2020 Climate Change Accountability Report

island health

CONTENTS

INTRODUCTORY NOTE

This is Island Health's eleventh annual report on the previous year's greenhouse gas emissions, steps taken to achieve carbon neutrality and emissions reduction efforts. The first report was published on July 1, 2010 and the Executive Summary optimistically stated: "As of 2010 the VIHA's carbon emissions are 13% below 2007 carbon emissions. VIHA's goal is to continue to reduce carbon emissions to meet the 2020 target of being 33% below 2007 emissions." Since that time, governments, executives, the health authority's name and even the emissions target have changed. What has not changed is Island Health's commitment to reduce greenhouse gas emissions and to adapt to the changing climate.

This commitment is embedded in the organization's Strategic Energy Management Plan, but it will take more than an energy management plan to achieve the target. It is essential to have sustained support from the Ministry of Health with policies and capital funding; the Climate Action Secretariat providing direction, education, awareness and research; the utility partners with infrastructure, rates and provision of low carbon energy and ongoing optimization of operations by Facilities Management. Recent mandate letters, capital policy changes and project funding increases by the Ministry of Health indicate their commitment and support for Island Health's efforts.

Starting in 2010, Island Health began tracking and reporting greenhouse gas emissions. Going back as far as 2008, energy and emissions reduction projects were included within the existing capital and operational boundaries of the health authority. In 2015, the Ministry of Health introduced the Carbon Neutral Capital Program (CNCP) to provide health authorities access to minor capital funding for projects focused on reducing emissions. This funding doubled in 2020. Since the CNCP started, Island Health has invested over $10M in emissions reduction projects for existing facilities. However, reaching the 2030 target will require at least four times that investment in retrofits, as well as additional investments to electrify the fleet and building all new facilities to achieve net zero emissions. New construction projects present opportunities to reduce emissions and with each new project, more ambitious emissions targets are established.

The demand for health care continues to grow and this pressure has resulted in increased floor area, leading to higher greenhouse gas emissions and demand on the environment. A year into the pandemic has also brought significant changes to how Island Health delivers care, and some of those changes, for the short-term, have reduced the need for space and possibly greenhouse gas emissions, such as remote work, the use of virtual care, and programs such as Hospital at Home. Coming out of the pandemic there will be lessons learned and innovations that will improve the delivery of care and possibly reduce environmental impacts.

Science tells us the pandemic will end and maybe even fade from memory; however, climate change will continue to be an increasing threat to the health and wellbeing of those we care for. Island Health has already experienced the impacts of climate change and identified the need to take measures to reduce risk. Recent policies from the Ministry of Health require health care organizations to consider future climate in all new capital expenditures. This aligns with Island Health's efforts and is supported by the completion of the Climate Resilience Guidelines for BC Health Facility Planning & Design. The guidelines were developed through a collaborative effort by the province's health care organizations along with designers and many other stakeholders. Island Health also contributes to municipalities' and regional

districts' development of climate change strategies. It is clear that preparing for climate change cannot happen in isolation. It requires the combined efforts of many stakeholders within Island Health and beyond. Together we can advance climate change resiliency, while continuing to provide excellent care for everyone, everywhere, every time.

Kim Kerrone
Vice President
Support Services & Chief Financial Officer
Island Health

1. Overview

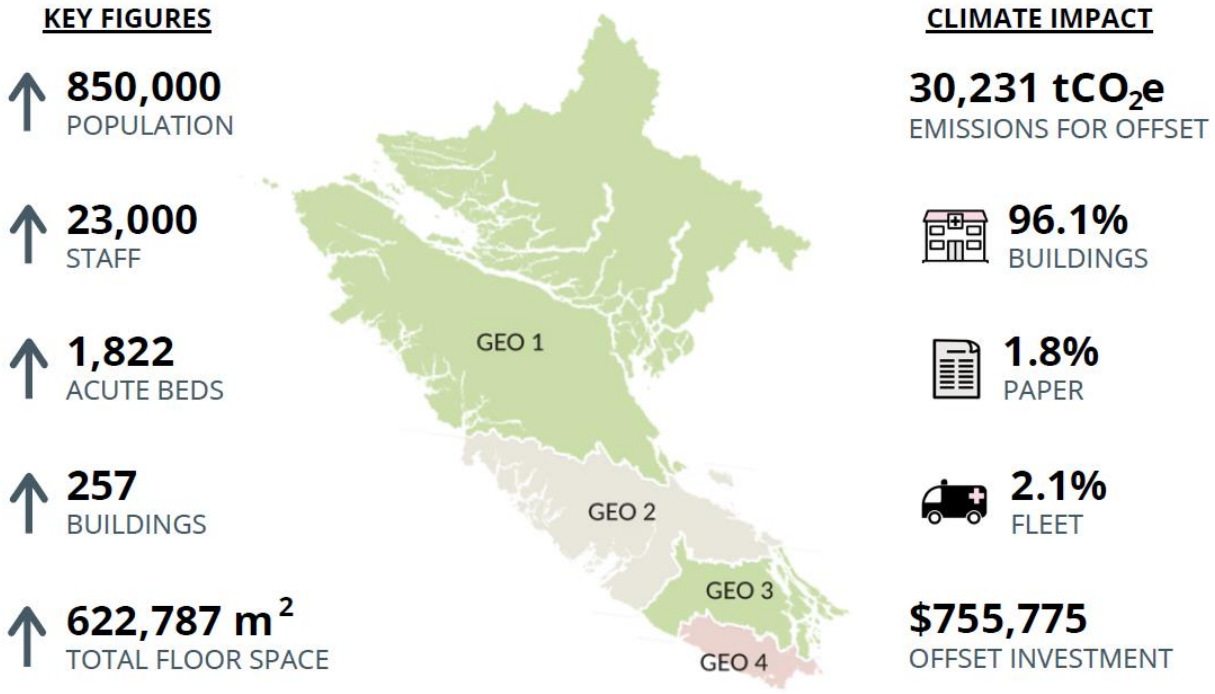
This Climate Change Accountability Report for the period January 1, 2020 to December 31, 2020 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2020 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2021 and beyond.

By June 30, 2021, Island Health's final 2020 Climate Change Accountability Report will be posted to our website at www.islandhealth.ca.

About Island Health

Approximately 23,000 health care professionals, technicians and support staff at Island Health provide health care to more than 850,000 people on Vancouver Island; the islands in the Salish Sea and Johnstone Strait; and the mainland communities north of Powell River and south of Rivers Inlet.

Figure 1: Island Health 2020 Numbers at a Glance



Year after year, Island Health expands to serve its growing communities. In 2020, the health authority experienced a rise in acute beds, buildings and total floor space, displayed by upward arrows in Figure 1. Since first achieving carbon neutrality in 2010, the health authority's total floor space has increased by 19%. Facilities are generating fewer emissions per square metre, but total floor space continues to grow. Growth of the organization is a challenge when trying to reduce emissions to meet the provincial emissions reduction targets. Greenhouse gas emissions for offsetting are 8% below 2010 levels, but need to reach a 50% reduction in emissions from buildings, and 40% reduction in emissions from fleet vehicles and paper by 2030.

Commitment

The *Climate Change Accountability Act,* amended in 2019*,* introduced requirements for public sector organizations (PSOs) to minimize adverse environmental effects and to manage risks arising from a changing climate. The *Act* also requires PSOs to be carbon neutral and achieve prescribed targets.

Released in 2018, *CleanBC* outlines a pathway towards achieving the prescribed emissions reduction targets. The target for public buildings is a 50% reduction in greenhouse gas emissions from 2010 levels by 2030. Emissions from public sector vehicles will strive for a 40% reduction by the same year.

Island Health has affirmed its commitment to being a positive contributor to environmental sustainability and climate change response. The health authority strives to advance environmental stewardship best practices in its buildings, services, processes and culture.

Accordingly, new infrastructure is designed and constructed to minimize adverse environmental effects, and, starting in 2020, be resilient to future climate extremes. Island Health operates four LEED Gold facilities, as well as one LEED Silver facility. As of 2021, new construction projects will pursue LEED Gold certification, reduce greenhouse gas emissions by a further 50% relative to the LEED Gold baseline and be adapted for future climate.

2020 Emissions and Offsets Summary Table

Table 1: Island Health's Greenhouse Gas Emissions and Offsets for 2020

GHG Emissions created in Calendar Year 2020	
Total Emissions (tCO_2e[1])	30,283
Total $BioCO_2$[2]	52
Total Offsets (tCO_2e)	30,231
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO_2e)	1,754
Grand Total Offsets for the 2020 Reporting Year	
Grand Total Offsets (tCO_2e) to be Retired for 2020 Reporting Year	31,985
Offset Investment ($25 per tCO_2e)	799,625

To reduce its emissions to net-zero, Island Health invests in emissions reduction projects by purchasing BC-based offsets through the provincial government. The offset payments provide incentives to BC-based

[1] Tonnes of carbon dioxide equivalent (tCO_2e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

[2] "Biogenic" portion ($BioCO_2$) of the emissions from biomass, renewable natural gas and biofuels are not required to be offset due to their renewable source.

projects that reduce emissions through greenhouse gas removal or avoidance according to provincial regulations. These projects support British Columbia's green economy and provide social, environmental and economic benefits to all British Columbians. The offset projects can be viewed on the BC Carbon Registry.

Retirement of Offsets

In accordance with the requirements of the *Climate Change Accountability Act* and *Carbon Neutral Government Regulation*, Island Health (the Organization) is responsible for arranging for the retirement of the offsets obligation reported above for the 2020 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 (the Ministry) 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.

2. EMISSIONS TRENDS

Table 2 provides detailed emissions information for the 2010-2020 period, including carbon offset costs, emissions per full-time equivalent employee and emissions per square metre of floor area. Figure 2 shows total emissions for offsetting (light blue bar) and exempt emissions (dark blue bar) over the same period, compared to the 2030 emissions target (red line).

Due to the COVID-19 pandemic, the Province directed all public sector organizations (PSOs) to use their 2018 greenhouse gas emissions as a placeholder for the 2019 reporting year. This allowed PSOs to meet legislated requirements, while providing flexibility as the public sector responded to the health emergency. In this report, the 2018 placeholder has been replaced with actual 2019 emissions data.

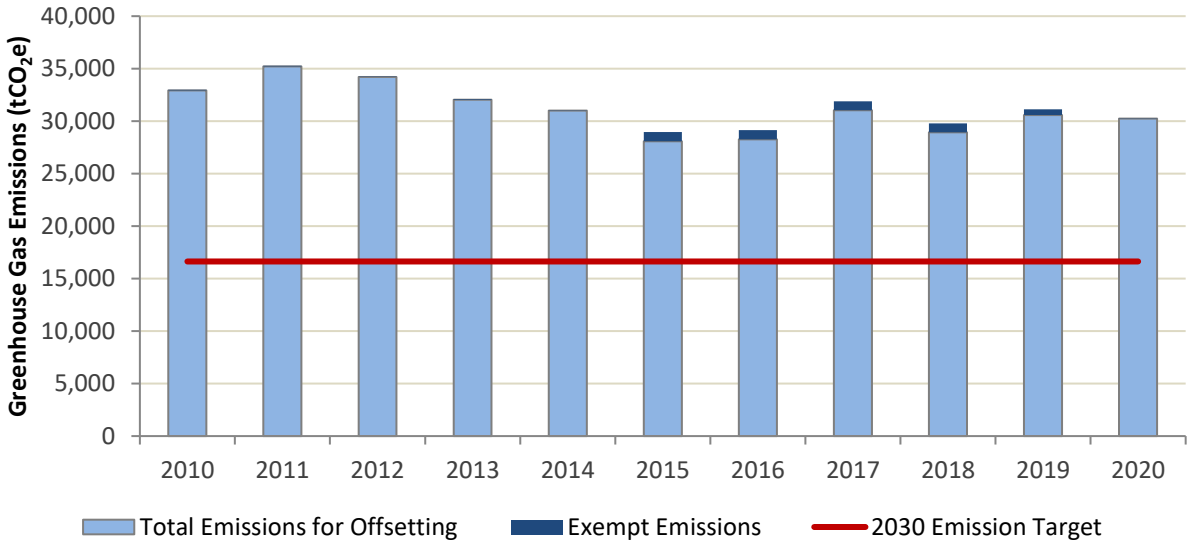
Table 2: Island Health's Emissions and Offset Data, 2010 to 2020[3]

Year	Total Emissions (tCO_2e)	Exempt Emissions (tCO_2e)	Total Emissions for Offsetting (tCO_2e)	Offsets Cost ($25 per tCO_2e)	Emissions per FTE[4] (tCO_2e/FTE)	Emissions per square metre (tCO_2e/m^2)
2010	32,982	61	32,921	823,025	2.90	0.063
2011	35,263	58	35,205	880,125	3.06	0.067
2012	34,252	51	34,201	855,025	2.85	0.062
2013	32,094	53	32,041	801,025	2.66	0.058
2014	31,049	55	30,994	774,850	2.55	0.056
2015	28,957	866	28,091	702,275	2.19	0.051
2016	29,151	874	28,277	706,925	2.12	0.052
2017	31,904	869	31,035	775,875	2.26	0.051
2018	29,798	861	28,937	723,425	2.01	0.047
2019	31,128	551	30,577	764,425	2.01	0.050
2020	30,283	52	30,231	755,775	1.84	0.049

[3] Historical data is updated to reflect data currently in the Clean Government Reporting Tool. 'Prior year adjustments' are included in the year the emissions were generated, not in the year offsets were purchased.

[4] The full time equivalent (FTE) data, provided by the Ministry of Health, was used to ensure consistency in methodology for the Climate Change Accountability Reports.

Figure 2: Change in Island Health Emissions and Offsets, 2010 to 2020



Island Health's emissions peaked in 2011 when the Patient Care Centre opened in Victoria. Emission levels steadily decreased between 2011 and 2015. The 2016 emission level was slightly higher (0.7%) than the 2015 level due to a cold winter season and a number of delayed emissions reduction projects. Emissions in 2017 increased by 9.8% compared to the 2016 level, with the opening of two new North Island Hospital campuses in Campbell River and Comox Valley. These new facilities increased the overall floor area by approximately 40,000 square metres. Emissions in 2018 decreased 6.8% from 2017. In 2019, Island Health's emissions increased 5.7% attributed to the loss of renewable natural gas, an increase in back-up fuels with higher global warming potential and slightly colder weather than an average year.

Overall, Island Health has decreased emissions from the peak level in 2011, despite an 18% increase in total floor space over the same period. Unfortunately, even with a focused emissions reduction effort, emission rates have plateaued over the past several years. In order to make progress in reducing emissions, while demand for services grows, reduction efforts will have to increase significantly. Table 3 outlines Island Health's emissions by source, with buildings accounting for 96% and the remainder from fleet vehicles and office paper.

Table 3: Island Health Emissions by Source, 2010 to 2020

Year	Fleet [tCO_2e]	Office Paper [tCO_2e]	Buildings [tCO_2e]	Total Emissions [tCO_2e]
2010	922	831	31,229	32,982
2011	901	747	33,615	35,263
2012	878	717	32,657	34,252
2013	892	714	30,488	32,094
2014	911	691	29,447	31,049
2015	888	706	27,363	28,957
2016	897	677	27,577	29,151
2017	1,021	687	30,196	31,904
2018	693	724	28,381	29,798
2019	940	627	29,561	31,128
2020	644	547	29,092	30,283

Island Health continues to grow, demonstrated by a 1.5% increase in floor area in 2020. In the past year, Island Health opened a new facility, the Summit at Quadra Village, with 320 long-term care beds. This facility replaced two older buildings; however, there was an overlap in operations when all these facilities were emitting greenhouse gases. The two older buildings consumed a large amount of natural gas and therefore had high greenhouse gas emissions per square metre. The larger of these is no longer operating within Island Health's portfolio, but the smaller facility still is for now. Operating the new, more efficient Summit facility will result in a net decrease in emissions in future years.

From 2015-2019, Island Health purchased a small amount of renewable natural gas (RNG), which was exempt from offset purchases because it was produced from biogenic sources. In August 2019, FortisBC ended the sale of RNG to the health authority due to supply constraints. As a result of the curtailment, almost 500 tonnes of exempt greenhouse gas emissions from RNG were substituted with standard natural gas in 2020. This event highlights the difficulties of securing cleaner fuels that are both accessible and affordable.

Despite the above challenges, greenhouse gas emissions for offsetting decreased 1.1% in 2020 from the previous year. A contributing factor to the decline was a 40% reduction in back-up diesel use in 2020. The emissions factor for standard diesel is 1.4 times higher than natural gas in BC. In terms of weather, the South Island region had a slightly warmer winter in 2020 compared to 2019, requiring less natural gas for space heating. Moreover, the Energy Management program continues to make progress on their goals to reduce energy use and greenhouse gas emissions at Island Health's facilities, as shown in Section 3 of this report.

Emissions from fleet vehicles and office paper consumption both declined in 2020 with impacts from the COVID-19 pandemic. The health authority suspended fleet pool vehicle programs and stopped staff shuttle services. At the end of 2019, Island Health replaced three of its oldest heavy-duty vehicles, resulting in greater fuel efficiency. Accordingly, there was 31.5% decrease in emissions from fleet vehicles

from 2019 to 2020. Island Health's fleet continues to pursue electrification, by procuring six battery electric fleet vehicles through the Carbon Neutral Capital Program (CNCP) in fiscal year 2020/21.

Emissions from paper declined 12.8% from the previous year. Paper consumption significantly declined when Island Health mandated remote work for non-essential employees at the onset of the pandemic, but later rebounded to almost pre-pandemic levels. Overall, paper emissions have decreased by 34% from 2010 levels. A contributing factor is the adoption of an alternative letter-sized paper in 2019, which has an emissions factor equal to paper made from 100% recycled content.

To achieve the Province's public sector target for 2030, emission requiring offset need to drop by 45% in the next decade, regardless of increases in service levels. Since 2010, Island Health has not made sufficient progress towards reaching the provincial targets, despite efforts from Energy Management, Sustainability and Business Continuity, Facilities, Maintenance and Operations, Fleet Services and Printing Services. Looking ahead, increased CNCP funding, additional funding from utility partners for building operations optimization, provision of low emissions energy and targeting net zero emissions for new construction will help bend the emissions curve.

3. Carbon Neutral Capital Program

In fiscal year 2014/15, Island Health began accessing funding from the Province's Carbon Neutral Capital Program (CNCP) to implement greenhouse gas emissions reduction projects. Table 4 summarizes projects funded by the program. The average cost of reducing emissions through these projects has been $3,375/tCO$_2$e. This value is used to forecast future emissions reduction from CNCP funding.

Table 4: Summary of CNCP Projects

Fiscal Year	Project Description	Total Expenditure ($)	CNCP Funding ($)	Expected Annual Savings ($)	Emissions Reduction (tCO$_2$e/yr)	Average Cost of Emissions Reduction ($)
FY2015	Lighting upgrade Boiler optimization Heating, ventilation & air conditioning (HVAC) zoning	1,366,278	902,818	194,452	507.5	2,692
FY2016	Laundry plant upgrade Boiler plant replacement Domestic hot water decouple Zone isolation and lighting	1,474,278	828,505	172,639	525.2	2,807
FY2017	Heat recovery chiller Exhaust air heat recovery Zone control Domestic hot water decouple	1,354,402	817,953	104,640	654.7	2,069
FY2018	Boiler & heating plant upgrade Heat recovery HVAC upgrade	1,416,875	817,953	62,650	262.3	5,402
FY2019	Electronic zone control OR zone control HVAC zoning and scheduling	1,147,500	821,370	89,453	321.0	3,575
FY2020	Heat recovery system	1,222,320	822,320	47,131	479.7	2,548
FY2021	Heat recovery systems and zero emission vehicle infrastructure	3,184,063	2,835,561	208,790	702.4	4,533
	Average	**1,595,102**	**1,120,926**	**125,679**	**493**	**3,375**

The largest of the heat recovery projects completed in fiscal year 2020/21 brings to a close a three-phased project at the Royal Jubilee Hospital in Victoria. Due to the complexity and size of the original project, a limited annual CNCP budget and escalating construction costs, the project was divided into three smaller phases. Each phase of this project yields increasing energy and greenhouse gas reduction and now that they are all complete, should deliver a total reduction of at least 886 tCO$_2$e and $162,358 in operating costs each year.

This heat recovery project is intended to harvest the waste heat being rejected from several stand-alone cooling systems operating year-round to serve areas such as medical imaging, server rooms and

pharmacy, and then re-use that heat to warm the supply air to spaces requiring it. The system also recovers additional waste heat in the summer for the same purpose since there are areas of the hospital requiring heating year-round. The completed second and third phases included the installation of a second modular heat recovery chiller in the ground floor mechanical room. These chillers are engineered to operate like heat pumps, taking heat from warm water rejected by the central chilled water plant and boosting the temperature to the required building heating loop temperature. The heat is otherwise rejected to atmosphere through cooling towers.

An additional benefit to this project is reduced load on the cooling tower. This will free up capacity needed as summer temperatures rise due to climate change as well as save water. This is an example of a project, which provides significant energy savings, emissions reduction and climate change adaptation benefits.

Since Island Health's fleet of vehicles also generates greenhouse gas emissions, Island Health has been replacing older vehicles that are powered by fossil fuels with hybrids and battery electric versions as vehicles reach end of life. In fiscal year 2020/21 the CNCP program expanded to allow electric vehicle infrastructure to be eligible for funding, enabling the replacement of six vehicles and installation of several charging stations, accelerating efforts to electrify the fleet. Replacing older vehicles that burn fossil fuels also helps reduce ground level pollution and contributes to healthier air quality.

4. Strategies to Reduce Emissions

At a high level, Island Health's strategy for achieving *CleanBC's* 50% reduction in emissions by 2030 is going to require a three-pronged approach as follows:

1. Increased operational funding for a new Building Automation Systems Specialist, parts and labour to optimize existing building systems and eliminate energy waste. This work in the past has provided an ROI of about 10%, often improving occupant comfort and reducing maintenance costs as well. The new position will allow the organization to substantially ramp up efforts in this area.
2. Increased annual capital from $2.8M to $4.1M per year starting in fiscal year 2021/22 for deep retrofits like heat recovery systems, escalating up to a total of $75M over 10 years. These projects typically have an ROI of 5% or more and can provide other benefits including infrastructure renewal and climate change adaptation. This would also include up to $12M in additional capital to electrify fleet vehicles. Benefits include lower operating and maintenance costs as well as reduced particulate and other ground level pollutants. Not included in the capital requirements is the cost of electrical upgrades to Island Health and/or BC Hydro infrastructure, necessary to meet the demands of increased electrification.
3. If necessary, increased operational funding to purchase low/zero carbon fuels, like renewable natural gas in 2030 at roughly $115,000/year for every 1,000 tCO_2e below the target.

Figure 3: Island Health Emissions, Targets and Projections

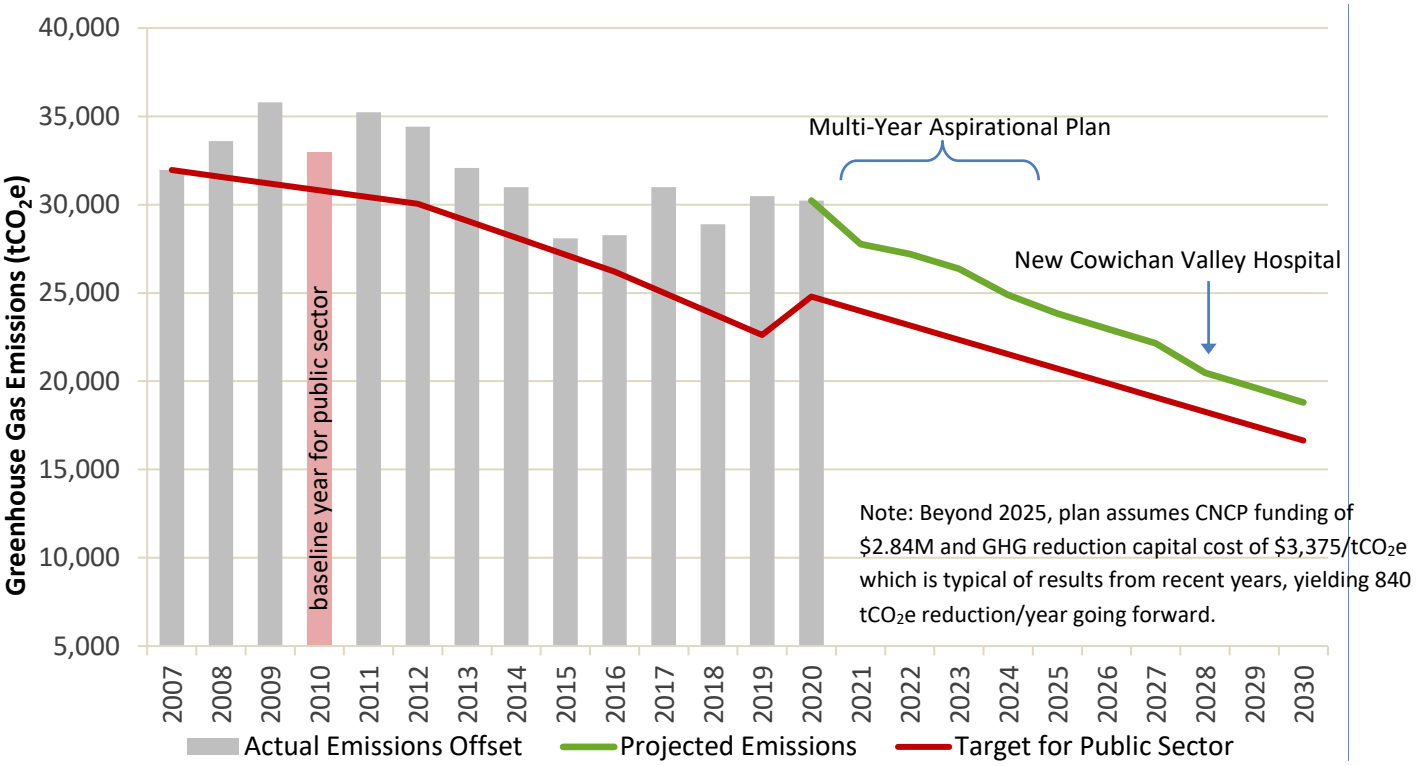


Figure 3 shows Island Heath's emissions since 2007. Emissions have been trending down with an overall reduction of 8% from the 2010 baseline, in spite of a 19% increase in floor area and 44% increase in FTEs. The green line forecasts future emissions, assuming annual capital investments of at least $2.8M for retrofit projects. This is now possible through the Ministry of Health's Carbon Neutral Capital Program, but assumes the efficacy of past retrofits remains the same. It will become more difficult and expensive, as the health authority started with the easiest retrofits first. A substantial increase in resources is needed to meet the provincial emissions reduction targets.

The details of changes required in facilities remain under development but there are three basic principles that characterize Island Health's tactics. In order of priority they are to:

1. Minimize energy waste by optimizing existing building systems,
2. Lower fossil fuel use by retrofitting existing facilities with more energy efficient equipment and system designs, and
3. Switch to renewable energy sources.

The first principle is already in play but the organization requires a dedicated resource with a budget to accelerate the work of fine-tuning buildings and eliminating every bit of energy waste possible. This work focuses on continuously finding ways to reduce energy within the limits of existing systems, similar to a regular "tune-up" on an old car but goes much further. It would be like programming the car's engine to shut down at intersections until you are ready to move on. Changes the engineer would implement include programming that automatically lowers ventilation rates and shuts off lights in unoccupied spaces.

The second principle is also part of Island Health's long established Energy Management program, partially funded by BC Hydro and FortisBC and employed since before 2010, to find ways of reducing energy consumption and lower utility costs. Progress to date, demonstrated by a 13% reduction in energy use intensity, is a direct result of this program but much more is needed. Increased capital funding will provide the financial resources to carry out many more deep retrofits required to close the gap.

Despite the aforementioned efforts, there is no guarantee Island Health will achieve the target in large part because the health authority continues to grow by building more facilities. After achieving the initial two principles, the third principle of switching to renewable energy (e.g. renewable natural gas) would be employed. Renewable energy is considerably more expensive which is why it makes sense to first focus on minimizing waste and increasing efficiency. It is a good strategy, once existing facilities are operating as efficiently as possible.

Furthermore, new facilities offer a unique opportunity because they are generally less costly to make low-carbon than existing ones. Island Health continues to strive for building designs that reduce emissions as close to zero as possible in all new facilities and are assessing the feasibility of the new made-in-Canada Zero Carbon Building standard for all new construction projects.

As the health authority works to reduce greenhouse gas emissions, additional co-benefits such as climate resiliency, are also pursued, so essential services can continue uninterrupted in the face of more extreme weather events.

Fleet

Island Health is targeting emissions reduction by introducing zero-emission vehicles and improving fuel efficiency. The health authority is committed to the *CleanBC* provincial mandate by making 10% of light-duty vehicle replacements zero-emission vehicles, when suitable.

In fiscal year 2020/21, Island Health utilized Carbon Neutral Capital Program (CNCP) funding to procure six battery electric vehicles, in addition to the three electric vehicles already in the fleet. CNCP also supported the installation of two dual-port electric vehicle charging stations for fleet vehicles at Island Health's largest campus, Royal Jubilee Hospital.

A significant portion of mobile emissions is from diesel heavy-duty trucks, for which there are currently no suitable zero-emission alternatives available. Accordingly, Island Health conducted external consultation on the feasibility of converting seven heavy-duty trucks from diesel to compressed natural gas. The health authority is also planning to introduce a medium-duty electric truck for localized transport, dependent on CNCP funding availability.

Overall, funding remains the largest challenge to achieving *CleanBC*'s emissions reduction target for public sector fleets of a 40% reduction by 2030, from 2010 levels. Despite federal and provincial rebates, electric vehicles are more expensive to purchase and require charging equipment that can be costly to install, depending on existing parking layouts and electrical service locations. There are further challenges associated with installing charging infrastructure in older facilities and leased buildings, which can lack electrical capacity. Regardless, Island Health's Fleet Services continues to review funding opportunities and optimal locations for charging infrastructure.

Paper

Emissions from office paper account for 1.8% of Island Health's offsettable emissions. Since 2019, Island Health has been using paper made from sugarcane fibre as its standard 8½ x 11 office sheet. This paper is produced from the residue waste of sugar production, and its greenhouse gas emissions factor is considered the same as 100% recycled wood fibre based paper. Paper made from 100% recycled fibre has 37% lower emissions than paper made from virgin wood fibre. Further opportunities for emissions reduction involve exploring alternative paper sources for other paper sizes, as well as reducing paper use through behaviour change and digitization.

5. Out-of-Scope Emissions

Island Health's climate impact extends beyond the in-scope emissions sources of fuels from buildings and fleet vehicles, and office paper usage. Consequently, the organization is monitoring greenhouse gas emissions from out-of-scope sources, such as personal vehicle business travel, fugitive emissions from refrigerants and anesthetic gas. Out-of-scope emissions sources are not included in the *Carbon Neutral Government Regulation*, and are thus not formally reported. Out-of-scope emissions do not require legislated carbon offsets, but they still emit harmful greenhouse gases further exacerbating climate change.

Personal Vehicle Business Travel

Island Health covers a large geographic area, requiring substantial business travel. When staff use their personal vehicle for travel, the emissions are not included in the organization's total reported greenhouse gas impact. Personal vehicle business travel accounts for considerably more distance travelled than in-scope fleet vehicles.

Due to COVID-19 challenges, Island Health temporarily stopped its pool vehicle programs, requiring staff to use personal vehicles for essential travel. Over the past couple years, Island Health has taken steps to offer more pool vehicles at sites across the Island, in place of personal vehicles. This initiative provides greener vehicle options and reduces costs for the health authority; however, it also increases the number of vehicles in the fleet. Expanding access to pool vehicles will raise reported in-scope fleet emissions, but is expected to offset less-efficient personal vehicle travel. With several zero-emission vehicles and hybrids, Island Health's fleet is aiming to be more efficient than the average passenger vehicle.

In 2020, the kilometres traveled in personal vehicles declined approximately 4% from 2019, largely due to the pandemic's impact on in-person meetings and events. However, much of the business travel in personal vehicles is from home and community care health workers who travel regularly to support their clients. As home support services expand, overall emissions from vehicle travel will also increase, unless zero-emission fleet vehicles can be provided at scale.

Refrigerants (Fugitive Emissions)

Fugitive emissions are from the leakage and loss of HFC and PFC based coolants from cooling equipment. Island Health applies the 1% rule to fugitive emissions from refrigerants. While fugitive emissions are within the scope of the *Carbon Neutral Government Regulation*, it is approximated they account for less than 1% of Island Health's total in-scope emissions.

Collecting refrigerant data is challenging. Island Health has taken steps to obtain data on reported leakages from cooling equipment. In 2020, 16 leak repairs were required across five sites. This information is useful for understanding the general impact of fugitive emissions, but it is not enough data to follow the methods outlined in The Climate Registry's General Reporting Protocol (Version 2.1) for robust reporting.

Island Health will continue taking measures to enhance monitoring and seek opportunities to use less global warming intensive coolants when new equipment is purchased.

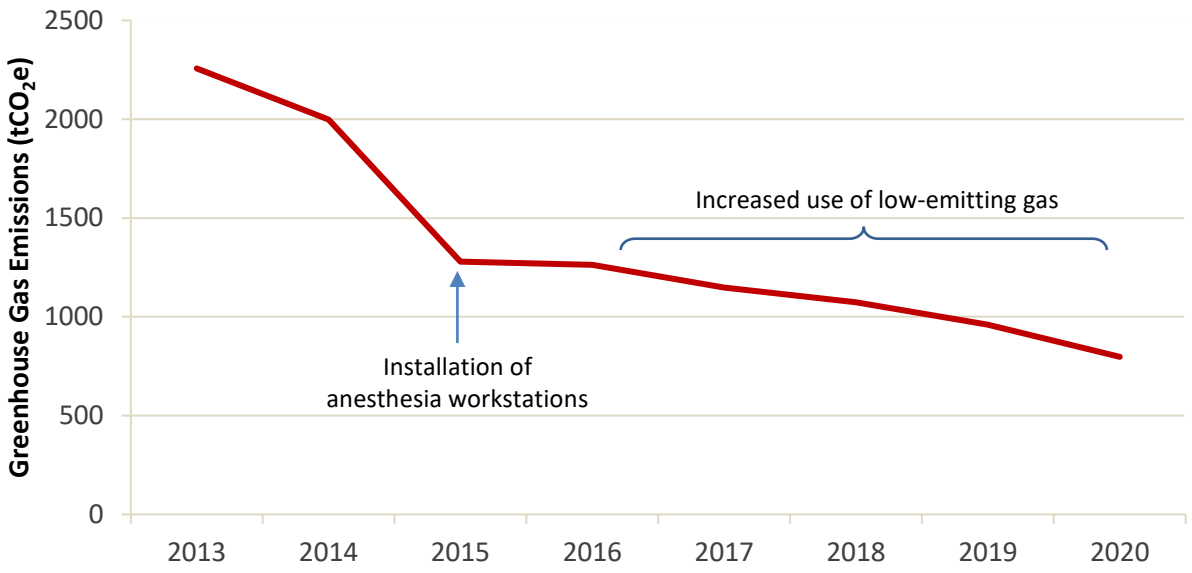
Anesthetic Gas

At Island Health, estimated greenhouse gas emissions from anesthetic gas are higher than the in-scope sources of fleet fuels and paper consumption. Island Health primarily uses two types of anesthetic gas, one of which has a significantly higher global warming potential.

From 2013 to 2020 estimated emissions from anesthetic gas declined by approximately 65%, as indicated in Figure 4. Anesthesia workstations were installed in 2015 at major acute sites, reducing overall gas usage at the source through efficiency measures. Over the past six years, Island Health's usage of the anesthetic gas with higher global warming potential declined, in favour of the lower-emitting gas. During the onset of the COVID-19 pandemic, the health authority postponed non-urgent surgeries, lowering the usage of anesthetic gas in 2020.

An Island Health physician and medical student conducted a quality assurance project in 2020 to raise awareness on the carbon footprint of anesthetic gas usage in British Columbia, published in the BC Medical Journal.

Figure 4: Island Health's Emissions from Anesthetic Gas Use[5]



[5] Emissions are estimated using factors from Sulbaek Andersen et al, 2012

6. Climate Change Adaptation & Resilience

Climate change continues to present risks for healthcare operations and infrastructure, and also to the health of our communities. While Island Health strives to minimize its climate impact, the health authority recognizes that building resilience within facilities is critical for maintaining health services as the climate changes. In 2020, the organization advanced resiliency by incorporating climate change risk assessment into new construction and renovations and increasing climate change awareness.

Organizational Risk

In 2019, Island Health identified lack of resilience to the changing climate as a top risk for the health authority, which resulted in the development of a risk profile in 2020. As climate change is an unfolding event over a long period there will be many controls required to reduce impacts. The main control identified at this time involves targeting new construction so all facilities are developed to withstand climate extremes over their life span. It is also important to increase awareness about climate change impacts, so staff and communities can take preventative actions and incorporate climate change into decision-making.

New Construction

New construction and renovations provide an excellent opportunity to incorporate climate change resiliency measures into design. Facilities are typically designed based on historical weather data, but this is not representative of the climate new facilities will operate in. This has led to the development of requirements for consulting engineers and architects to use future climate data to inform the design of building systems, with an addendum to their standard contracts. Also, an extreme event screening tool was created as a means for early screening of projects' climate hazards and impacts. This tool was used to screen the fiscal year 2021/22 Carbon Neutral Capital Program projects and adjust the scope of work to include climate resilience measures.

Island Health contributed to a provincial health authority initiative for establishing Resilience Guidelines for Health Facility Design and Operations. These guidelines have been adopted and are being used in developing business cases and procurement documents for new projects.

Existing Facilities

Existing facilities remain the largest floor area within Island Health's building stock. The age of the facilities increases the likelihood for poor resilience to a changing climate. Based on prior assessments and recent experience, the short-term impacts of climate change are from extreme heat, wildfire smoke and extreme wind events. Facility operators have started taking measures to address these concerns by stocking specialized air filters to be used on ventilation equipment during wildfire smoke events. Additionally, expanding cooling capacity and availability is a priority for long-term care facilities. This provides an opportunity to use heat pumps, which can also reduce greenhouse gas emissions.

Public Education & Awareness

The Environmental Health Office's Regional Built Environment Team supports municipalities and regional districts as they develop climate resiliency plans, to ensure health impacts are considered along with infrastructure vulnerabilities. This team also reviews and comments on official community plans that are

in review due to the declaration of climate emergencies in various communities. Furthermore, in the fall of 2020, the Island Health Magazine published the first in a series of climate change articles by Medical Health Officer, Dr. Shannon Waters.

Future Climate Resilience Tasks:

- Support climate change risk and resilience for all capital projects
- Coordinate the use of cross-dependency assessment results
- Monitor and develop guidelines for wildfire smoke events
- Provide cooling to a long-term care facility in Campbell River through a heat recovery project
- Review Official Community Plans, due to declarations of climate emergencies
- Participate in municipal and regional district climate action planning

7. Sustainability Initiatives

Several departments at Island Health are actively taking measures to achieve greater efficiency and minimize adverse environmental impacts. Below are highlights of these activities in 2020.

Water Conservation

Island Health reviews water costs and consumption at all major owned sites through an online utility monitoring platform. Facilities with higher consumption and water rates are prioritized for further analysis. This analysis informs future opportunities for identifying water conservation measures. The Energy Department also incorporates a water performance review into quarterly meetings with Facilities, Maintenance and Operations. In addition to water monitoring, all new buildings are constructed with high water efficiency goals through LEED certification, including the new North Island Hospital campuses which have the lowest water usage per square metre.

In 2020, Island Health continued its participation in BC Hydro and FortisBC's Energy Wise Network to access funding and coaching for behaviour change campaigns. This year's campaign highlighted the relationship between water and energy use, as a significant amount of energy is required for water treatment and delivery to facilities, as well as for filtering, treating, heating and cooling water for various uses. To increase staff awareness, Island Health's MultiMedia Services developed an informative video.

Waste Reduction

Island Health is advancing sustainability best practices by reducing waste and moving towards a greener supply chain. In 2019, Provincial Health Services Authority (PHSA) Supply Chain introduced new environmental fields to the province-wide Product Investigation Portal. Health authority staff are able to submit product concerns related to excess packaging, recyclability and other environmental issues.

Staff at BC Women's Hospital identified unnecessary single-use packaging associated with perineal bottles through the Portal. Due to this product concern, Island Health transitioned to a perineal bottle without wasteful packaging in 2020. The product change will avoid approximately 9,500 small plastic bags going to waste at the health authority this year.

Island Health is also collaborating with other BC regional health authorities and PHSA Supply Chain to embed environmental sustainability into procurement processes.

Public Electric Vehicle Charging Stations

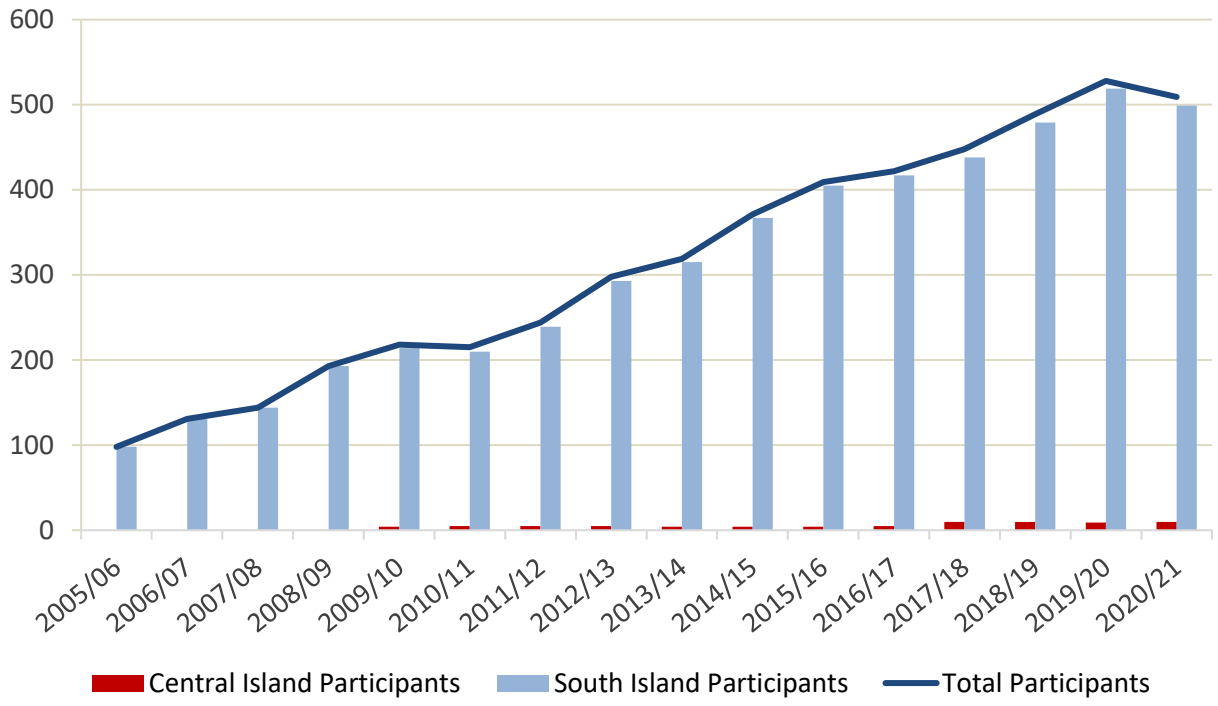
Emissions from public vehicles are out-of-scope; however, the health authority recognizes the negative health impacts associated with pollution. Island Health has Level 2 electric vehicle charging stations at multiple sites to serve the public. Since 2013, four stations have been operating at the Nanaimo Regional General Hospital. Last year, charging stations were installed at the North Island Hospital Campuses in Comox Valley and Campbell River, with one connector at each site available to the public. In 2020, the health authority secured federal funding to support the installation of two dual-port charging stations at the new Cowichan Hospice House. Installing public charging infrastructure has challenges associated with high costs of equipment, limited parking space availability and electrical capacity requirements. By 2040, 100% of new light-duty vehicles sales and leases will be zero emissions vehicles, as set out in the Province's

Zero Emissions Vehicle Act. At this time, Island Health primarily provides public charging to meet municipal requirements or achieve LEED points for new construction.

Transportation Demand Management

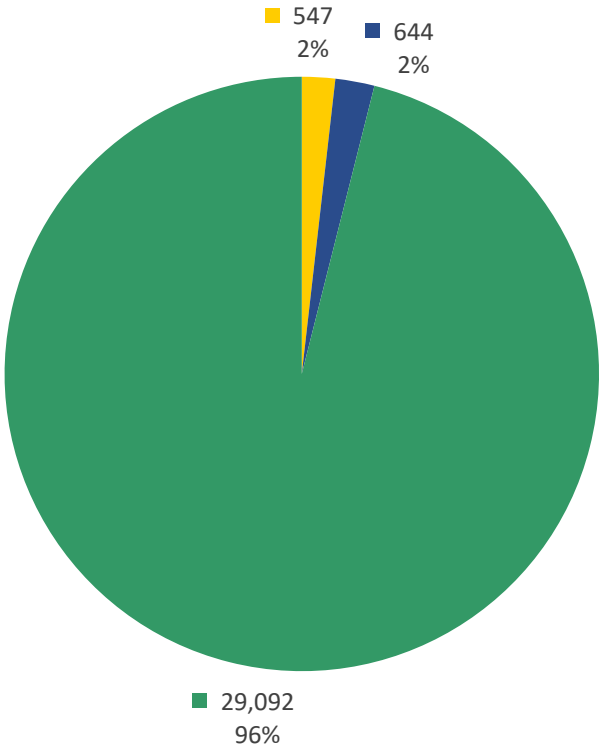
Parking Services promotes initiatives for decreasing single-occupancy vehicle traffic and demand for parking at Island Health sites. Through transportation demand management planning, Parking Services supports employees in optimizing their use of local transportation resources and Island Health programs. By getting people out of single-occupancy vehicles and into more efficient modes of commuting, the health authority reduces parking congestion and its climate impact. Initiatives to support transportation demand management include participation in the annual Go By Bike Week, offering employees subsidized BC Transit ProPass enrollment and providing an inter-site shuttle between two major hospitals in Victoria. In fiscal year 2020/21, shuttle participation decreased 75% and employees' ProPass enrollment decreased by about 23%, as displayed in Figure 5. Results were significantly affected by COVID-19 closures, and distancing protocols. Shuttle services have been closed since March 2020.

Figure 5: Island Health's BC Transit ProPass Participation



APPENDIX A: EMISSIONS SOURCE REPORT

Vancouver Island Health Authority Greenhouse Gas Emissions by Source for the 2020 Calendar Year (tCO_2e*)



Total Emissions: 30,283

- Supplies (Paper)
- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combution (Building heating and generators) and Electricity

Offsets Applied to Become Carbon Neutral in 2020

Total offsets required: **30,231**. Total offset investment: $**755,775**. Emissions which do not require offsets: **52** **

*Tonnes of carbon dioxide equivalent (tCO_2e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

**Under the *Carbon Neutral Government Regulation* of the *Greenhouse Gas Reduction Targets Act,* all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.