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Scan and Synthesis of Current and Future Climate Accountabilities for Canada's Health Sector

Final Report

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Study Commissioner:

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Table of Contents

List of Tables

List of Figures

List of Abbreviations

AB	Alberta
BC	British Columbia
CH4	Methane
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalents
ECCC	Environment and Climate Change Canada
GHG	Greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
GOC	Government of Canada
HCO	Health care organization
HFC	Hydrofluorocarbon
MB	Manitoba
NB	New Brunswick
NHS	National Health Service
NIR	National Inventory Report
NL	Newfoundland and Labrador
NS	Nova Scotia
NT	Nunavut
NWT	Northwest Territories
N2O	Nitrous oxide
OBPS	Output-based pricing system
ON	Ontario
PEI	Prince Edward Island
PFC	Perfluorocarbon
QC	Québec
SF6	Sulfur hexafluoride
SK	Saskatchewan
US	United States

1. Introduction

1.1 Project Background

As part of Canada's commitment to achieve a net-zero economy by 2050, the federal government has developed several policy initiatives that will have implications for many key sectors of the economy nationwide, potentially including the health care industry. The recent Net-Zero Accountability Act (Bill C-12) (GOC, 2022a) and Greenhouse Gas (GHG) Pollution Pricing Act are two examples that will affect major GHG emitters by requiring them to account for and reduce their GHG emissions. Initial interpretation of these federal policies along with provincial climate policies indicate that some health care delivery organizations already have GHG emissions accountability obligations; however, they are variable across different health care regions and types of health care providers, and it is not known how these obligations will evolve over time. In addition to government policies and programs, the need to track and reduce GHG emissions is being addressed by a variety of other organizations at a voluntary level (e.g., The Canadian Coalition for Green Health Care's (CCGHC) Green Hospital Scorecard program (CCGHC, 2023)).

Immediate questions that need to be explored revolve around identifying which types of health care facilities and organizations are accountable for their GHG emissions, when are they accountable, how long do they have to act on their obligations, and which sources of GHG emissions are included in these obligations (e.g., Scope 1? Scope 2? Scope 3?). In addition, it is important to understand how these issues vary across different regions in Canada's health system, and how developments in other jurisdictions outside Canada may influence or guide these programs and activities in Canada.

In light of these uncertainties, the Institute of Health Policy, Management, and Evaluation (IHPME) at the University of Toronto commissioned EarthShift Global to review the available information and synthesize the necessary knowledge on current and expected climate accountabilities for health care operators in Canada.

1.2 Research Objectives

The primary objectives of this research were to determine:

- How are health systems across provinces and territories in Canada being called to account for GHG emissions now, and what are some of the near-term expected shifts?
- What might GHG emissions accounting norms look like for health systems in Canada, given emerging international standards in health systems, or in other sectors?

In developing the answers to these questions, an interpretation of the findings was completed to synthesize the information and identify the underlying drivers and mechanisms that have led to greater levels of GHG emissions accountability in particular jurisdictions, and to consider the likelihood that these mechanisms will lead to an increased level and scope of GHG emissions accountability in the Canadian health care sector more broadly.

1.3 Research Approach

Information and data on GHG emissions accountability in Canada and other jurisdictions were obtained from an online review of government policy documents, statements, and websites, as well as policy documents and websites for regional health care providers. A small sample of relevant scientific literature on health care sustainability was also reviewed to gather information on some specific developments in other jurisdictions.

In the context of this research project, climate or GHG emissions accountabilities refers to either a legal or voluntary expectation on behalf of health care operators for reporting of their GHG emissions to

government, other stakeholders, or the general public. This accountability could originate from governmental or organizational mandates that require health care operators to quantify and report some level of their GHG emissions over some defined period, and most likely to report on an agreed-upon schedule or level of frequency (e.g., annually). The source of the accountability may be a direct program or policy targeted at health care operators or may be a program or policy directed at a broader group of organizations or operators, but which indirectly requires health care operators to participate and report their GHG emissions. In addition, although voluntary reporting does not represent an example of accountability derived from external programs or policies that compel participation, voluntary quantification, and reporting of GHG emissions by health care providers was considered as part of this analysis, as well as a reflection on the potential for increased voluntary action alongside of more formal, external accountability mechanisms.

In addition to assessing the levels and mechanisms of accountability, efforts were also made to understand the level of existing and potential future GHG emissions reporting in terms of scope, and in terms of any GHG emissions quantification and reporting protocols being used. In this context, a distinction was made between scopes of GHG emissions, as defined by the GHG Protocol (WBCSD & WRI, 2004):

- **Scope 1 – Direct GHG Emissions**: Direct GHG emissions from sources that are owned or controlled by the company; for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc., emissions from chemical production in owned or controlled process equipment, etc. An example for a health care operation would be emissions from fuel combusted in an onsite heating plant or boiler.
- **Scope 2 – Electricity Indirect GHG Emissions**: Indirect GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organizational boundary of the company. Scope 2 emissions physically occur at the facility where electricity is generated. An example for a health care operation would be GHG emissions produced at a power plant that supplies grid electricity used at a health care facility, or purchased steam and chilled water.
- **Scope 3 – Other Indirect GHG Emissions**: An optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company but occur from sources not owned or controlled by the company. An example for a health care operation would be the life cycle GHG emissions associated with manufacturing of pharmaceuticals, or of other single-use materials and durable materials, infrastructure, etc.

2. Current Health Sector Climate Accountabilities at the Federal Level

The scan of health sector climate accountabilities began at the Canadian federal government level. Although health care is largely an area of provincial and territorial jurisdiction in Canada, broader federal government programs and policies on climate change provide some direction and guidance for provincial policies and could therefore influence the level of climate accountabilities for health care operators. In addition, some federal programs and policies may directly require health care operators to track and report their GHG emissions via legislation created for an adjacent industry or industrial operators of a similar size.

In the following sections, a summary of federal GHG reporting programs and their intersection with health care operators is provided, along with a brief review of other federal programs and policies which may indirectly affect climate accountabilities for health care operators.

2.1 Federal GHG Emissions Reporting Policies and Programs

At the federal level in Canada there are several policies and programs directed at the quantification and reporting of GHG emissions for particular industries and operators as part of Canadian government programs to reduce GHG emissions and to report on their international commitments. Summaries of the three most significant programs and their intersection with the health care sector are provided below.

2.1.1 Canada's National Inventory Report

As part of Canada's commitments to the United Nations Framework Convention on Climate Change (UNFCCC), a National Inventory Report (NIR) is developed annually to track Canada's GHG emissions sources and sinks (ECCC, 2022a). The development of the NIR relies on a mixture of primary data (i.e., measured GHG emissions) and secondary data and assumptions that are calculated to estimate GHG emissions for particular sectors and economic activities. This calculated approach is necessary since it is not feasible to have direct reporting of GHG emissions from every source in Canada on an annual basis, and because a large proportion of the operators who are responsible for these GHG emissions do not regularly gather data on their GHG emissions.

The Canadian health care sector would be included in this group of operators who do not gather annual GHG emissions data from individual facilities. As such, the GHG emissions associated with health care operators such as hospitals are calculated for the NIR using energy consumption estimates for commercial and institutional buildings. Canada's GHG emissions are reported in the NIR using categories developed by the Intergovernmental Panel on Climate Change (IPCC), and those of relevance to the health care sector are described below (ECCC, 2022a).

Stationary Fuel Combustion – Energy Industries (Public Electricity and Heat Production)
Health care operators consume electricity to power their equipment and facilities, and their electricity consumption is part of the national demand for electricity. As such, the GHG emissions associated with the generation of this electricity are captured under this broader category of public electricity generation. However, these emissions are not attributed specifically to health care operators under the NIR, they are tabulated as emissions from electricity generation.

Stationary Fuel Combustion – Other Sectors (Commercial & Institutional)
This category captures GHG emissions from commercial and institutional facilities that produce onsite energy (e.g., co-generation systems that supply buildings with heat and power). Health care operators with onsite fuel combustion for energy generation would have their GHG emissions captured under this program. These GHG emissions estimates are not based on reported emissions from facilities, but rather are estimated based on surveys of energy consumption, and then estimation of GHG emissions based on energy demand. The GHG emissions are not attributed to any specific operator types within the NIR.

Energy consumption data for institutional and commercial facilities (which would include health care facilities) are obtained from the Report on Energy Supply and Demand (RESD) in Canada (Statistics Canada, 2022). These data include consumption of solid, liquid, gaseous, and biomass fuels by commercial and institutional facilities and public administration facilities gathered via surveys by Statistics Canada on an annual basis. The GHG emissions are then estimated using IPCC factors for carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) emissions associated with each type of energy source.

So, while Scope 1 and Scope 2 GHG emissions from health care operators are captured to a certain degree within these broader categories in Canada's NIR, these emissions are estimated and are not attributable to any specific operator or source. In addition, GHG emissions for health care operators that do not have onsite energy generation facilities would only be captured via the national totals for emission from electricity consumption. GHG emissions from the use of anesthetic gases are not

captured under Canada's NIR, nor are any Scope 3 emissions. In short, the use of these top-down emissions estimation approaches means that there is no impetus for health care facilities to supply GHG emissions data for the NIR, and that the NIR data do not provide any useful level of attribution or granularity to support tracking and reduction of GHG emissions at individual health care facilities or by specific health care authorities.

2.1.2 Canadian Greenhouse Gas Reporting Program (GHGRP)

The Canadian GHGRP is a federal program requiring Canadian facilities to report GHG emissions if they exceed a certain threshold of annual emissions. The program has been in existence since 2004 and reporting is mandatory for facilities that meet or exceed the emissions reporting threshold. The emissions thresholds and reporting requirements are defined under Section 46 of the *Canadian Environmental Protection Act*, and qualifying facilities are listed annually in the Canada Gazette (GOC, 2019). Reported facility emissions are fully searchable and available for viewing and download on the GHGRP website, including geographical data and a breakdown of specific greenhouse gases reported, including CO_2, CH_4, N_2O, hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6) (GOC, 2022b). Participation in the GHGRP does not require reporting facilities to develop emissions reduction plans or to meet emissions targets.

Historically the GHGRP was targeted primarily at large industrial emitters involved in producing chemicals, metals, pulp, and paper, and that produce large amounts of direct, onsite GHG emissions (Scope 1). Up until 2017 the reporting threshold was set at 50,000 tonnes of carbon dioxide equivalents (CO2e) emitted annually, and a review of reported data between 2004 and 2016 indicates that there were no Canadian health care facilities reporting under the GHGRP (GOC, 2022c). In 2017 the reporting threshold was lowered to 10,000 tonnes of CO2e emitted annually, and this reduction resulted in a wider range of facilities needing to report under the program.

Under this new GHGRP reporting threshold, several larger Canadian hospitals were required to start reporting annual Scope 1 GHG emissions starting in 2017. In 2017, eight Canadian hospitals reported their annual GHG emissions, and as of 2020 there are now twelve hospitals reporting their annual GHG emissions (GOC, 2022c). A summary of reported emissions for Canadian hospitals is provided in Table 1 below.

Data from 2020 show that hospitals in Alberta, Ontario, and Québec reported to the GHGRP, ranging in capacity from 127 beds (Alberta Children's Hospital) up to 1,252 beds (Credit Valley Hospital). Annual GHG emissions ranged from a low just below the 10,000 tonnes threshold of 9,371 tonnes CO2e (Credit Valley Hospital), up to a high of 48,912 tonnes CO2e (Victoria Hospital, ON). As noted, reported emissions are Scope 1 GHG emissions, and in the case of hospitals it is assumed that all these emissions are coming from onsite energy generation (e.g., cogeneration plants). There is no reporting of anesthetic gases by any of the qualifying hospitals, and emissions from purchased electricity (Scope 2) are not reported under this program.

If the reporting threshold were to be lowered further, then additional hospitals and health care facilities would likely exceed the threshold and be required to begin annual reporting. However, at this time, it is unclear if there is any intention to lower the threshold further. Given that the GHGRP was developed to capture large industrial emitters primarily, and that there are not currently any thresholds in Canada below 10,000 tonnes CO2e (see Section 3, Table 4), it seems unlikely that the threshold would be lowered further in the near term.

Table 1. Summary of GHG emissions reported by health care facilities in 2020 under the Canadian GHGRP (GOC, 2022c).

Facility	Province	Number of Beds	CO_2 (tonnes)	CH_4 (tonnes)	N_2O (tonnes)	Total (tonnes CO2e)
Alberta Health Services – Rockyview General Hospital	AB	585	10,948	5.25	674	11,628
Alberta Health Services – Alberta Children's Hospital	AB	127	9,642	4.75	219	9,866
Alberta Health Services – Chinook Regional Hospital	AB	272	9,680	4.75	56.6	9,742
William Osler Health System – Brampton Civic Hospital	ON	908	10,917	5.33	59.6	10,982
London Health Sciences Centre – Victoria Hospital	ON	1,058	48,634	23.98	254	48,912
Halton Healthcare Services Corporation – Oakville Trafalgar Memorial Hospital	ON	650	13,515	6.59	73.8	13,596
Alberta Health Services – Red Deer Regional Hospital	AB	353	14,220	6.83	50.7	14,277
Hamilton Health Sciences Corporation - Hamilton General Hospital Cogeneration Plant	ON	1,251	16,437	8.05	89.6	16,535
Hamilton Health Sciences Corporation - Juravinski Hospital and Cancer Center Cogeneration Plant	ON	1,251	19,803	9.69	108	19,921
Centre Hospitalier de L'Université de Montréal - Centre Hospitalier de L'Université de Montréal	QC	693	23,554	11.60	131	23,697
Trillium Health Partners - Credit Valley Hospital	ON	1,252	9,318	4.37	48.5	9,371
The Ottawa Hospital - The Ottawa Hospital - Civic campus	ON	1,028	13,222	6.48	73.0	13,301

2.1.3 Canada's Carbon Pricing Policy

Canada enacted the Greenhouse Gas Pollution Pricing Act (GGPPA) in 2018, and since 2019 every Canadian province has implemented some form of price on carbon and some form of reporting and pricing program for larger emitters. The basic federal program consists of two parts, a regulatory fuel charge on consumption of fossil fuels, and a performance-based system for industries known as the Output-Based Pricing System (OBPS) (GOC, 2020). Under this second part, facilities that emit GHG emissions above a particular threshold must report their GHG emissions and commit to reduction targets. Under the federal Output-Based Pricing System Regulations, facilities within Canada that emit more than 50,000 tonnes of CO2e are included in the program (GOC, 2022d). This applies specifically to Scope 1 GHG emissions, which are those generated from onsite activities.

Despite the federal carbon pricing program, carbon pricing has not been applied equally across all provinces and territories. Each province was given the latitude to develop their own carbon pricing programs that, if more stringent than the federal backstop, could be submitted for federal approval. This has resulted in a number of different approaches across the country, which in some cases have led to different thresholds for output-based pricing systems, and different fuel charges. These variations are captured at a high-level in Figure 1 below, and are explained in greater detail in the provincial and territorial profiles in Section 3 of this report.

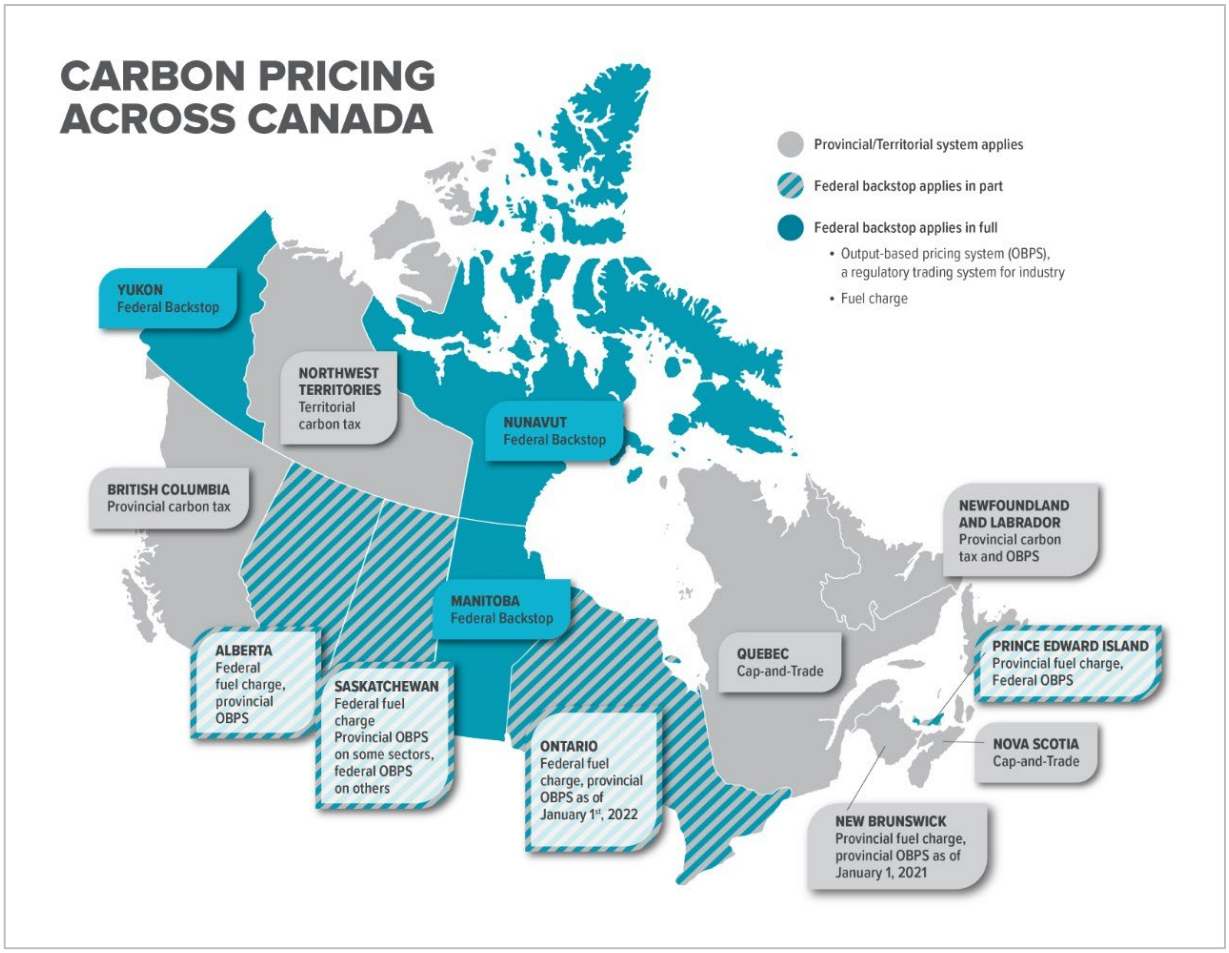

Figure 1. Summary of carbon pricing programs across Canada (Government of Canada, 2022e).

2.2 Other Federal Policies and Programs

Although the GHGRP program does capture a small group of Canadian hospitals and requires them to be accountable for a portion of their annual GHG emissions (Scope 1), the GHGRP is not a federal program

targeted at regulating GHG emissions accountabilities for Canadian health care operators specifically, but rather it is targeted at larger industrial emitters. Broadly speaking there are no federal programs or policies that specifically target GHG emissions accountability in the health care sector. Health care is a provincial government mandate, so one would expect these types of directed policies to be developed at the provincial level (See Section 3). However, there are some federal policies aimed at tracking and reducing Canada's GHG emissions which may indirectly put more pressure on Canadian health care operators to be more accountable for their GHG emissions.

2.2.1 Pan-Canadian Framework on Clean Growth and Climate Change

The Pan-Canadian Framework on Clean Growth and Climate Change was enacted in 2016 and was Canada's first ever national plan to address climate change (GOC, 2016). Of the 50 proposed initiatives to reduce GHG emissions, the framework does not include any specific references to the health care sector, with the one exception being discussion of the need to improve energy efficiency and promote use of renewable fuels in buildings and facilities, and hospitals are cited specifically in some of these instances. These commitments do not include any mention of GHG emissions quantification and reporting though, they refer solely to the need for emissions reductions.

Despite the lack of specific reference to health care operators in the Pan-Canadian Framework, the policy does have potential influence on furthering GHG emissions accountabilities for health care operators indirectly via commitments to have government show leadership on climate change, particularly with respect to procurement and greening of government buildings and operations. The framework includes action items under the section on *Government Leadership* to reduce emissions from government buildings and fleets, and to increase the adoption of sustainable procurement plans (GOC, 2016). There is some evidence that the former has been adopted at the provincial level where some provincial governments capture hospitals under programs to track and reduce Scope 1 and Scope 2 GHG emissions for publicly owned buildings (see Section 3). The plan to increasingly adopt sustainable procurement programs for government agencies has the potential to reduce Scope 3 GHG emissions associated with purchased goods and services by healthcare operators if provincial governments adopt these programs. However, there is no specific reference to the health care sector in these federal action plans, and there is no indication that sustainable procurement programs would lead to increased accountability to track and report GHG emissions from health care operations.

Under the *Buildings* section of the Pan-Canadian Framework there is reference to improving energy efficiency and to promote fuel switching programs for buildings in Canada (i.e., substituting renewable energy systems for fossil fuel energy systems), however these types of programs are already going ahead and do not seem to be linked to any additional quantification and reporting of GHG emissions for the facilities that participate (GOC, 2016).

Lastly, although the Pan-Canadian Framework has a specific action item under *New Actions* to commit to working with governments at all levels to improve GHG emissions measurement and reporting to strengthen programs, there are no specific programs coming out of this and no specific mention of the health care sector as a target for collaboration in this respect (GOC, 2016).

2.2.2 Canada Climate Change Plan – A Healthy Environment and A Healthy Economy

In 2020, Canada released its latest climate change plan called "A Healthy Environment and a Healthy Economy". This plan builds off the Pan-Canadian Framework by adding 64 new federal policies, programs, and investments to address climate change (ECCC, 2020). There are no proposed policies, programs, or investments within this plan that target the health care sector specifically. Like the Pan-Canadian Framework, there are proposed initiatives which could indirectly lead to increased GHG

emissions accountability via net-zero requirements for buildings and government operations, for example.

With respect to buildings, the climate change plan includes initiatives to fund building retrofits and fuel switching projects, and to move towards net-zero for all government buildings by 2050. However, given that most health care operators are not using federal government-owned buildings, at best these initiatives could create influence that may lead to similar initiatives at the provincial government level, and indeed there is some evidence of that already happening (see Section 3). Overall, none of these initiatives as laid out in the federal climate plan include any reference to actively increasing the quantification and reporting of GHG emissions for the buildings targeted in these programs. These emissions reductions programs are already proceeding without concurrent emissions tracking and reporting. In most cases the emissions savings are calculated based on energy savings and/or changes in GHG emissions from switching fuel sources. However, reductions are reported outside the context of any formal tracking of historical GHG emissions for those specific buildings over time.

As part of reflecting on potential driving forces to increase GHG emissions accountabilities for health care operators in Canada, a summary of key initiatives laid out in Canada's climate change plan and their potential to indirectly influence health care operators is provided in Table 2 below. Each initiative has a colour-coded column indicating the potential influence of this federal initiative on climate accountabilities for health care operators, recognizing that there is limited direct influence, but that indirectly these initiatives may influence health care operators via concurrent provincial and territorial policies. Consideration was given to potential influence on accountability for Scope 1, Scope 2, and Scope 3 emissions.

The completion of Table 2 was based on some particular assumptions and patterns observed in the provincial scan of GHG emissions accountabilities for health care operators (See Section 3), and is not intended to be definitive, but rather speculative in nature to highlight potential influences. For example, when municipalities or provincial/territorial governments make commitments to reduce GHG emissions for publicly owned buildings and/or to promote and fund renewable energy switchovers, this may also include the need to gather GHG emissions data from those facilities, at least with respect to Scope 1 and Scope 2 emissions. Similarly, policies and programs related to reducing GHG emissions related to purchased materials and products may also create a need for operators to report on the GHG emissions of their existing purchasing portfolios, and to track how they change over time. Carbon pricing programs at any level may prompt building operators to better track their fuel consumption and resulting GHG emissions.

Key takeaways from the assessment in Table 2 are that programs and policies related to buildings and carbon pricing at the federal level may have the greatest potential for indirectly influencing health sector operators to track and report their GHG emissions, particularly for Scope 1 and Scope 2 emissions. This is also the case for programs and policies aimed at promoting a shift to net-zero facilities and operations. There are limited possibilities for influencing the reporting of Scope 3 GHG emissions within this climate change policy, and the assessment in Table 2 shows that there are only limited and low potential opportunities related to infrastructure planning (may influence selection of low-carbon building materials or more efficient systems) and other, broader approaches to further advance the climate agenda into more sectors. It is noted that none of the initiatives summarized in Table 2 include any specific GHG emissions reporting requirements, and any specific reference to health care operators. This assessment reflects only the potential for influence on health care operators which may come from provincial departments or health care authorities adopting policies that are informed by the federal plan, and for which accounting for GHG emissions of health care facilities may be required.

Table 2. Summary of priorities in the Canadian action plan for climate change which may indirectly lead to increased GHG emissions accountabilities for health sector operators. Actions coded in red have no potential influence, actions coded in yellow have limited potential influence, and actions coded in green have strong potential to influence GHG emissions accountabilities. The scope of emissions that may be influenced is also indicated.

Priority	Actions	Applicability to Health Sector GHG Accountabilities
Making The Places We Live and Gather More Affordable by Cutting Energy Waste (18% of Canada's emissions)	Home energy retrofits	
	Municipal and community buildings	**Scope 1, 2**
	Commercial and large-scale building retrofits	**Scope 1, 2**
	Long-term infrastructure planning	**Scope 1, 2, 3**
Making clean, affordable transportation and power available in every community	Investments in public transit networks	
	Zero-emission buses and school buses	
	Promoting active transportation	**Scope 1, 3**
	Making Canada a leader in clean power	
Continuing to ensure pollution isn't free and households can get more money back	Carbon pricing in Canada	**Scope 1, 2**
	Carbon pricing trajectory from 2023 to 2030	**Scope 1, 2**
	More consistency, certainty, and fairness	
	A national offset system	**Scope 1, 2**
	Returning the proceeds of carbon pricing to Canadians	
	Guidance for returning carbon pollution pricing proceeds to support Canadians and drive climate ambition	
	Maintaining international business competitiveness	
Building and securing Canada's clean industrial advantage	Supporting businesses to transition to clean technology	**Scope 1, 2**
	Achieving net-zero emissions	**Scope 1, 2**
	Net-zero accelerator fund	**Scope 1, 2**
	Moving to cleaner fuels	**Scope 1, 2**
	Carbon capture, utilization, and storage	
	Supporting agricultural solutions	
	Access to critical minerals: a competitive advantage	
	Supporting workers to succeed in a low carbon economy	
	Factoring climate risk into decision making	**Scope 1, 2, 3**
Embracing the power of nature to support healthier families and more resilient communities	Funding to support nature-based climate solutions	
	Protecting and conserving nature	
	Beating plastic pollution	**Scope 3**
Creating resilience in Canada	Climate change adaptation	
	Using data to drive adaptation decisions	
Canada's partnership with indigenous peoples	Supporting communities to clean energy sources	
	Indigenous leadership in land conservation	
Demonstrating international leadership	Supporting ambitious climate action abroad to achieve a net-zero and nature positive world	
	Advancing the climate agenda	**Scope 1, 2, 3**
	Supporting nature-based solutions globally	

2.2.3 Canada Net-Zero Emissions Accountability Act

The Government of Canada has joined over 100 other countries is committing to achieve net-zero by 2050. As part of this commitment, Canada enacted the Net-Zero Emissions Accountability Act in 2021 to lay out a path to this objective (GOC, 2022a). The Act lays out a series of steps and programs and targets to be initiated for working towards net-zero.

The most significant development under the new Act to-date has been the release of the 2030 Emissions Reduction Plan: Clean Air, Strong Economy. This plan includes a commitment to reduce national GHG emissions by 40% (relative to 2005 levels) by 2030, as a first key milestone on the path to net-zero by 2050 (ECCC, 2022b). The plan includes specific and collaborative actions and programs to be undertaken nationally and within Canadian provinces and territories. Within the key elements and commitments in the net-zero act, there are no specific programs or policies directed at the health care sector. The only references to hospitals and health care operators are within provincial action plans that are summarized in the document, and these references are primarily for programs and funding to improve energy efficiency and support fuel switching projects. So, while these programs may ultimately lead to GHG emissions reductions for hospitals and health care operators with respect to the operation of their buildings, the net-zero policy includes no specific plans for GHG emissions accountability in terms of quantification and reporting to support these programs.

3. Current Health Sector Climate Accountabilities by Province and Territory

The delivery and regulation of health care is a provincial and territorial responsibility in Canada and so this review of GHG accountabilities was particularly focused on variations in provincial-level policies and programs, and GHG emission reporting requirements for health sector operators. The following sections provide a summary of existing GHG emissions accountabilities (or lack thereof) for health care operators in each province and territory of Canada. A synopsis and reflection on the findings of this provincial and territorial review are provided in Section 3.14 and further in Section 4.

3.1 British Columbia

British Columbia (BC) has been one of Canada's early leaders and most ambitious provinces when it comes to developing policies and regulations aimed at reducing GHG emissions and addressing climate change. With respect to the health care sector, this has translated to the longest running and most detailed program for GHG emissions accountability by provincial health authorities in the country.

Under the Climate Change Accountability Act, the BC government has committed to reducing GHG emissions by 40% in 2030 (relative to 2007 emissions), 60% in 2040, and by 80% in 2050. As part of this legislation, the BC government enacted the Carbon Neutral Government Regulation, requiring all public sector organizations to achieve carbon neutrality each year by reducing GHG emissions and purchasing carbon offsets (Government of British Columbia, 2022).

Under the Carbon Neutral Government Regulation, all provincial health authorities are required to submit an annual GHG emissions accountability report because they are public sector organizations. These reports follow the structured approach to the Carbon Neutral Government Regulation to:

- Measure GHG emissions from buildings, vehicles, and paper use;
- Reduce emissions by conserving electricity and fossil fuels;
- Offset emissions by purchasing "made in BC" carbon offsets;
- Report on annual progress using the PSO Climate Change Accountability Report; and
- Verify emissions inventories by having third-party review a portion of annual reports each year.

As part of this program, the BC government has developed a specific methodology for quantifying GHG emissions that is updated annually. This method is based on guidance from the World Resources Institute (WRI) and the Climate Registry, both international programs that have developed widely used guidance and protocols for measuring and reporting GHG emissions for organizations and for products. Under this program, public sector organizations must report annual GHG emissions associated with (MECCS, 2020):

- Stationary fuel combustion and purchased electricity;
- Mobile fuel combustion (e.g., fleets);
- Business travel; and
- Supplies (office paper).

The emissions inventories are required to include six greenhouse gases, including (MECCS, 2020):

- Carbon dioxide (CO2);
- Methane (CH4);
- Nitrous oxide (N2O);
- Hydrofluorocarbons (HFCs);
- Sulfur hexafluoride (SF6); and
- Perfluorocarbons (PFCs).

Each of the five provincial health authorities report annual GHG accountabilities under this program, and 2022 marked the 12th consecutive year that provincial health authorities reported their GHG emissions accountability reports, including:

- Fraser Valley Health;
- Interior Health;
- Island Health;
- Northern Health; and
- Vancouver Coastal Health.

A review of the provincial health authority reports submitted in 2022 (for the 2021 operating year) indicates that stationary fuel combustion (including purchased electricity) accounted for well over 90% of GHG emissions in 2021 for all health authorities (Table 3). Emissions associated with vehicle fleets and paper supplies were quite variable between regions but generally not significant contributors overall. One of the metrics tracked by each health authority is the amount of GHG emissions per square meter of facility space, which ranges from 0.05 t CO2e – 0.7 t CO2e per meter squared (Fraser Health, 2022; Interior Health, 2022; Island Health, 2022; Northern Health, 2022; Vancouver Coastal Health, 2022).

Table 3. Summary of GHG emissions accountabilities for British Columbia health authorities for the 2021 operating year.

Category	Vancouver Coastal Health	Fraser Health	Interior Health	Island Health	Northern Health
Mobile Fuel Combustion (t CO2e)	82	144	1,068	522	803
Stationary Fuel Combustion (t CO2e)	40,842	39,433	38,725	28,233	20,845
Supplies (t CO2e)	817	1,631	840	608	308
Total Carbon Footprint (t CO2e)	41,742	41,228	41,732	29,463	21,985
Total Biogenic CO2 (t CO2e)	36	25	1,100	50	29
Purchased Carbon Offsets ($)	$1,042,650	$1,034,400	$1,025,550	$735,325	$560,000
Emissions per Full-Time Employee (t CO2e/FTE)	2.32	1.80	1.99	1.66	n/a
Emissions per Meter Square Facility Space (t CO2/m2)	0.06	0.06	0.06	0.05	0.07

Sources: Fraser Health, 2022; Interior Health, 2022; Island Health, 2022; Northern Health, 2022; Vancouver Coastal Health, 2022.

Data for the GHG emissions associated with individual hospitals or health care facilities were not provided in the summary reports, and there are no descriptions of how these emissions values were obtained. It is assumed that utility bills and other financial reports were used to estimate how much electricity and fuel and paper were consumed and then emissions factors from the BC quantification method were used to estimate annual t CO2e. There are no descriptions or references to anesthetic gases, and it is assumed that they are not included in these emissions inventories since they do not fit any of the pre-defined categories.

It is notable that GHG emissions associated with the manufacturing of paper is included in these inventories. These are the only Scope 3 emissions included, and perhaps represent an initial effort to include Scope 3 by using something that is easily quantifiable and for which reliable emissions factors exist. If a full accounting of Scope 3 emissions were included, each health authority's total carbon footprint would increase significantly. However, that level of Scope 3 assessment is not currently required and is currently not feasible for most organizations due to lack of data and lack of appropriate emissions factors.

The summary reports also included updates on projects undertaken to reduce emissions, descriptions of upcoming projects, and other initiatives that are planned to reduce emissions in the new operating year.

4. Other Reporting Programs in BC

British Columbia's Greenhouse Gas Emissions Reporting Regulation requires industrial operators that emit over 10,000 tonnes of CO2e per year to report their GHG emissions annually (Osler, 2021a). Operators emitting over 25,000 tonnes of CO2e per year must report their GHG emissions and have them verified by a third-party. At present there are no health care facilities that exceed these thresholds, most likely because even the larger hospitals are reliant on electricity from the BC grid which has a low carbon intensity (over 80% of electricity produced from hydropower).

4.1 Alberta

Alberta's Ministry of Health does not have any formal policies or plans for measuring or reducing GHG emissions in the province's health care system. A review of the Alberta Health Services organization also did not reveal any plans to measure or report GHG emissions from health care facilities in the province.

In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any such voluntary programs, the only mechanism that could impose GHG emissions accountability onto Alberta health care operators would be through broader provincial climate change strategies. Alberta's Climate Leadership Plan does not make any reference to health care operators, nor does it make reference to emissions tracking for publicly owned buildings, as has been the case in some other provinces (Alberta Government, 2018).

Alberta has an emissions reporting and reduction program for large emitters called the Technology Innovation and Emissions Reduction Regulation (TIER). The threshold for this program is set to capture very large industrial emitters who produce more than 100,000 t CO2e per year, or emitters that compete with a producer regulated under TIER, or those who produce more than 10,000 t CO2e per year belong to a sector with high emissions intensity and trade exposure (Alberta Government, 2022). No health care facilities in Alberta would qualify under TIER.

The Specified Gas Reporting Regulation requires facilities that emit 10,000 tonnes or more CO2e per year to submit annual reports on their emissions (Alberta Government, 2023). These reports are submitted through ECCC's federal portal; however, it is not clear if these reports are publicly available.

Alberta's climate change and GHG emissions reporting policies and regulations are largely targeted at the oil and gas sector since this is the province's greatest source of emissions, and its greatest source of employment and economic return.

4.2 Saskatchewan

Saskatchewan's Ministry of Health does not have any formal policies or plans for measuring or reducing GHG emissions in the province's health care system. A review of the Saskatchewan Health Authority also did not reveal any plans to measure or report GHG emissions from health care facilities in the province.

In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto Saskatchewan health care operators would be through broader provincial climate change strategies. Saskatchewan's "Prairie Resilience" climate change strategy does not make any reference to health care operators, nor does it make any reference to emissions tracking for publicly owned buildings, as has been the case in some other provinces (Government of Saskatchewan, 2017).

Saskatchewan's Management and Reduction of Greenhouse Gases (Reporting and General) Regulation requires that all facilities in the province that emit more than 10,000 t CO2e annually must report their emissions to the government (Osler, 2021b). There are no health care facilities in Saskatchewan that are known to exceed this threshold.

Much like Alberta, Saskatchewan's climate change and GHG emissions reporting policies and regulations are largely targeted at the oil and gas sector, since this is the province's greatest source of emissions, and its greatest source of employment and economic return.

4.3 Manitoba

Manitoba's Department of Health does not have any formal policies or plans for measuring or reducing GHG emissions in the province's health care system. A review of the five regional health authorities in Manitoba also did not reveal any plans to measure or report GHG emissions from health care facilities.

In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto MB health care operators would be through broader provincial climate change strategies. Manitoba's climate change action plan does not include any specific initiatives for the health care sector or even the buildings sector in terms of tracking and reporting GHG emissions (Government of Manitoba, 2017). The one proposed program which may indirectly create greater climate accountabilities for health care operators is the Low Carbon Government initiative, within which efforts will be made to reduce GHG emissions for all government buildings. There is currently no mention of specific GHG reporting requirements for government owned buildings, but this type of program has led to reporting of GHG emissions by hospitals and health care operators in some other provinces. (e.g., British Columbia).

Moving towards a "carbon neutral government" was also referenced in Manitoba's 2015 Climate Change and Green Economy Action Plan, including discussion of developing and reporting GHG emissions inventories for all government owned buildings in the province (Government of Manitoba, 2015). Further to this, Manitoba enacted the Climate and Green Plan Implementation Act in 2017 which requires annual reporting of GHG emissions for all government departments and agencies (Government of Manitoba, 2017). However, to-date there is nothing to suggest that these action plans led to any on the ground tracking of GHG emissions at government facilities.

With respect to carbon pollution pricing, MB follows the federal fuel charge and OBPS program. Under this program, facilities that emit more than 50,000 tonnes CO2e annually must report annual GHG emissions and participate in the OBPS program (Osler, 2021c). At present Manitoba does not have any health care facilities that would exceed this threshold.

4.4 Ontario

Outside of British Columbia, the province of Ontario has the longest running provincial and territorial government regulations requiring health care operators to track and annually report their GHG emissions. Hospitals in Ontario fall under the provincial regulation for Broader Public Sector (BPS): Energy Reporting and Conservation and Demand Management Plan issued under the Electricity Act. This regulation (O. Reg 50718) requires BPS organizations to report annually on energy use and GHG emissions and to develop 5-year conservation and demand management plans (Government of Ontario, 2021). Hospitals of all sizes, along with other public organizations such as schools, universities, etc., have been reporting under this regulation since 2011. Emissions data are available for public download on the Ontario government website (https://data.ontario.ca/dataset/energy-use-and-greenhouse-gas-emissions-for-the-broader-public-sector).

Beyond this BPS regulation, Ontario also has a regulation requiring larger industrial emitters and facilities to report GHG emissions on a regular basis. Under the Greenhouse Gas Emissions: Quantification, Reporting and Verification Regulation (O. Reg. 390/18), all facilities that emit more than 10,000 tonnes of CO2e annually are required to report their annual GHG emissions, have their GHG emissions reports verified by a third-party, and submit emissions mitigation plans (Osler, 2021d). Much like the federal GHGRP, this program was largely designed to target heavy industrial emitters. However, a review of the GHG emissions that are reported publicly under this program on the Ontario government website (https://data.ontario.ca/dataset/greenhouse-gas-emissions-reporting-by-facility) reveals that several larger hospitals in Ontario exceed the 10,000 tonnes CO2e threshold and reported in the most recent year of data available (2019), including:

- Victoria Hospital (London): 51,875 tonnes CO2e;
- Juravinski Hospital and Cancer Center Cogeneration Plant (Hamilton): 21,414 tonnes CO2e;
- Hamilton General Hospital Cogeneration Plant (Hamilton): 12,656 tonnes CO2e;
- The Ottawa Hospital - Civic campus (Ottawa): 14,120 tonnes CO2e;
- Brampton Civic Hospital (Brampton): 11,528 tonnes CO2e;
- Oakville Trafalgar Memorial Hospital (Oakville): 13,496 tonnes CO2e; and
- Credit Valley Hospital (Mississauga): 11,146 tonnes CO2e.

With respect to carbon pollution pricing, Ontario developed their own pricing program in place of the federal OBPS, which is the Emissions Performance Standards (EPS). The Emissions Performance Standards Regulation program is established under the Greenhouse Gas Emissions Standards Regulation (O. Reg. 240/19) and applies to large industrial emitters that exceed 50,000 tonnes CO2e annually. Emitters of between 10,000 and 50,000 tonnes CO2e annually may voluntarily participate in the program (Osler, 2021d). With respect to health care operators, it is likely only the Victoria Hospital in London would exceed the 50,000 tonnes CO2e annually and be required to participate.

4.5 Québec

Québec's Department of Health does not have any formal policies or plans for measuring or reducing GHG emissions in the province's health care system. A review of a sample of the 17 regional health authorities in Québec also did not reveal any specific plans to measure or report GHG emissions from health care facilities.

In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto QC health care operators would be through broader provincial climate change strategies. Québec's 2030 Plan for a Green Economy sets out a number of initiatives related to climate change and buildings in the province. These include a number of broad initiatives to promote fuel switching for onsite generation and heating and improve energy efficiency (Government of Québec, 2022). The plan also notes an initiative to use more environmentally friendly building materials, touching on an approach that could potentially reduce Scope 3 emissions. The plan also includes a commitment to reduce GHG emissions associated with heating and fossil fuel use in government buildings by 60% (Government of Québec, 2022). This plan, along with all the initiatives laid out for buildings, do not reference health care facilities specifically, and do not specifically indicate any formal GHG emissions reporting programs to accompany these emissions reductions plans. So, while health care facilities may participate in these programs, there is nothing tangible in this plan to indicate that GHG reporting would be required.

Québec did not implement the federal carbon tax and OBPS program, but instead developed a provincial cap and trade program to establish a carbon market for large emitters. Under this program, industrial facilities that emit more than 25,000 tonnes CO2e per year qualify for the carbon market program, and emitters between 10,000 and 25,000 tonnes CO2e per year can opt-in voluntarily. No health care operators in Québec would exceed the 25,000 tonnes threshold to participate in this carbon market and report annual GHG emissions (Osler, 2021e).

4.6 New Brunswick

New Brunswick's Department of Health does not have any formal policies or plans for measuring or reducing GHG emissions in the province's health care system. A review of the two regional health care organizations also did not reveal any plans to measure or report GHG emissions from health care facilities.

In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto NB health care operators would be through broader provincial climate change strategies. New Brunswick released a climate change action plan in 2016, and in that plan made reference to British Columbia's Carbon Neutral Government Regulation. There was a sense that NB was planning to emulate this plan from British Columbia, and in particular commitments that the provincial government would (Government of New Brunswick, 2016):

- Be carbon neutral in its operations, facilities, and vehicles by 2030;
- Set up a GHG Offset program to facilitate achievement of its carbon-neutral goal; and
- Encourage municipal and other public institutions to participate and make similar commitments as the provincial government.

This is the type of program employed in BC which resulted in annual GHG emissions reporting by all provincial health authorities. However, in a 2020 progress report from the NB government, no progress was shown on these three objectives other than some background research and reports that had been completed (Government of New Brunswick, 2020). Furthermore, in 2022 New Brunswick released its most recent climate change action plan, and there is no longer any reference to these specific commitments from 2016 which seemed to emulate the BC program (Government of New Brunswick, 2022a). In general, this new plan includes several large commitments, such as reaching net-zero as a province by 2050, but does not provide detailed measures on how this will be achieved. While the plan makes no reference to accounting for GHG emissions in the health care sector specifically, it is noted that Action 113 was completed, which consisted of implementing an energy management plan across 800 government-owned facilities that could also be used to track GHG emissions (Government of New Brunswick, 2022b). This group of buildings includes hospitals, although no GHG emissions summaries are provided publicly for NB hospitals.

As part of the Canadian government's OBPS to regulate GHG emissions, New Brunswick enacted the Reduction of Greenhouse Gas Emissions Regulation under its Climate Change Act (Osler, 2021f). Under this regulation, facilities that emit more than 50,000 tonnes of CO_2e are required to report their annual GHG emissions and work towards reduction targets. Facilities producing between 10,000 and 50,000 tonnes of CO_2e annually may opt into the program if they choose. Due to the rather high threshold of this program, only large industrial operators come in above the threshold and report their emissions. There are no health care operators in NB that emit enough GHG emissions to qualify for this program.

4.7 Nova Scotia

Nova Scotia's Department of Health and Wellness does not have any formal policies or plans for measuring or reducing GHG emissions in the province's health care system. A review of Nova Scotia Health Authority also did not reveal any plans to measure or report GHG emissions from health care facilities.

In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto NS health care operators would be through broader provincial climate change strategies. In 2022, Nova Scotia released the Environmental Goals and Climate Change Reduction Act which set out the province's climate change action plan for the future (Government of Nova Scotia, 2021). Within this plan, there are no specific goals requiring health care operators to report GHG emissions. However, there is a goal to require any new or major retrofitted government buildings, including schools and hospitals, to be net-zero energy performance, and a goal to reduce GHG emissions from government buildings by 75% in 2035. While neither of these goals specify any GHG emissions reporting

requirements for hospitals, these are the types of policies which may lead indirectly to the need to report in order to assess progress towards the net-zero goal and the emissions reductions. It is noted that the net-zero objective would only apply to new or newly retrofitted buildings from 2022 onwards.

In 2018, Nova Scotia enacted the Quantification, Reporting, and Verification Regulations under the Environment Act, requiring facilities that emit more than 50,000 tonnes of CO_2e to report their annual GHG emissions and work towards reduction targets (Osler, 2021g). Due to the rather high threshold of this program, only large industrial operators come in above the threshold and report their emissions. There are no health care operators in NS that are known to emit enough GHG emissions to qualify for this program.

4.8 Prince Edward Island

Prince Edward Island's Department of Health and Wellness does not have any specific policies or programs requiring health care facilities to track and report GHG emissions. A review of the Health PEI agency also indicates that there are no formal policies in place requiring health care operators to report their GHG emissions.

In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto PEI health care operators would be through broader provincial climate change strategies. The province's climate change action plan for 2018-2023 does not include any specific objectives or policies for health care operators to report their GHG emissions (Government of Prince Edward Island, 2018). However, there is a commitment under the *Government Leadership* section to develop a GHG emissions inventory for government. It is not clear to what extent this might include hospitals and health care facilities as the emphasis is more on energy efficiency and fuel switching upgrades, however this type of mechanism directed at public buildings has led to reporting of GHG emissions from hospitals and health care facilities in other provinces.

PEI implemented the federal government's OBPS for large emitters, requiring annual reporting and reduction of GHG emissions for facilities with annual production of 50,000 tonnes of CO_2e. Smaller emissions-intensive trade exposed (EITE) facilities that emit 10,000 tonnes or more of CO_2 may voluntarily opt into the program (Osler, 2021h). There are no health care operators in PEI that would fall under this program.

4.9 Newfoundland & Labrador

Newfoundland and Labrador's Department of Health and Community Services does not have any formal policies or plans for measuring or reducing GHG emissions in the province's health care system. A review of the regional health care organizations also did not reveal any plans to manage or report GHG emissions at health care facilities.

In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto NL health care operators would be through broader provincial climate change strategies. In 2019, the NL government released a 5-year climate change action plan for the province. Within this plan there were no policies directed at health care operators or facilities with respect to managing GHG emissions (Government of Newfoundland and Labrador, 2019). The plan's only references to the health care system were recommendations to incorporate climate change into health care planning in relation to the health risks associated with climate change (e.g., disease).

The climate change action plan does recommend investment in energy efficiency and fuel switching projects in government-owned buildings in the province under the "Energy in Buildings and Homes"

section of the plan (Government of Newfoundland and Labrador, 2019). Provincial hospitals are included in a $38 million investment to upgrade public buildings to improve efficiency and lower GHG emissions. However, there is no evidence that these recommendations have led to GHG emissions reporting for public buildings, but this could be a catalyst for future tracking and reporting, at least in following-up to verify the outcome of energy efficiency and fuel switching investments.

As a province, NL has committed to GHG emissions reduction targets, and as part of that plan have enacted The Management of Greenhouse Gas Reporting Regulations. These regulations are targeted at large industrial emitters and impose GHG emission reporting targets for facilities that emit 15,000 tonnes of CO2e or more in a year (Government of Newfoundland and Labrador, 2022). Facilities that emit more than 25,000 tonnes of CO2e per year are also required to meet mandatory annual reduction targets. As of 2020, there are 17 facilities reporting under this regulation and there are no health care facilities captured under this program. Given the smaller size of health care operators in NL, it is not likely that any hospitals or facilities will ever exceed the reporting threshold.

The carbon pricing program in NL applies a carbon tax to combusted fossil fuels under the Revenue Administration Act and includes a performance standard system for large industrial emitters that produce more than 25,000 tonnes of CO2e annually (Osler, 2021i). These emitters face GHG emissions reduction requirements under the act. However, there are no health care operators that qualify under this program, and it is not expected that any hospitals or facilities will ever exceed the threshold.

4.10 Yukon

Health care in Yukon is led by the Department of Health Care and Social Services. The Department does not have any formal environment and sustainability plans or policies, and therefore no requirements for Yukon health care operators to report their GHG emissions to the government.

Hospitals in the Yukon are managed by the Yukon Hospital Corporation, including Whitehorse General Hospital, Dawson City Community Hospital, and Watson Lake Community Hospital. The Yukon Hospital Corporation does not have any formal environment and sustainability plans or policies and does not require hospitals to track and report their GHG emissions. In their most recent strategic plan, the Yukon Hospital Corporation did not set out any environmental or sustainability goals and did not mention GHG emissions (YHC, 2017).

Despite the lack of emphasis on climate change and GHG emissions within the management of the health care sector, the Yukon government does track and report its annual GHG emissions as part of the Our Clean Future policy that was released in 2020 (Government of Yukon, 2021a). Although the policy does not lay out any specific directives to account for GHG emissions from hospitals, as part of reaching the goal of reducing Yukon's GHG emissions by 45% (relative to 2010 levels) by 2030, GHG emissions are tracked and reported for all government buildings. More specifically, the Government of Yukon reports emissions using a Financial Control Boundary, meaning that only buildings and operations subject to government financial policies are included.

The GHG emissions inventories for public organizations and buildings in Yukon are developed using guidance from The Climate Registry (https://www.theclimateregistry.org/) and emissions factors from the ECCC National Inventory Report (NIR). The GHG inventories for public organizations and buildings are to be reported annually and to undergo third-party verification every 5 years (Government of Yukon, 2021b). The boundary of GHG emissions reporting for Yukon public buildings include:

- Scope 1 – Direct GHG emissions from assets owned by Government of Yukon reporting entities, including emissions from building heating, transportation, waste management, and refrigeration.
- Scope 2 – Indirect GHG emissions from the generation of purchased electricity.

Scope 3 emissions, including emissions from leased buildings and vehicles, are excluded from the boundary. The raw data on fuel, electricity, and transportation are from two government databases that are used to track government expenditures in these areas. Data on fuel consumption in non-fleet vehicles, waste management activities, and refrigeration are obtained by contacting the responsible organizations.

Under this reporting program, GHG emissions are tracked and reported for each of the three hospitals in the Yukon Hospital Corporation. These emissions have been reported since 2010 and are broken down according to emissions from building heating, fleet vehicles, electricity, and direct emissions from fugitive sources. Fugitive sources are assumed to include anesthetic gases; however, this was not defined in GHG reports and has not been confirmed.

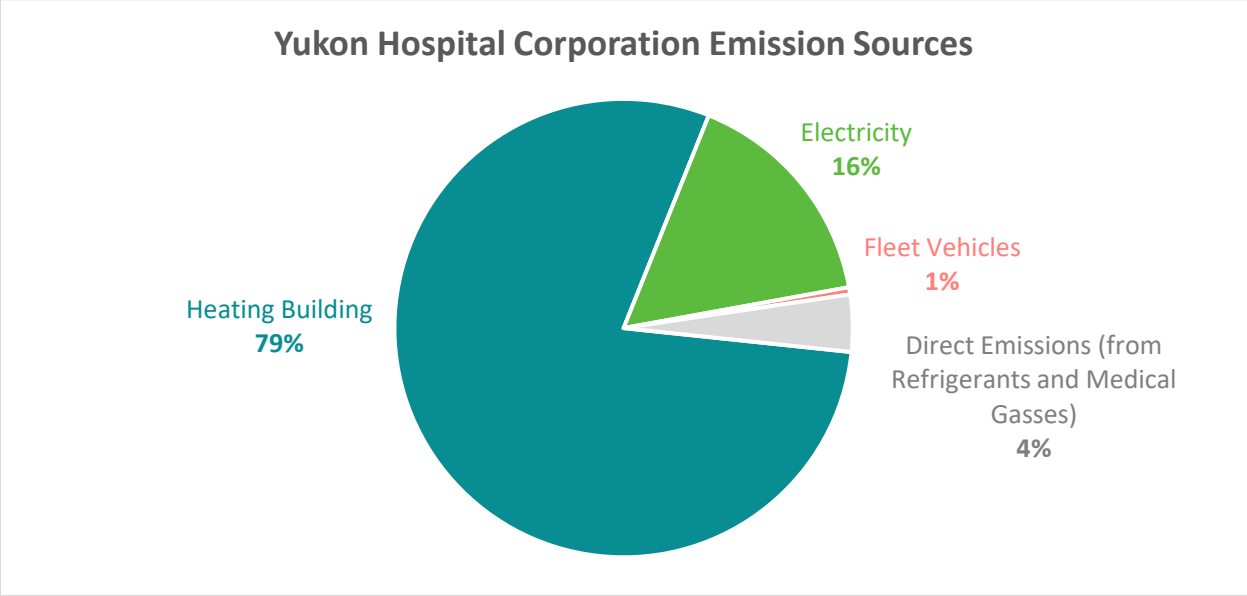

Figure 2. Breakdown of GHG emissions sources for the Yukon Hospital Corporation in 2019 (adapted from Government of Yukon, 2021b).

It is expected that GHG emissions for Yukon hospitals will continue to be reported and tracked as part of the Government of Yukon's ongoing efforts to meet GHG emissions reduction targets under the Our Clean Future policy, which also includes an objective of being Net Zero by 2050 (Government of Yukon, 2021a). Again, although these policies do not target health care providers directly, because hospitals are within the financial boundary of the Government of Yukon, they are included in the boundary.

4.11 Northwest Territories

The Department of Health and Social Services in the NWT does not have any specific policies or programs requiring health care facilities to track and report GHG emissions. In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto NWT health care operators would be through broader provincial climate change strategies.

The 2030 NWT Climate Change Strategic Framework does not include any specific recommendations on tracking GHG emissions from health care operators, nor does it include any reference to tracking GHG emissions from publicly owned buildings (Government of NWT, 2022). The strategic framework does include a commitment to "improve tracking of GHG emissions and reporting towards the NWT's emissions reduction target". This effort could include health care providers, although no specific sectors are included.

The NWT implemented a carbon tax on fossil fuels with no particular program requirements for designated large emitters. The NWT have not implemented the federal government's OBPS for large emitters. There are no health care operators in NWT that would qualify as a large emitter in any case.

4.12 Nunavut

Nunavut's Department of Health does not have any specific policies or programs requiring health care facilities to track and report GHG emissions. In the absence of programs and policies directed specifically at measuring GHG emissions in the health sector or any voluntary programs, the only mechanism that could impose GHG emissions accountability onto Nunavut health care operators would be through broader provincial climate change strategies. The province has released a plan called Setting the Course: Climate Change Impacts and Adaptation in Nunavut (Government of Nunavut, 2011). This plan acknowledges the need to reduce GHG emissions, but is notably focused more on climate change adaptation, as one might expect for such a northern territory. This climate change plan does not include any specific objectives or policies for health care operators to report their GHG emissions, nor does it define any specific plans for tracking GHG emissions from public buildings, which is the type of mechanism that has led to reporting of GHG emissions from hospitals and health care facilities in other provinces.

Nunavut implemented the Federal Backstop under the federal carbon pricing program, meaning that they implemented a carbon tax on fossil fuels, and implemented the federal government's OBPS for large emitters, requiring annual reporting and reduction of GHG emissions for facilities with annual production of 50,000 tonnes of CO2e. Smaller emissions-intensive trade exposed (EITE) facilities that emit 10,000 tonnes or more of CO2e may voluntarily opt into the program (Osler, 2021j). There are no health care operators in Nunavut that would fall under this program.

4.13 Synopsis of Provincial Programs for Health Sector GHG Accountabilities

A summary of the key findings of the provincial scan are provided in Table 4 below. Overall, the provincial scan indicated that only one province or territory currently has a formal program for tracking and reporting GHG emissions for the entire provincial health care sector (British Columbia), and only five provinces/territories have policies in place requiring hospitals to report annual GHG emissions (British Columbia, Manitoba, Ontario, New Brunswick, and Yukon). It is also noted that none of these policies are specific to the health sector, but rather are targeted more broadly at publicly owned facilities, which includes hospitals and health care facilities. Three provinces have hospitals that report their annual Scope 1 GHG emissions to the federal GHGRP (Alberta, Ontario, and Québec). Reporting thresholds for carbon pricing programs and other large emitter regulations range from 10,000 t CO2e annually up to 100,000 t CO2e annually (in Alberta). Results of the federal and provincial scans both indicated that commitments to reduce GHG emissions for government agencies and government owned facilities often lead to increased GHG emissions accountabilities for operators. However, only four provinces currently have such commitments.

Table 4. Overview of current GHG emissions accountabilities for health care operators and more general GHG emissions reporting requirements in each Canadian province and territory.

Province/Territory	Health Sector GHG Emissions Reporting	GHG Emissions Reported by Hospitals	Large Hospitals Report to GHGRP	Provincial GHG Reporting Threshold	Carbon Pricing Reporting Threshold	Commitment to Report GHG Emissions for Public Buildings
British Columbia	✓	✓	✗	10,000 t CO2e	10,000 t CO2e	✓
Alberta	✗	✗	✓	10,000 t CO2e	100,000 t CO2e	✗
Saskatchewan	✗	✗	✗	10,000 t CO2e	50,000 t CO2e	✗
Manitoba	✗	✗	✗	-	50,000 t CO2e	✗
Ontario	✗	✓	✓	-	50,000 t CO2e	✓
Québec	✗	✗	✓	-	25,000 t CO2e*	✗
New Brunswick	✗	✗	✗	10,000 t CO2e	50,000 t CO2e	✗
Nova Scotia	✗	✗	✗	-	50,000 t CO2e*	✗
Prince Edward Island	✗	✗	✗	-	50,000 t CO2e	✓
Newfoundland & Labrador	✗	✗	✗	15,000 t CO2e	25,000 t CO2e	✗
Yukon	✗	✓	✗	-	50,000 t CO2e	✓
Northwest Territories	✗	✗	✗	-	-	✗
Nunavut	✗	✗	✗	-	50,000 t CO2e	✗

**Threshold for participation in a cap-and-trade program*

5. Health Sector Climate Accountabilities in Other Jurisdictions

In addition to understanding the current situation for climate accountabilities for health care providers in Canada, a scan of some other selected jurisdictions was conducted to explore the current status in other countries and to potentially anticipate future developments that may arise in Canada based on international trends. The scope of this scan of other jurisdictions was limited to a few select countries for which information was readily available and that were of particular relevance.

5.1 England

England's National Health Service (NHS) has become the global standard for addressing GHG emissions from health care operators, with its commitment to achieving net-zero health care operations. As part of this commitment, the NHS has enacted legislation requiring them to achieve net-zero by 2040 for "emissions the NHS controls directly", and net-zero by 2045 for "emissions the NHS has ability to influence". The former refers to Scope 1 and 2 GHG emissions, and the latter refers to supply chain or Scope 3 GHG emissions. The pursuit of net-zero emissions for Scope 3 sources would appear to be a global first, and certainly well-beyond any commitments made in Canada up to this point. These commitments and related initiatives and requirements have been enacted into legislation under the Health and Care Act 2022 (NHS England, 2020).

There are many ambitious objectives for programs and initiatives coming out of these net-zero commitments; however, for the focus of the present research report, the aspects of greatest interest are the development and use of GHG emissions inventories for operators within the NHS. Since 2008, the NHS has tracked and reported the GHG emissions of its operations under England's Climate Change Act (NHS England, 2020). The Climate Change Act does not make specific reference to health care operators; however, it does set requirements for England to develop carbon budgets that could not be exceeded by national GHG emissions, and a key part of developing these carbon budgets is estimating national GHG emissions periodically to enable the setting of carbon budgets.

To calculate the GHG emissions for NHS operations, a hybrid approach is used, including a "top-down" approach using financial activity data and input-output emissions estimates, as well as a "bottom-up" validation of the calculations using data from NHS organizations (NHS England, 2020). This approach was used not only to model past and current GHG emissions, but also to develop models to project emissions out to 2050 to allow for assessment of proposed reduction initiatives.

Table 5 below provides an overview of the calculation approaches and data sources used to estimate the NHS carbon footprint, including the baseline, current years, and projected emissions scenarios out to 2050. This table provides a sense of the complexity of calculating a more complete carbon footprint for health care operations in a country, and the wide-ranging sources of data and approaches that are required. An effort at this level extends well beyond just gathering GHG emissions data from hospitals. As is noted in the guidance document for the NHS net-zero plan, data and monitoring underpin the entire effort, including existing data reporting by health care operators on anesthetics, inhalers, and building energy use, and newly mandated data collection on sustainability indicators by clinical commissioning groups and trusts within the NHS (NHS England, 2020).

Table 5. Summary of calculation approaches and data used to estimate the GHG emissions of NHS operations, both baseline year emissions through to project emissions to 2050 (Adapted from NHS England, 2020).

Category	Bottom- up or top-down?	Source	Back Cast years	Actual data	Projection years	Projection Basis
Building energy use, hospitals	Bottom-up	ERIC	None	1990–2018	2019–2050	Gas, oil, coal – continuing trends Electricity – expenditure adjusted for inflation
Building energy use, other sites (GP, offices)	Estimate	Sample data source	1990–2013	2014–2015	2016–2050	Back cast based on hospital energy use. Forecast based on expenditure adjusted for inflation.
Electricity factors	Bottom-up	BEIS HMT Green Book	1990–2002	2002–2017 2018–2050		All BEIS factors have been used for grid composition year and HMT Green Book modelled factors have been used for subsequent years. For 2018 an average of 2019 BEIS (2017 grid composition) and 2020 Green Book factor has been used.
Waste and water	Top-down	EEIO	1990–1996	1997–2016	2017–2050	Comparison with bottom-up data shows a large variance, so top- down totals are being used.
Travel – staff, visitor, and patient	Top-down	NTS	1990–2001	2002–2018	2019–2050	Continuing trends model
Supply chain	Top-down	EEIO	1990–1996	1997–2016	2017–2050	Forecast based on OBR FSR 2018 growth projections
Anesthetics – volatiles	Bottom-up	Supplier information	1990–2015	2016–2018	2019–2050	
Anesthetics – nitrous oxide	Bottom-up	Supplier information	1990–2010	2011	2012–2050	
Meter dose inhalers hydrofluorocarbons (HFCs)	Bottom-up	NAEI	1990–2005	2006–2017	2018–2050	Back cast uses linear increase between introduction of HFC inhalers in 1997 to first recorded emissions data in 2006.
Meter dose inhalers chlorofluorocarbon gases (CFCs)	Bottom up	NAEI		1990	1991–2050	Linear reduction 1990 to 2006

Definitions: ERIC= Estates Return Information Collection; BEIS = Department of Business, Energy, and Industrial Strategy; HMT = HM Treasury; EEIO= Environmentally Extended Input-Output; NTS = National Travel Survey; NAEI = National Atmospheric Emissions Inventory; OBR = Office for Budget Responsibility; FSR = Fiscal Sustainability Report.

5.2 United States

The US presents an interesting case to consider since the health care system is largely operated by private organizations, as opposed to the publicly funded and operated health care system in Canada (and in England). In this case there is less ability for centralized direction to compel health care operators to track and report GHG emissions, and more reliance on voluntary or incentivized actions towards reporting GHG emissions. An extensive review of the entire US health care sector was beyond the scope of this research project, however, there have been some efforts by other researchers to review the level and scope of sustainability and GHG emissions reporting in the US health sector and some key findings and insights from this work are summarized here.

In an overview of the environmental performance of the US health care system, Eckelman et al. (2020) noted that facility-level data on GHG emissions are needed to support a proper assessment of the industry, and that currently there are no GHG emissions reporting mandates in the US for health care operators or corporations. Senay & Landrigan (2018) did a scan of large health care organizations (HCO) in the US to assess the level of environmental and sustainability reporting coming from these organizations. Their analysis examined 49 health care corporations in the US, including 8 Fortune 500 companies, 3 from the S&P500, 8 from the Forbes 100 Largest Charities list, 11 of the other largest for-profit HCOs, and 10 of the largest non-profit HCOs. Results of the analysis indicated a very low reporting rate by health care organizations relative to other economic sectors, with a particularly low rate of reporting GHG emissions from health care operations (Figure 3).

The decision to compare health care organizations with other economic sectors is revealing in and of itself, as it highlights the fact that major health care providers in the US are privately owned for the most part, and thus may operate more like a typical corporation than would a health care authority in Canada where they are part of the broader public sector. The framing here is that, in the absence of direct mandates, private health care organizations may be likely to choose to track and report on environmental performance voluntarily in an effort to distinguish themselves in a competitive market, much like a typical corporation like Walmart would.

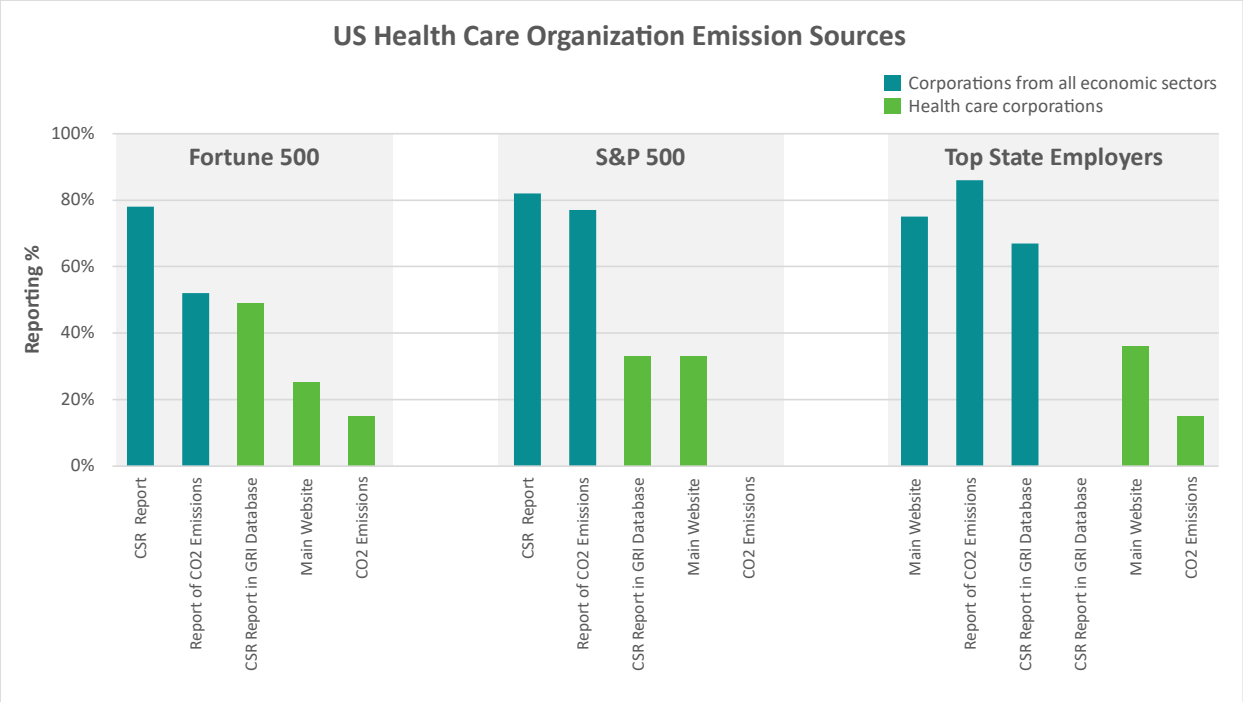

Figure 3. Summary of sustainability and GHG emissions reporting by US health care organizations compared with the percentage of those reporting in all other economic sectors in the US (adapted from Senay & Landrigan, 2018).

Sherman et al. (2018) provided a brief article reflecting on the findings from Senay & Landrigan (2018) and noted that the sample of 49 large health care organizations represented only a small sample of the more than 5,500 hospitals operating in the US. Sherman et al. (2018) then noted that there are a number of other sustainability initiatives that large numbers of US hospitals are engaging with and suggest that there is a greater desire to track and report on sustainability metrics across the sector in the US than is captured by Senay & Landrigan (2018).

Sherman et al. (2018) do not provide any evidence related to specific tracking and reporting of GHG emissions by US health care operators and point only towards some broader trends in sustainability and some avenues through which sustainability metrics may become more integral in the US health sector. In building off the arguments from Sherman et al. (2018), in April of 2022 the Department of Human Health Services (DHS) in the US partnered with the White House and Biden Administration to create the Health Sector Climate Pledge (The White House, 2022). This voluntary pledge asks health sector operators to sign on and commit to:

- Reducing GHG emissions by 50% by 2030, achieve net-zero operations by 2050, and to report publicly on their progress;
- Complete an inventory of Scope 3 GHG emissions; and
- Develop climate resilience plans for their facilities and communities.

As of June of 2022, over 61 of the largest health care organizations and hospitals in the US had signed on to the pledge, accounting for 650 hospitals and thousands of health care providers across the country (White House Briefing Room, 2022). While the signing of this voluntary pledge does not guarantee any increase in GHG emissions tracking and reporting for US health care operators, it does signal a strong movement in this direction in the US, and the large health care organizations that have signed on will likely compel a significant number of operators to participate in tracking and reducing GHG emissions. It

is also notable that the pledge includes a commitment to quantify Scope 3 GHG emissions, something that has not been done to-date by health care operators in Canada and most other countries outside of England. There are no indications, however, of how this could be achieved, and the lack of data and knowledge on how to model Scope 3 remains a barrier in the US, and globally.

5.3 Germany

A study of GHG emissions reporting by German hospitals published in 2021 indicated that 12% of all German hospitals reported some level of GHG emissions (Quitmann et al., 2021). Of these hospitals, over 77% were privately owned, 18% were publicly owned, and 4% were non-profit health care providers.

A deeper analysis of 62 of the hospitals that reported GHG emissions indicated that hospital sizes ranged from 25 to 3,011 beds, with a median of 335 beds. Hospitals with more than 500 beds were more likely to report GHG emissions than those with less than 500 beds (Quitmann et al. 2021). Many of the reporting hospitals did not specify any protocols that were followed for quantification of GHG emissions, and there was some inconsistency in which types of GHG emissions were reported, with 60% only reporting CO_2, and 40% reporting CO_2, CH_4, N_2O, and HFCs. Over 95% of the reporting hospitals reported Scope 1 emissions, 90% reported Scope 1 and Scope 2, and none of the hospitals reported Scope 3 emissions (Quitmann et al. 2021).

The sources of GHG emissions that were included in reporting from 62 of the hospitals examined are summarized in Figure 4. Electricity was the most commonly included source of GHG emissions, while anesthetic gases were only included by 2% of the reporting hospitals.

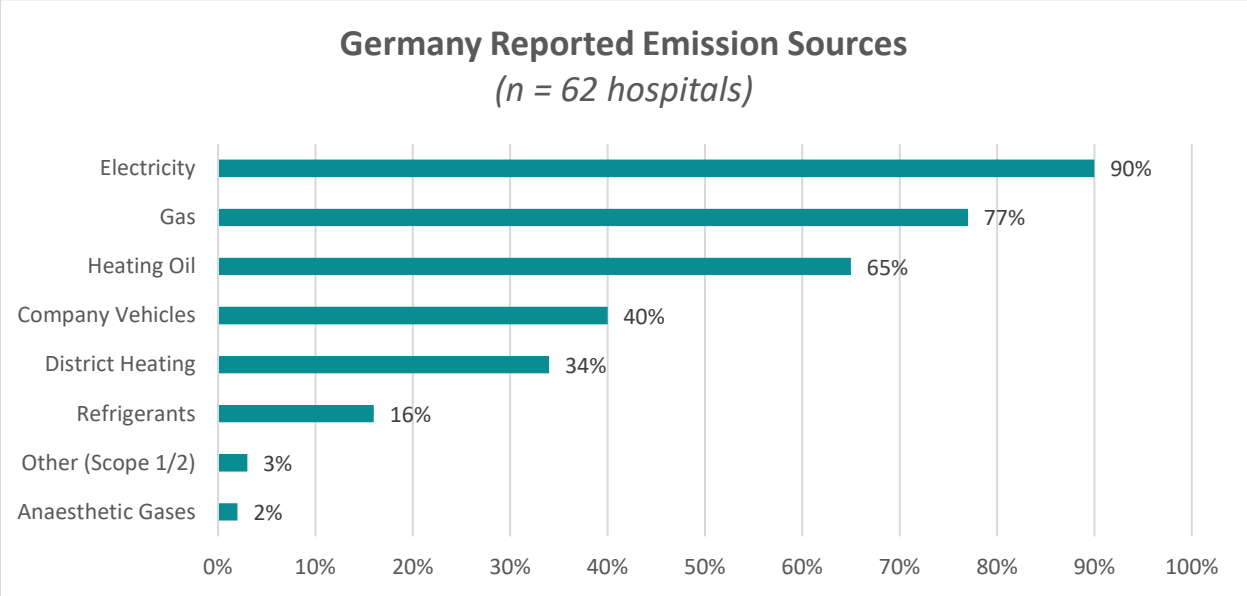

Figure 4. Summary of reported emissions sources for 62 hospitals reporting GHG emissions in Germany (adapted from Quitmann et al. 2021).

Quitmann et al. (2021) summarized the situation in Germany, indicating that a small proportion of hospitals report GHG emissions, and reporting from those that do is incomplete and inconsistent. They noted that there is no legal obligation for hospitals to report GHG emissions in Germany, and that the majority of hospitals reporting are privately-owned and reporting voluntarily to communicate with stakeholders and improve their image. For other hospitals it is argued that without any legal requirements, there are not enough incentives to generate more voluntary reporting as hospitals work to balance many issues related to providing adequate service and that GHG emissions reporting is thus

not a priority. Further recommendations were to develop a more standardized GHG emissions reporting structure for Germany to improve the completeness and consistency of reporting in the future.

6. Discussion on Health Sector Climate Accountability in Canada

The scan of federal, provincial, territorial, and international health sector climate accountabilities revealed several common observations, trends, and outcomes that warrant further discussion to help explore the potential future of climate accountabilities for the Canadian health sector. In this section, several key themes from this broad review are discussed more fully to indicate the potential implications for climate accountabilities for health sector operators.

6.1 Mechanisms of Climate Accountability

In addition to understanding the current state of climate accountability for health care operators in Canada, one of the objectives of this research was to better understand the driving forces that have led to the current level of accountability in Canada, and how those forces may contribute to future changes (or not). These driving forces can be defined within three broader categories, and several levels within each category (Table 6).

Direct regulatory mechanisms observed in the scan included federal GHG emissions reporting programs such as the GHGRP, federal carbon pricing plans such as the OBPS, and limited provincial government regulations for GHG emissions reporting by facilities, such as Ontario's provincial OBPS programs or other heavy emitter regulations. These are direct mechanisms because they are mandatory and require health care facilities to report when they exceed emissions thresholds, but they have low current and expected future influence because they are limited in terms of their scope (often only capture very large emitters), limited in extent (not present in many provinces), and generally only account for Scope 1 and Scope 2 GHG emissions.

Table 6. Summary of mechanisms that drive climate accountability and their current and expected future influence on the level and scope of climate accountabilities for the Canadian health sector.

Mechanism for Climate Accountability	GHG Emissions Scopes to be Considered	Current Influence on Canadian Health Sector Accountability	Likelihood to Drive Future Change in Canadian Health Sector Accountability
Direct Regulatory Mechanisms			
Mandatory federal government programs for GHG emissions reporting by facilities	Scope 1	Low	Low
Mandatory provincial/territorial government requirements for GHG emissions reporting by facilities	Scope 1, 2	Low	Low
Indirect Regulatory Mechanisms			
Provincial/territorial climate change plans for tracking emissions in government owned buildings	Scope 1, 2	Moderate	High
Federal/provincial/territorial policies for net-zero operations	Scope 1, 2, 3	Low	Moderate
Federal/provincial/territorial energy efficiency and fuel switching projects	Scope 1, 2	Low	Moderate
Federal/provincial/territorial initiatives for sustainable procurement	Scope 3	Low	Moderate
Voluntary Mechanisms			
Health sector action groups/pledges	Scope 1, 2, 3	Low	High
Health authority sustainability initiatives	Scope 1, 2, 3	Low	Moderate
Pressure from surgeons, internal experts, and academia	Scope 1, 2, 3	Low	High

Indirect regulatory mechanisms observed in the scan included provincial and territorial climate action plans which required the reporting of GHG emissions for government owned agencies and facilities (e.g., Yukon), and other federal, provincial, and territorial policies towards net-zero operations, efficiency and fuel-switching programs, and sustainable procurement plans. Provincial and territorial programs requiring the reporting of GHG emissions for public sector buildings are already having a moderate influence on climate accountabilities for health care operators because a common regulatory strategy is to use government owned programs and facilities to demonstrate and promote behaviors that governments would like to see adopted more widely. For this reason, and because of the increasing number of climate action initiatives being taken by governments, it is expected that this mechanism may have a high level of influence on future climate accountabilities for health sector operators. Other government programs with indirect influence are currently having a low level of influence on health sector operators because they mostly do not include specific GHG emissions reporting requirements alongside of GHG reduction commitments, and they appear to be going ahead in the absence of baseline GHG emissions data from health care facilities (e.g., fuel switching programs for hospitals and health care facilities are being funded and undertaken despite the absence of GHG emissions reporting).

Voluntary mechanisms are becoming more prominent in some jurisdictions due to the lack of, or slow pace of, government initiatives to track and report on GHG emissions in health care operations. Examples of voluntary mechanisms include the Health Sector Climate Pledge in the US, which despite being created by the US government, will succeed purely on the will of health care authorities and operators to voluntarily participate. Examples in Canada include the CCGHC's Green Hospital Scorecard (CCGHC, 2023) and Practice Green Health's GHG Inventory tool (PGH, 2023). Academic groups in many jurisdictions are creating increasing momentum, developing important data sets and methods, and creating collaborative efforts to build capacity and raise awareness of the need to better quantify and reduce GHG emissions from the health care sector. These groups are much more agile and able to bring resources and expertise to bear more quickly on key issues. Despite their lack of ability to mandate action in the way that government regulators can, these groups have the potential for a high level of influence on the future climate accountabilities for the Canadian health care sector and could play a valuable role in supporting the development of necessary data and calculation approaches.

6.2 GHG Emissions Reporting Scopes

Results of the scan indicated that Scope 1 emissions (i.e., emissions from onsite energy generation) are the target of most current regulatory programs, and among the small proportion of health sector emissions that are currently reported in Canada, Scope 1 and Scope 2 (i.e., purchased electricity) GHG emissions are the only emissions captured. Although it has taken considerable effort to reach this low level and limited scope of GHG emissions reporting, research on the life cycle impacts of health care systems indicates that Scope 3 emissions (i.e., upstream emissions from the manufacturing and transport of goods and materials used in hospitals) likely account for upwards of 80% or more of overall life cycle GHG emissions in the health care sector (Eckelman et al., 2020).

The tracking and reporting of Scope 3 emissions for health sector operators presents an entirely new set of challenges relative to Scope 1 and Scope 2 emissions. There are thousands of products and systems used in health care facilities that create Scope 3 emissions, and the estimation of even a fraction of the products used in a single hospital is beyond the capacity and capabilities of most health care organizations. There are significant data gaps, significant gaps in knowledge and methods for calculating emissions factors, and a need for significant time and financial resources to be invested into the ability to reasonably estimate and track Scope 3 emissions in healthcare.

A full exploration of this issue is beyond the scope of this research project; however, the fact that there currently is no reporting of Scope 3 emissions for health care operators globally (with a few exceptions)

only serves to reinforce the inherent challenge in doing so. Unlike requiring health care facility operators to track and report on energy use and GHG emissions, where the data are readily available within existing facility records, accounting for Scope 3 emissions cannot be addressed by mandating that health care operators start tracking and reporting on them. As noted, they do not have the data, the expertise, or the resources to undertake this individually. In short, addressing Scope 3 emissions in the health care sector will require a more centralized and collaborative effort to develop the fundamental methods and data, and potentially develop calculation tools to be disseminated more broadly within the sector. The NSH England example in Section 4.1 provides some sense of the complexity and a path forward.

6.3 Appropriate Climate Accountabilities Relative to Objectives

Results of this jurisdictional scan indicate that there is currently a very low level of GHG emissions accountability for health care operators in Canada. Given broader developments in global movements toward net-zero and an increasing focus on addressing the climate crisis, it seems likely that GHG emissions accountabilities for health sector operators will increase due to the mechanisms described in the previous section. Given the significant time and efforts involved at various levels of government and health sector operation required to achieve this existing low level of accountability, it is likely that further increases in accountability will arise slowly due to the slow pace of change at the government level, the need to build capacity in key areas where data needs to be gathered, and the need to direct resources to these efforts.

This observation raises some important questions. What is the extent of time and resources needed to raise the current level of accountability? If we are operating in a climate crisis with limited time, what is the level of time and resources that could be directed at increasing climate accountabilities to meet climate policy objectives? What are the primary objectives of pursuing increased climate accountabilities for health care operators? And is there an appropriate level of climate accountability that is being pursued? What is that appropriate level? Is it for 100% of individual health care operators to be tracking and reporting their GHG emissions annually? Or for some other percentage of coverage that is higher than the current situation but not fully 100%? What are the broader objectives within which climate accountabilities for health care operators serve? Presumably it is to continuously, and perhaps rapidly, reduce GHG emissions from health care operations and facilities in pursuit of larger provincial, federal, and global climate change objectives (e.g., net-zero).

These are important questions to ask in determining a path forward. Having reliable data on the GHG emissions of health care operators is necessary to understand where the emissions reductions opportunities are and to track progress over time. However, there is a point beyond which having more data on an increasing number of individual facilities and operators may not be necessary to continue working towards the desired objectives, and a point beyond which the time and costs required to track more and more data at more and more facilities are no longer worthwhile. In light of this, it may make more sense to pursue midway solutions similar to what is done in the NHS England approach where a mixture of top-down and bottom-up data and calculations are used to estimate health sector-wide GHG emissions. Within this approach, rather than expecting all or most health care operators to report GHG emissions, financial data on energy and other purchases could be used at the level of health authorities, or at the provincial/territorial government level, combined with emissions factors to estimate the GHG emissions of facilities within the sector, and then ground-truthing those estimates using ground-up GHG emissions data from a selection of facilities that are reporting. This is also the approach taken to developing Canada's NIR on GHG emissions, which is a critical tool and data source for informing climate policy.

Answering these questions and developing these approaches will require further discussion and collaboration by government, academia, and health care operators to arrive at an optimal solution. The need for this effort is raised here as an overall observation of the results of this jurisdictional scan and

based on an understanding of the level of effort that would be required to continue to increase climate accountabilities for individual health sector operators and noting that placing more of that accountability at a higher level than individual operators (e.g., hospitals) may be a preferred approach. This may allow for objectives to be met in a more effective and timely fashion.

7. Conclusions

A scan of current climate accountabilities at the federal level and provincial and territorial levels was completed to determine the current level of GHG emissions tracking and reporting required of health sector operators in Canada. An additional scan of selected jurisdictions outside of Canada was also completed to understand current trends in climate accountabilities for health care operators in those countries, and to understand if trends or approaches being taken in other countries might point to where climate accountabilities will go for Canadian health sector operators in the future.

Results of the federal scan for Canada indicated that there are currently no formal programs or policies specifically requiring health care operators to track and report their GHG emissions. However, a limited number of larger hospitals were identified as being eligible for Canada's GHGRP for large emitters and shown to be reporting annual GHG emissions under that program. Results of the provincial and territorial scan also indicated a very low level of climate accountability for health sector operators, and very limited levels of policies and programs directed specifically at tracking GHG emissions in the health sector. The primary mechanism driving the reporting of GHG emissions by health sector operators at the provincial and territorial level was shown to be broader climate change action plans by provincial and territorial governments to track GHG emissions in public sector buildings and facilities, under which many health care facilities fall. A scan of carbon pricing and OBPS approaches federally and at the provincial and territorial level showed that the majority of health care facilities do not produce enough GHG emissions annually to meet the reporting thresholds for these programs. Results of the federal and provincial and territorial scans also revealed that existing climate accountabilities for health care operators only include Scope 1 and sometimes Scope 2 GHG emissions. With the exception of the inclusion of paper in British Columbia health sector inventories, Scope 3 GHG emissions are not currently being captured in reporting programs.

Results of the scan of other jurisdictions showed similar trends in some respects, such as the lack of Scope 3 emissions reporting and the relatively low level of overall GHG emissions accountability for health care operators. The exception was the NHS program in England where an approach combining top-down calculations and bottom-up data validation is used to estimate GHG emissions for the entire NHS, and where health care operators are participating in a large-scale effort to pursue net-zero operations, including Scope 3 emissions.

Changes in future climate accountabilities for Canada's health sector are not likely to be driven by mandatory federal and provincial/territorial emissions tracking programs that were designed for large industrial emitters. Future changes in climate accountabilities are more likely to come indirectly from broader provincial and territorial government programs to track GHG emissions of government agencies and facilities, and from voluntary actions taken by health care operators with the support of health care authorities, academia, and highly motivated internal experts such as surgeons and clinicians.

It is recommended that future climate accountabilities and efforts to estimate and track GHG emissions for the health care sector may be better directed towards the health authority level and the provincial/territorial government level, rather than emphasizing accountability at the individual operator or facility level. The level of desired climate accountabilities at each of these levels should be carefully considered in the context of the climate change policy objectives being pursued in order to develop a time and cost-effective approach to guide the sector in the climate crisis.

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