry installation capacity through training and use incentives to drive even more heat pump installations via trained and qualified contractors.
- The Retail program launched an 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. For fiscal 2022, this program saved close to 6 GWh of savings per year.
- BC Hydro has spent over \$5 million on its Low-Income conservation program to help low-income customers save close to 5 GWh hour of electricity and lower participants' annual electricity bills by \$465,000. The program also includes a component that specifically supports Indigenous communities.
- BC Hydro also offers a Non-Integrated Area Program which helps customers and Indigenous Nations in the Non-Integrated Areas to advance energy efficiency. Reduction of consumption in these areas reduces high-cost electricity production as well as BC Hydro's greenhouse gas (GHG) emissions from diesel generation in communities that are not connected to BC Hydro's integrated system. A notable achievement in our fiscal year 2022 includes saving 400,000 kWh of electricity by supporting Indigenous communities with the installation of energy savings products in 145 homes and heat pumps in 80 homes. Furthermore, BC Hydro continued to provide support for Climate Action Coordinator positions in remote Indigenous communities. These positions bring capacity to their Nations to enable implementation of energy efficiency projects and diesel reduction initiatives.
- BC Hydro also provides technical and financial support to government bodies for the development and identification of codes and standards that focus on energy efficiency and climate change. Examples include supporting carbon pollution standards, and the BC Energy Step Code.

7. Emissions and offset summary table

Table 2 – BC Hydro 2021 GHG Emissions and Offsets Summary

BC Hydro GHG emissions and offset for 2021	
GHG emissions created in calendar year 2020	
Total emissions (t CO ₂ e)	32,833
Total BioCO ₂	818
Total offsets (t CO ₂ e)	32,016
Adjustments to offsets required GHG emissions reported in prior years	
Total offsets adjustment (t CO ₂ e)	0
Grand total offsets for the 2021 reporting year	
Grand total offsets (t CO ₂ e) to be retired for 2021 reporting year	32,016
Offset investment (\$25 per t CO ₂ e)	\$800,400

Retirement of offsets:

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 2021 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.

