NET-ZERO CHALLENGE

TECHNICAL GUIDE

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Environment and Climate Change Canada
Public Inquiries Centre
12th Floor, Fontaine Building
200 Sacré-Coeur Boulevard
Gatineau QC K1A 0H3
Telephone: 819-938-3860
Toll Free: 1-800-668-6767 (in Canada only)
Email: ec.enviroinfo.ec@canada.ca

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Abbreviations

CH_4: Chemical formula for methane

CIB: Canada Infrastructure Bank

CO_2: Chemical formula for carbon dioxide

CO_2 eq: Carbon dioxide equivalent

ESG: Environmental, Social, and Governance

GFANZ: Glasgow Financial Alliance for Net-Zero

GHG(s): Greenhouse gas(es)

GHGRP: Greenhouse Gas Reporting Program

GWP: Global Warming Potential

HFC: Shorthand for a group of chemicals called hydrofluorocarbons

kt: Kilotonne(s)

Mt: Megatonne(s)

NIR: National Inventory Report

N_2O: Chemical formula for nitrous oxide

NZA: Net Zero Accelerator

NZBA: Net-Zero Banking Alliance

OBPS: Output Based Pricing System

PFC: Shorthand for a group of chemicals called perfluorocarbons

PPCA: Powering Past Coal Alliance

SACC: Strategic Assessment of Climate Change

SBTi: Science Based Targets initiative

SF_6: Chemical formula for sulfur hexafluoride

SIF: Strategic Innovation Fund

UNEP-FI: United Nations Environment Programme Finance Initiative

UNFCCC: United Nations Framework Convention on Climate Change

Glossary of Terms

Absolute emissions reduction target: A target defined by a percentage reduction in absolute emissions over time relative to a base year, e.g. reduction of emissions by 45% below 2005 levels by 2030.

Anthropogenic emissions: Emissions caused by human activities.

Avoided emissions: Emissions reductions that occur outside of a product's life cycle or value chain, but as a result of the use of that product (World Resources Institute).

Bottom-up approach: A process by which a company selects a target based on possible future scenarios underpinned by robust assumptions on prices, economic factors, policy environment, and technological developments.

Carbon sequestration: The process of storing carbon in a carbon sink (see definition on carbon sink).

Carbon sink: A reservoir (natural or human, in soil, ocean, and plants) where a greenhouse gas is stored. (IPCC Special Report: Global Warming of 1.5C).

Carbon dioxide equivalent (CO_2 eq): A unit of measure for comparison between greenhouse gases (GHGs) that have different global warming potentials (GWPs). This unit of measure allows other GHGs to be expressed in terms of the GWP of one unit of CO_2. To express GHG emissions in units of CO_2 eq, the quantity of a given GHG is multiplied by its GWP.

Decarbonization: The process of reducing carbon dioxide emissions from a product, process, facility, or sector.

Deforestation: Conversion of forest land to a non-forest land use.

Direct emissions: Emissions from sources that are owned or controlled by a company (GHG Protocol 2004: 97).

Downstream emissions: Emissions from downstream activities associated with the operations of a company, including processing of sold products, use of sold products, investments, franchises, downstream transportation and distribution, end-of-life treatment of sold products, and downstream leased assets.

Emissions intensity reduction target: A target defined by a reduction in emissions relative to productivity or economic output, e.g. reduction of emissions per barrel of oil produced by 25% between 2020 and 2030.

Emission factor: A value that quantifies an average amount of emissions associated with an activity. For more details on Canada-specific emission factors, see the latest National Inventory Report for Canada.

Emissions: The release of greenhouse gases into the atmosphere.

Emissions inventory: A quantified list of a company's greenhouse gas emissions and sources.

Energy Efficiency: A measure of how effectively energy is used for a given purpose. It is a ratio or other quantitative relationship between an output of performance, service, goods, commodities, or energy, and an input of energy.

Environmental, Social, and Governance criteria: The criteria are a set of standards for a company's operations that global investors are increasingly using to screen potential investments. Environmental criteria consider how a company performs as a steward of nature. Social criteria examine company relationships with employees, suppliers, customers, and the communities in or near operations. Governance relates to the overall leadership, executive pay, audits, internal controls, and shareholder rights of a company.

Equity share: One approach a company may use to define the organizational boundary of their GHG emissions inventory (*see inventory boundary*). Equity share reflects a company's economic interests in an operation. Typically, the share of economic risks and rewards that a company has in an operation is aligned with their percentage of ownership in that operation (GHG Protocol 2004: 17).

Financial control: One approach a company may use to define the organizational boundary of their GHG emissions inventory (*see inventory boundary*). Financial control is when the organization has the ability to direct the financial and operating policies of an operation with a view to gaining economic benefits from its activities (GHG Protocol 2004: 17).

Fugitive emissions: Emissions resulting from the intentional or unintentional releases of GHGs, e.g. equipment leaks from joints, seals, packing, and gaskets; methane emissions from coal mines and venting; hydrofluorocarbon emissions during the use of refrigeration and air conditioning equipment; and,

methane leakages from gas transport (GHG Protocol 2004: 98).

Global Warming Potential (GWP): Allows the comparison of the global warming impacts of different gases. It is a measure of how much energy the emissions of 1 tonne of a gas will absorb over a given period of time, compared to the emissions of 1 tonne of carbon dioxide.

Greenhouse gas (GHG): A gas that absorbs and re-emits radiation, resulting in the greenhouse effect, which contributes to a warming climate. For the purposes of this guidance and for the Net-Zero Challenge, GHGs include all of those that are subject to reporting for the Greenhouse Gas Reporting Program. As of 2021, this includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulphur hexafluoride (SF_6), 13 different hydrofluorocarbons (HFCs), and 7 different perfluorocarbons (PFCs).

GHG emissions baseline: The first GHG emissions inventory reported in the first net-zero plan serves as the initial GHG emissions baseline.

GHG emissions inventory: *see emissions inventory*.

GHG removal: The withdrawal of GHGs from the atmosphere as a result of deliberate human activities, e.g. enhancing biological carbon sinks and using chemical engineering to achieve long-term removal and storage.

Indirect emissions: Emissions that are a consequence of the activities of a company but occur at sources owned or controlled by another company (GHG Protocol 2004: 99).

Inventory boundary: Allows a participant to determine what sources of emissions are the result of their activities and accordingly, what emissions will need to be addressed in order to reach net-zero emissions by 2050. Generally, the inventory boundary includes geographical boundaries and organizational boundaries.

Land-use change: Land-use change involves a change from one land use category to another, e.g. the conversion of forest land to cropland.

Mitigation (of climate change): A human intervention to reduce emissions or to enhance sinks.

Mitigation strategy: A practice, process, or technology that contributes to mitigation, e.g. enhancing energy efficiency and adopting renewable energy sources.

Mobile combustion: Combustion of fuels by transport, e.g. cars, trucks, buses, trains, airplanes, ships.

Net-zero emissions: Achieving net-zero emissions means the economy either emits no greenhouse gas emissions or offsets its emissions, for example, through actions such as tree planting or employing technologies that can capture carbon before it is released into the air. Also referred to as simply net-zero herein.

Net-zero plan: For the purposes of the Net-Zero Challenge, a net-zero plan includes an emissions inventory and baseline, interim targets, descriptions of the considered scenarios, pathways and mitigation strategies, and an outline of how net-zero planning will be incorporated into a company's governance.

Offset credits: Represent GHG emissions reductions or removals generated from activities that are additional to what would have occurred in the absence of the offset project (i.e., generated from activities that go beyond legal requirements and a business-as-usual standard). Each offset credit generated by an offset project represents one tonne of carbon dioxide equivalent (CO_2 eq) reduced or removed from the atmosphere.

Operational boundaries: The boundaries that determine the direct and indirect emissions associated with operations owned or controlled by a company, in addition to the value chain emissions that are the result of upstream and downstream emissions associated with the operations of a company. This assessment allows a company to establish which emission scopes and sources should be identified and quantified in their net-zero planning and reporting.

Operational control: One approach a company may use to define the organizational boundary of their GHG emissions inventory (*see inventory boundary*). Operational control is when an organization has the full authority to introduce and implement its operating policies at an operation (GHG Protocol 2004: 17).

Organizational boundaries: The boundaries that determine the operations owned or controlled by a company, depending on the consolidation approach taken (equity share, operational control, or financial control).

Participant: For the purposes of the Net-Zero Challenge, a participant is any company or association that signs the commitment letter and agrees to fulfill the requirements of the Net-Zero Challenge.

Process emissions: Emissions generated from physical or chemical processes in industry and manufacturing, e.g. perfluorocarbon emissions from aluminum smelting, carbon dioxide emissions from

calcination in cement production, and nitrous oxide emissions from nitric acid production.

Reforestation: Planting of forests on lands that have previously contained forests but that have been converted to some other use.

Scenario: A plausible description of how the future may develop, based on a coherent and internally consistent set of assumptions about key driving forces (e.g. rate of technology change, prices) and relationships. Scenarios are neither predictions nor forecasts (IPCC SR15 2018: 557).

Scope: Defines the operational boundaries in relation to direct and indirect emissions (GHG Protocol 2004: 101).

Scope 1 emissions: A company's direct emissions, principally the generation of electricity, heat, or steam, physical or chemical processing, transportation, and fugitive emissions (GHG Protocol 2004: 101).

Scope 2 emissions: A company's indirect emissions associated with the purchase of electricity, heating/cooling, and steam for own consumption (GHG Protocol 2004: 101).

Scope 3 emissions: A company's indirect emissions excluding those covered in scope 2. Also known as value chain emissions (GHG Protocol 2004: 101).

Small- and medium-sized enterprise (SME): An independent, non-subsidiary company with fewer than 500 employees

Stationary combustion: Burning of fuels to generate electricity, steam, heat, or power in stationary equipment such as boilers, furnaces, etc.

Top-down approach: Process by which a company selects a target and then determines how to achieve it.

Upstream emissions: Emissions from upstream activities associated with the operations of a company, including purchased goods and services, capital goods, fuel- and energy-related activities, upstream transportation and distribution, waste generated in operations, business travel, and employee commuting.

Value chain: All business processes or activities involved in the production of a good or service for market, from conception to end use and beyond. A simplified value chain would include corporate services (e.g. marketing, logistics), research and development, inputs, assembly, distribution, sales, and after-sales service.

Value chain emissions: These are indirect emissions that may exist upstream or downstream of a company's operations. Value chain emissions are also known as scope 3 emissions.

Net-Zero Challenge: An Overview

Context

The science shows that it is vital that the world does more to address climate change and keep the Paris Agreement target of limiting temperature rise to 1.5°C within reach, and on a faster timeline. Understanding the urgency to act, the Government of Canada is committed to reducing Canada's emissions by 40-45% from 2005 levels by 2030 and putting Canada on a path to reach net-zero emissions by 2050. The *Canadian Net-Zero Emissions Accountability Act* establishes in law Canada's emissions reduction target and holds the federal government accountable to the public as it charts the country's path to net-zero emissions by 2050. As part of the framework established by this Act, in March 2022, the Government of Canada released its 2030 Emissions Reduction Plan, which provides a comprehensive roadmap to help reach Canada's climate targets.

Canada's Climate Targets

- 40-45% reduction below 2005 levels by 2030
- Net-zero by 2050

Achieving net-zero emissions requires support from all parts of our society, including the private sector. In particular, companies operating in Canada are integral to achieving net-zero emissions by 2050. To support Canadian companies in reducing their emissions, the Government of Canada is launching the Net-Zero Challenge.

What is the Net-Zero Challenge?

It is a voluntary initiative that aims to encourage businesses to develop and implement credible and effective plans to transition their facilities and operations to net-zero emissions by 2050. This Challenge builds on the momentum of global initiatives, while offering a made-in-Canada approach.

Objectives

- **Normalize net-zero planning** so that it becomes the default business practice
- **Build momentum** through guidance and leadership
- **Reduce GHG emissions** from industrial and other sectors

What Does Net-Zero Mean?

Net-Zero emissions means that the economy either emits no greenhouse gas emissions or offsets its emissions, for example, through actions such as tree planting or employing technologies that can capture carbon before it is released into the air. For the purposes of the Net-Zero Challenge, companies are expected to set a net-zero target and develop a plan aligned with this definition.

Who Can Join?

All businesses operating in Canada, including domestic and international companies and corporations and small- and medium-sized enterprises, can join the Net-Zero Challenge. Industry associations can also join the Net-Zero Challenge and can encourage their members to participate and support them in the development of their net-zero plans.

When and How to Join?

Companies can join the Net-Zero Challenge at any time.

The first step to joining the Challenge is by identifying your participation stream and signing our commitment letter indicating that you commit to achieving net-zero emissions by 2050 and that you will fulfill the requirements of the Challenge.

Participation Streams

Stream 1: Large industrial emitters

Stream 2: Financial institutions

Stream 3: All other companies, including small- and medium-sized enterprises

Why Join the Net-Zero Challenge?

- **Recognition** – the names of participating companies will be highlighted and outstanding achievements championed through participation tiers, enhancing companies' reputations with the public
- **Investor Confidence** – as Environmental, Social and Governance (ESG) criteria become increasingly important in investment decisions, participation will showcase companies' commitment to responsible environmental performance
- **Corporate Learning** – through sharing of best practices and guidance, including peer-to-peer discussions, companies will be supported in developing and implementing credible, effective and efficient net-zero plans

What Are the Participation Requirements?

By signing a commitment letter, companies agree to:

- Set a **net-zero emissions target for 2050** or earlier;
- Develop a **preliminary net-zero plan** within 12 months of joining the Challenge and a **comprehensive net-zero plan** within 24 months of joining;
- Set at least **two interim emissions reduction targets** consistent with achieving net-zero emissions by 2050 or earlier;
- **Report on progress annually** and review and update plans every five years;
- **Complete Participation Checklists** attesting to the content of the preliminary and comprehensive plans and progress reports; and
- Provide information on **climate-related financial disclosures**.

Purpose and Target Audience

This technical guide is intended to be used by all participants. It has two main purposes: (i) for all participants, to describe the basics of the Net-Zero Challenge (or Challenge), including how to join and minimum requirements for participation, net-zero plans, reporting and participation tier placement; and (ii) for companies new to net-zero planning, to provide descriptive guidance on constructing a greenhouse gas (GHG) emissions inventory, conducting scenario analysis and identifying mitigation strategies.

This guide was designed by Environment and Climate Change Canada for a broad audience. The language has been simplified and technical terms explained, to the extent possible. This guide can be considered a mid-point between a purely technical document and a plain language document.

The Net-Zero Challenge aims to build a community of practice around net-zero planning in Canada, where issues can be addressed, ideas and best practices can be shared, and where participants can communicate and collaborate to further their own net-zero plans. The Net-Zero Challenge is open to working with any interested parties to help build this community of practice, to develop resources, and to encourage ambition and progress in net-zero planning. The Net-Zero Challenge intends to provide additional guidance and resources in the future, all of which will be found on the Net-Zero Challenge website.

1.0 Introduction

1.1 Context

Getting Canada to net-zero emissions by 2050 will require collaboration and innovation across all parts of society, including the private sector. Unlocking further emissions reductions and planning now for a net-zero future is essential for Canada to remain competitive in an increasingly low-carbon global economy, and it will support Canada's climate objectives.

The Government of Canada's Net-Zero Challenge is a voluntary initiative open to all companies operating in Canada. The Challenge aims to support the transition towards a low-carbon economy. It offers a made-in-Canada approach that builds on various global and domestic protocols and initiatives, including the Greenhouse Gas (GHG) Protocol, the Science Based Targets initiative, Canada's Greenhouse Gas Reporting Program (GHGRP), the Strategic Assessment of Climate Change, and the Federal Greenhouse Gas Offset System.

By complementing and leveraging these types of programs, the Net-Zero Challenge will build on the momentum of the net-zero planning already underway by many companies across Canada. The Challenge takes into account that net-zero planning is an ongoing process and will be different for each participant. It also seeks to align with existing reporting requirements and minimize duplication. The design and development of the Net-Zero Challenge has been informed by a series of consultations and engagements with interested partners and stakeholders.

1.2 Objectives

The first objective of the Net-Zero Challenge is to **normalize net-zero planning** so that it becomes the default business practice. It is not simply making a pledge to reach net-zero emissions by 2050; it is encouraging businesses to engage in the *planning* needed to reach net-zero. This means identifying specific and realistic ways that companies can reduce their emissions in the short-term, and identifying the longer-term investments needed to accelerate emissions reductions in the future. Thorough planning will help companies ensure that their plans are actionable and are not simply an exercise in counting emissions.

The second objective is to **build momentum** by providing guidance – such as that found in this technical guide – and encourage leadership in net-zero planning. Both private and public-sectors can play a leadership role as we reduce emissions in Canada.

The third objective is the desired outcome – **reducing greenhouse gas emissions** from industry and other sectors on the journey to net-zero emissions by 2050.

2.0 Joining the Net-Zero Challenge

2.1 Who Can Join

All businesses operating in Canada can join the Net-Zero Challenge, including small- and medium-sized enterprises (SMEs). Joining at the parent company level is strongly encouraged, since it allows net-zero plans to encompass multiple facilities and operations, thus capturing as many GHG sources as possible. However, individual facilities within a larger parent company may also join the Challenge.

Are you a business operating in Canada?

For the Net-Zero Challenge, a business operating in Canada is any company or business that is based in Canada, any company or business that has a Canadian subsidiary, or any company or business that has a facility that reports to Canada's Greenhouse Gas Reporting Program (GHGRP).

Any company, subsidiary, or business joining the Challenge are referred to in this document as participant(s). Each participant will fall into one of three different participation streams (described below). Participants in the Challenge will be recognized through the participation tiers (see Section 9.0).

2.2 How to Join

To become a participant, simply sign and submit the commitment letter. The date a participant submits the letter is considered the date they join the Challenge. Commitment letters must be signed by a person with the authority to ensure compliance with the participation requirements, such as the Chief Sustainability Officer, the Chief Executive Officer, or another member of the company's senior executive (C-suite level) leadership.

2.3 Participation Streams

The Challenge has three participation streams:

Stream 1: Large industrial emitters (for example, from the oil & gas, fossil-fueled electricity, petrochemicals, iron & steel, aluminum and cement sectors)

Stream 2: Financial institutions (such as banks, asset managers, asset owners, pension funds, insurance companies)

Stream 3: All other companies, including small- and medium-sized enterprises

Industry and business associations can also join the Challenge as Stream 3 participants and can encourage their members to participate and support them in the development of their net-zero plans by developing sector-specific guidance.

If you are uncertain of which participation stream your company should join, please contact the Net-Zero Challenge (defizeronet-netzerochallenge@ec.gc.ca).

The key difference between the three streams is in the **scope of emissions** that are required in the net-zero plan. All participants must include scope 1 and 2 emissions, while there are different requirements for scope 3 emissions. Scope 1 emissions are direct emissions principally resulting from activities undertaken by the company. Scope 2 emissions are indirect emissions from electricity, heating, cooling or steam that a company purchases for its own use. Scope 3 emissions, or value chain emissions, are upstream and downstream indirect emissions that are not included in scope 1 or 2.

More details on emissions scopes and categories can be found in Section 4.3.3.

Table 1: Key Differences between Participation Stream Requirements

Streams	Scope 1	Scope 2	Scope 3
Stream 1	✓	✓	**Encouraged to** include relevant scope 3 emissions categories
Stream 2	✓	✓	**Must include** scope 3 emissions category 15 (investments)[1] and, if applicable, lending portfolio emissions
Stream 3	✓	✓	**Must include** the single most relevant scope 3 emissions category
SMEs	✓	✓	**Encouraged to** include relevant scope 3 emissions categories

[1] GHG Protocol, *Corporate Value Chain (Scope 3) Accounting and Reporting Standard* (2011), p. 32. GHG Protocol Scope 3 standard

2.4 Net-Zero Challenge Minimum Requirements

Although the Net-Zero Challenge is a voluntary initiative there are still several minimum requirements that participants must meet in order to remain in the Challenge. While the Net-Zero Challenge is meant to be flexible and encourages participation from all companies operating in Canada, the minimum requirements help ensure a level of rigour and ambition in net-zero planning. Meeting the minimum requirements ensures that all participants attain the Bronze tier in the participation tiers (see Section 9.0). However, going beyond the minimum requirements and demonstrating increased ambition and rigour in the net-zero plan can result in higher participation tier placements.

The minimum requirements are found throughout this guide and are preceded by words such as **must, will, or shall**. In addition, Annex B highlights all of the minimum requirements for the Net-Zero Challenge. Other parts of the technical guide use words such as **can**, **encouraged, recommended or should** to refer to recommendations and best practices. Participants are not required to meet all recommendations and best practices to participate in the Net-Zero Challenge, but doing so can result in a higher participation tier.

Failure to meet any of these minimum requirements will result in the re-consideration of a participant's status in the Challenge (see Section 2.6).

2.5 Timelines

In addition to the minimum requirements there are specific timelines for the different milestones of the Challenge that participants must meet in order to remain in the Challenge. Broadly, there are five key milestones of the Net-Zero Challenge:

- Signing the commitment letter
- Preliminary net-zero plan (see Section 3.1)
- Comprehensive net-zero plan (see Section 3.2)
- Annual progress reporting (see Section 7.0)
- Updating the net-zero plan (see Section 3.4)

Each of these milestones is described in more detail throughout the technical guide and each milestone has a specific Participation Checklist (see Section 3.3) that participants must complete and submit. Each of these milestones has a maximum timeline dependent on the completion of a previous milestone (see Figure 1).

After signing the commitment letter, participants have up to 12 months to submit the Preliminary Net-Zero Plan Participation Checklist and up to 24 months to submit the Comprehensive Net-Zero Plan Participation Checklist. It is not mandatory to wait to submit either of these checklists – they can be submitted as soon as the participant has been enrolled into the Net-Zero Challenge, and the checklists can be submitted simultaneously.

After submission of the comprehensive net-zero plan, participants have up to 18 months to submit their first Annual Progress Participation Checklist. Then participants have 12 months to submit each subsequent Annual Progress Participation Checklist. Finally, participants must submit a Participation Checklist to update their net-zero plans within 5 years of submitting the Comprehensive Net-Zero Plan Participation Checklist. For each subsequent update, participants have up to 5 years from the previous update to submit.

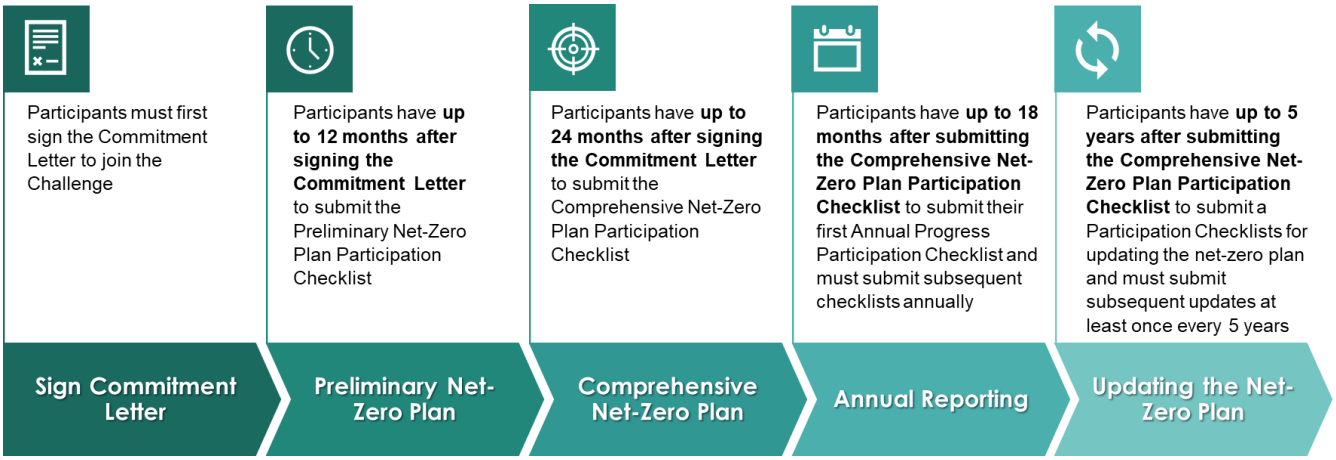

Figure 1: Net-Zero Challenge Milestones

The Net-Zero Challenge contains five distinct milestones. First is signing the commitment letter, where participants must first sign the commitment letter to join the Challenge. Second is the preliminary net-zero plan, where particpants have up to 12 minths after signign the commitment letter to submit the Preliminary Net-Zero Plan Participation Checklist. Third is the comprehensive net-zero plan, where participants have up to 24 months after signing the commitment letter to submit the Comprehensive Net-Zero Plan Participation Checklist. Fourth is annual reporting, where participants have up to 18 months after submitting the Comprehensive Net-Zero Plan Participation Checklist to submit their first Annual Progress Participation Checklist and then must submit subsequent checklists on an annual basis. Fifth is updating the net-zero plan, where participants have up to five years after submitting the Comprehensive Net-Zero Plan Particiaption Checklist to submit a Participation Checklist for updating the net-zero plan and must submit subsequent updates at least once every 5 years.

2.6 Failure to Meet Requirements

If a participant does not meet the minimum requirements or timelines, their participation in the Net-Zero Challenge will be re-considered. In such cases, the participant will be informed that they have failed to meet minimum requirements or that they have missed a deadline (e.g. for submitting the preliminary plan). The participant will have six months, beginning from the date the notification is sent, to rectify the situation that led to the participation reconsideration status.

If the situation is resolved, then the participant will once again be considered an active participant. If the situation is not resolved, then the participant will be removed from the Net-Zero Challenge. At this point, the participant's name and participation tier will be removed from the Net-Zero Challenge website. Participants will be informed in writing if they are removed from the program.

In the future, other Government of Canada programs may be informed if a participant is not meeting the Net-Zero Challenge requirements or if the participant is removed from the program, if and only if such programs have a link to the Net-Zero Challenge. Once a participant is officially removed from the program, they cannot use the Net-Zero Challenge as a form of recognition for their environmental and climate commitments and/or performance.

2.7 Joining the Net-Zero Challenge with an Existing Net-Zero Plan

Some participants will already have company targets and/or net-zero plans developed when they join the Net-Zero Challenge. Multi-national companies may wish to join using a parent company level net-zero target and plan. Companies are welcome to use these targets and plans, so long as they meet the minimum requirements (see Section 2.4) and companies can complete the preliminary and comprehensive net-zero plan Participation Checklists.

Multi-national companies joining with a parent company level net-zero target and plan are strongly encouraged to develop a Canadian-specific net-zero plan, or to release net-zero information about their Canadian facilities and operations. This is also one of the criteria to reach the Platinum and Diamond levels of the Participation Tiers (see Section 9.0).

Furthermore, many companies may be signatories or provide disclosure under other similar initiatives, such as the Science Based Targets initiative, the Carbon Disclosure Project, and partner initiatives under the Race to Zero Campaign. The Net-Zero Challenge strongly encourages participants to continue using these other programs and initiatives. Participants should be aware that details they provide on their net-zero plans, GHG emissions inventory, and targets to these other initiatives can be used as evidence in the Participation Checklists to satisfy many of the minimum requirements of the Net-Zero Challenge.

Part of the Glasgow Financial Alliance for Net-Zero?

The **Glasgow Financial Alliance for Net-Zero** **(GFANZ)** brings together net-zero finance initiatives into one sector-wide coalition. This currently includes the Net-Zero Banking Alliance, the Net Zero Asset Managers Initiative, the Net-Zero Asset Owner Alliance, the Paris Aligned Investment Initiative, the Net-Zero Insurance Alliance, the Net Zero Financial Service Providers Alliance, and the Net Zero Investment Consultants. If a stream 2 participant is a signatory of one of these initiatives, then they may choose to join the Net-Zero Challenge via an **accelerated process**.

The accelerated process recognizes the importance of GFANZ, which is considered a global, credible, and robust framework towards net-zero for various financial sectors. As such, the Net-Zero Challenge deems that for stream 2 participants using the accelerated process, any reporting as per a GFANZ initiative will satisfy the minimum requirements of the Net-Zero Challenge.

The accelerated process requires participants to sign the **Accelerated Net-Zero Challenge Commitment Letter** and complete the **Accelerated Participation Checklist**. Participants must complete the Accelerated Participation Checklist within 24 months of joining the Challenge. It is a simplified checklist requiring participants in the accelerated process to provide evidence that they are active members of a GFANZ initiative. Since the accelerated process is separate from the general Net-Zero Challenge process, the participation tiers are not applicable. Participants using the accelerated process will be highlighted on the Net-Zero Challenge website.

Participants using the accelerated process are required to submit an Accelerated Annual Progress Participation Checklist. The checklist will ask participants to provide evidence that they are active members of a GFANZ initiative and that they are meeting the requirements of that initiative and progressing towards net-zero.

The Net-Zero Challenge may seek alignment with other net-zero initiatives and programs to reduce reporting burden and coordinate best practices and standards for net-zero planning, as appropriate.

3.0 Net-Zero Plans

Developing a net-zero plan is central to the Net-Zero Challenge. A credible and robust net-zero plan has several components to help inform a plausible path to the net-zero target.

To facilitate the development of these multiple components and to promote accountability, net-zero planning has been divided into two phases: a preliminary net-zero plan and a comprehensive net-zero plan. The rest of Section 3.0 describes the components of these two phases and how to submit the Participation Checklists attesting to the net-zero plan, while Sections 4.0 – 8.0 provide guidance, references and best practices for developing the net-zero plan.

Key Steps to Develop a Net-Zero Plan

- Establish the starting point (baseline) by developing a GHG emissions inventory (see Section 4.0)
- Identify net-zero pathway(s) by:
  - Conducting a scenario analysis (see Section 5.0)
  - Identifying and selecting potential mitigation strategies (see Section 5.3)
- Select two interim targets along the pathway(s) to net-zero (see Section 6.2)
- Include accountability mechanisms:
  - Describe corporate governance for net-zero planning (see Section 8.1)
  - Implement climate-related financial disclosure (see Section 8.2)

Participants will be placed in different **Participation Tiers** according to the ambition and transparency of their interim targets and net-zero plan, and participants can attain higher levels as they meet successive Net-Zero Challenge milestones (see Section 9.0).

3.1 Preliminary Net-Zero Plan

A preliminary net-zero plan must be developed within 12 months of joining the Challenge. It is required that the preliminary net-zero plan include the following elements:

- An announced **net-zero GHG emissions by 2050** target;
- A **GHG emissions inventory** baseline (see Section 4.2); and
- Information on **climate-related financial disclosure** (see Section 8.2).

These elements can be revised, as needed, in the comprehensive net-zero plan.

To determine that a participant's preliminary net-zero plan meets the minimum requirements, the participant must submit a completed Preliminary Net-Zero Plan Participation Checklist at any time after signing the commitment letter and before the 12 month deadline.

3.2 Comprehensive Net-Zero Plan

A comprehensive net-zero plan must be developed within 24 months of joining the Challenge. It is required that the comprehensive net-zero plan include the following elements:

- The **GHG emissions inventory baseline**, as per the preliminary net-zero plan;
- At least one of the two **interim targets and the net-zero target** (see Section 6.0);
- A high-level description of the **scenario analysis** conducted to identify net-zero pathways (see Section 5.0);
- A high-level description of some **mitigation strategies** (see Section 5.3);

- A description of the **corporate governance** strategy (see Section 8.1); and
- Information on **climate-related financial disclosure** (see Section 8.2), as per the preliminary net-zero plan.

To determine that a participant's comprehensive net-zero plan meets the requirements, the participant must submit a completed Comprehensive Net-Zero Plan Participation Checklist at any time after submitting the completed Preliminary Net-Zero Plan Participation Checklist and before the 24 month deadline.

3.3 Submitting Net-Zero Plan Information

Participants **do not submit their net-zero plans** to the Net-Zero Challenge. Rather, they submit Participation Checklists attesting to the development of their preliminary and comprehensive net-zero plans. These checklists ask a series of questions to determine whether the participant has met the minimum requirements and to determine placement in the participation tiers. For each response in the Participation Checklists, participants must provide evidence in support of their response. It is expected that participants will be able to use publicly-available information to provide evidence to most, if not all questions.

Once completed, participants submit the Participation Checklists to the Net-Zero Challenge. The Net-Zero Challenge will acknowledge receipt of the Participation Checklists and will use the responses and evidence provided in each Participation Checklist to verify whether a participant meets the minimum requirements of the Net-Zero Challenge and to determine their participation tier. Following submission and review of the Comprehensive Net-Zero Plan Participation Checklist, Environment and Climate Change Canada will notify participants of their placement in the participation tiers.

The participation tier levels simply recognize that the specified Net-Zero Challenge criteria have been met. A participation tier is not an endorsement of the net-zero plan, nor an indication of whether the net-zero plan is achievable. Environment and Climate Change Canada will explore evaluation and verification tools, as appropriate, to assess evidence provided by participants.

To promote accountability and transparency, participants are encouraged to publish comprehensive information about their net-zero plans on their websites in an accessible format. In addition, completed Participation Checklists submitted to Environment and Climate Change Canada can be made publicly available upon request.

3.4 Updating Net-Zero Plans

The comprehensive net-zero plan should be reviewed and updated **at least once every five years**. Net-zero planning is an ongoing process and plans are likely to change significantly between now and 2050. Scenarios will need to be adjusted to account for new information, and new mitigation strategies may need to be identified, especially for hard-to-abate sectors where new clean technologies may emerge or become more economically feasible.

Specifically, participants shall:

- Conduct a thorough review of the GHG emissions inventory, identifying any new emissions sources and changes to the inventory boundaries;

- Update and adjust the GHG emissions baseline, if there have been significant changes to their GHG emissions inventory and boundaries (e.g. deciding to include more scope 3 emissions categories);
- Review the net-zero pathway assumptions and update scenarios to reflect new knowledge and developments;
- Update mitigation strategies based on new knowledge;
- Specify the second interim target and adjust the first interim target, if needed;
- Update the corporate governance strategy, if needed; and
- Add or modify any other relevant information.

As with the original preliminary and comprehensive net-zero plans, participants do not submit the updated net-zero plan to the Net-Zero Challenge. Rather they will submit a Participation Checklist, similar to the ones developed for the preliminary and comprehensive plans. This checklist will be made available to participants at a later date.

4.0 GHG Emissions Inventory

An accurate and transparent inventory of a participant's GHG sources and emissions is a key input for a net-zero plan and for setting interim targets. **The initial GHG emissions inventory is the baseline or starting point for the net-zero plan**, clearly showing the gap between a participants' current emissions and its aspiration for net-zero emissions by 2050. The more accurate the inventory, the more accurate the estimate of the gap to net-zero.

Many participants will already have a GHG emissions inventory and report on it annually, at least for their scope 1 (direct) emissions. For those who do not, or who only have a scope 1 emissions inventory, there are three key steps to building an accurate and detailed GHG emissions inventory:

- Determining the scope of the inventory by setting geographical, organizational and operational (i.e., scope 1, 2 and 3 emissions) boundaries;
- Identifying the GHG emissions sources within those boundaries; and
- Quantifying the GHG emissions from those sources – either directly (e.g. monitoring and measuring) or by indirectly (e.g. using emission factors).

The GHG Protocol is the most widely used standard for GHG accounting (that is, counting emissions to construct a GHG emissions inventory). The GHG Protocol identifies, explains, and provides options for GHG emissions inventory best practices. Many other initiatives, such as the Science Based Targets initiative and the United Nations Race-to-Zero Campaign, refer to the GHG Protocol and use its terminology. The Net-Zero Challenge also references the GHG Protocol and recommends that participants follow its guidance to develop and update their GHG emissions inventory.

Participants can use other widely-accepted methodologies and tools to develop their GHG emissions inventory. For example, Stream 2 participants may want to use financial sector specific tools, such as those developed by the Partnership for Carbon Accounting Financials. If developing a Canadian-specific GHG emissions inventory, participants should preferentially use Canada-specific guidance

where it exists, such as Canadian emission factors as published in the most recent National Inventory Report.

Already have a GHG emissions inventory?

Many participants will already have a GHG emissions inventory, including a baseline, for their company and **it is not necessary to establish a new one**. However, participants are required to ensure that their GHG emissions inventory meets the requirements of the Net-Zero Challenge and are encouraged to improve the accuracy and breadth of their inventories, where possible.

GHG Emissions Inventory Requirements for the Net-Zero Challenge

- Ensure that you have a **baseline GHG emissions inventory** (see Section 4.2), for all the required emissions scopes, with a clearly stated **base year**.
- **Ensure that your GHG emissions inventory** accounts for scope 1, scope 2 and where applicable, scope 3 emissions (see Section 4.3.3):
    - If your company only has an inventory for scope 1, you will need to do an inventory, including a baseline, for scope 2 (all participants).
    - If your participation stream requires you to include certain scope 3 emissions categories, or if you voluntarily choose to include additional scope 3 emissions categories, then you will need to do an inventory, including a baseline, for those scope 3 emissions.
    - For Stream 2 participants, the scope 3 GHG emissions inventory and baseline may be developed progressively following guidelines established by other initiatives (see Section 4.4.4)
- Ensure that your GHG emissions inventory, including the baseline, **reports scope 1 and 2 emissions in absolute terms**. Scope 3 emissions may be expressed in absolute terms or by other means.
- In the GHG emissions inventory, including the baseline, the most relevant **scope 3 emissions categories must be presented disaggregated** from scope 1 and 2 emissions.
- If there are changes to the GHG emissions baseline (see Section 4.2), or the GHG emissions inventory boundaries (see Section 4.3), participants should provide an explanation.

Participants may wish to use the International Organization for Standardization (ISO) standards for assessing and verifying GHG emissions, including ISO 14064-1 (GHG emissions and removals for organizations – corporate level), ISO 14064-2 (GHG emissions and removals for organizations – project level), and ISO 14064-3 (validation and verification of GHG statements). The ISO 14064 is an international standard for quantifying and reporting GHG emissions and it establishes minimum standards for compliance with GHG emissions inventory best practices. It is also largely complementary to the GHG Protocol and participants could benefit from using both sets of guidance. Specifically, if a participant wishes to have their GHG emissions inventory verified by an accredited third-party, it is recommended that they use the ISO 14064 standards to ensure that their GHG emissions inventory is developed in a way that can be easily verified and compared to the inventories of other organizations.

Verification of GHG emissions inventories

It is a recommended best practice and participants are encouraged to have their GHG emissions inventories verified by an accredited third-party. A verified GHG emissions inventory can provide confidence in the GHG emissions inventory and in the net-zero plan. Furthermore, a verified GHG emissions inventory can help companies avoid being labelled as "green-washing".

This section introduces and summarizes in plain language the basic concepts developed by the GHG Protocol, but for technical details, refer to the original guidance documents provided by the GHG Protocol. It also describes the basic parameters of what must be included in the GHG emissions inventory for the Net-Zero Challenge, which forms the basis for setting the interim and net-zero targets (see Section 6.0).

4.1 GHG Emissions Inventory Minimum Requirements

Minimum requirements for the GHG emissions inventory are explained throughout Section 4.0. For a summary of these requirements, please see the box below or Annex B.

In addition to having a GHG emissions inventory, participants that have facilities that report to Canada's **Greenhouse Gas Reporting Program** must provide the aggregate total emissions reported to the GHGRP from all facilities for scope 1 or submit scope 1 emissions for their Canadian operations. Participants must do this for the same base year used in their baseline GHG emissions inventory and in conjunction with each annual GHG emissions inventory (see Section 4.4.1). Participants that do not have facilities that report to the GHGRP can ignore this requirement.

4.2 GHG Emissions Baseline

The GHG emissions baseline is the GHG emissions inventory at one point in time that serves as the reference point for the interim and net-zero targets. For participants new to GHG emissions inventories, the first GHG emissions inventory constructed will serve as this baseline. The GHG emissions baseline also facilitates tracking progress in subsequent annual progress reporting, which will require reporting on GHG emissions.

GHG emissions inventories – and therefore the baseline – are based on annual emissions. Fuel consumption, energy use and other sources of emissions will need to be calculated on an annual basis. Participants must state their baseline emissions in absolute terms (e.g., XXX kt CO_2 eq) for scope 1 and scope 2 emissions. Participants' scope 3 baseline emissions may be expressed as emissions intensity, or as a narrow range of estimates and a description of the confidence level in those estimates. Some participants with established GHG emissions inventories that are updated annually may have an existing net-zero plan and others will be developing their first net-zero plan. For the former, it is permissible to use the existing baseline, even if it dates back several years and only includes a portion of their Scope 3 emissions, so long as participants expand their baseline GHG emissions inventory to include all emissions in their net-zero plans, as per the minimum requirements. For the latter, the baseline should be set as close to the present date as possible, but no earlier than five years prior to developing the preliminary plan. In the information provided on the GHG emissions baseline in the preliminary plan, the year must be provided along with the scope 1, 2 and/or 3 emissions.

In the future, changes to the GHG emissions baseline may be needed due to changes in the GHG emissions inventory (e.g. adding scope 3 emissions), changes to the company (e.g. mergers,

acquisitions, expansions), or changes to the calculation methods (e.g. more accurate measurement), or other reasons. If this occurs, participants should update their baseline when updating their net-zero plan (Section 3.4), and should include an explanation for the changes.

4.3 Inventory Boundaries

Inventory boundaries determine the scope of the GHG emissions inventory. These boundaries can be conceptualized by three complementary criteria: geography, organization and emission scopes.

4.3.1 Geographical Boundaries

The Net-Zero Challenge is a made-in-Canada approach to help normalize and build momentum for net-zero planning. As much as possible, net-zero plans and GHG emissions inventory should centre on Canadian domestic operations. Some participants may be multi-national companies or a subsidiary of a multi-national company that already has a net-zero plan. To support the goal of building momentum for net-zero planning, such participants can join the Net-Zero Challenge using their existing plans and targets, or pointing to the plans and targets of their parent company. However, it is strongly recommended that participants develop Canadian-specific plans and targets after joining the Challenge, if possible.

4.3.2 Organizational Boundaries

Organizational boundaries refer to how to define the company or corporation for the purposes of establishing a GHG inventory. These boundaries are easily defined for smaller organizations that wholly own all their operations. It is a more complex task for larger corporations. The GHG Protocol Corporate Standard describes three standard approaches to define these boundaries: equity share, operational control and financial control. Participants may use any of these approaches when defining their organizational boundary.

4.3.3 Emissions Scopes

Within the organizational boundaries, it is important to determine the scope of emissions to be included. This can be divided into two main categories: direct and indirect emissions.[2] The GHG Protocol defines **direct emissions** as "emissions from sources that are owned and controlled by the company."[3] These are known as **scope 1 emissions**.

The GHG Protocol defines **indirect emissions** as emissions that "are a consequence of the activities of the company but occur at sources owned or controlled by another company." They result from a company's activities, but the actual release of emissions occurs elsewhere. For example, most

[2] GHG Protocol, *A Corporate Accounting and Reporting Standard*. Revised edition. (2004 GHG Protocol Corporate Standard. This section provides a simplified explanation of GHG Protocol guidance that is most relevant to Net-Zero Challenge requirements. The GHG Protocol discusses this in terms of *operational* boundaries which refer to "direct and indirect emissions for operations that fall within a company's established organizational boundary" (see Chapter 4 of the GHG Protocol, page 25). For large companies with subsidiary companies, there is an important nuance between operational boundaries and emission scope. Specifically, how organizational boundaries are defined (equity share versus control) will determine what is classified as direct versus indirect emissions. Such participants should refer to and follow GHG Protocol guidance for determining the appropriate boundaries and classifying emissions accordingly.

[3] GHG Protocol, *A Corporate Accounting and Reporting Standard,* p. 25.

electricity emissions occur at plants not owned by the company producing a specific product. Indirect emissions can be divided into purchased energy and value chain emissions. These are known, respectively as **scope 2** and **scope 3 emissions**.

More specifically, scope 2 emissions are indirect emissions from electricity, heating, cooling or steam that a company purchases for its own use. Scope 3 emissions, or value chain emissions, are upstream and downstream indirect emissions that are not included in scope 1 or 2. Refer to the GHG Protocol for more details on these emissions scopes.

All participants must include scope 1 and 2 emissions in their net-zero plans and GHG emissions inventory, and **some participants must include some scope 3 emissions categories** (see Table 1 in Section 2.3). If a participant does not have scope 1 or 2 emissions to report, this must be explained in the Participation Checklists. **All participants are encouraged to include as many categories of scope 3 emissions** as possible. Participants are required to indicate which scope 3 emissions categories are included in their GHG emissions inventory. Participants that include more scope 3 emissions categories than required can be placed in higher levels of the participation tiers. The following sections describe how to identify and quantify emissions sources within the three emissions scopes.

4.4 Identifying and Quantifying Emissions Sources

4.4.1 Scope 1 Emissions

Scope 1 emissions are direct emissions principally resulting from the types of activities undertaken by a company as described in Table 2.

Table 2: Types of Scope 1 Emissions[4]

Type of Activity	Description
Generation of electricity, heat or steam	Emissions from fuel combustion in company owned/controlled stationary sources (e.g., boilers, furnaces, turbines).
Physical or chemical processing	Emissions from manufacture or processing of chemicals and materials (e.g. cement, petrochemicals) and waste processing.
Transportation of materials, products, waste and employees	Emissions from the fuel combustion in company owned/controlled mobile combustion sources (e.g., trucks, trains, ships, airplanes, buses, and cars).
Fugitive emissions	Emissions from intentional or unintentional releases (e.g., equipment leaks from joints, seals, packing, and gaskets; methane emissions from coal mines and venting hydrofluorocarbon (HFC) emissions during the use of refrigeration and air conditioning equipment; and methane leakages from gas transport).

4.4.1.1 Scope 1 Minimum Requirements

All participants must provide their scope 1 GHG emissions inventory, including a baseline, by following GHG Protocol or similar guidance.

[4] GHG Protocol, *A Corporate Accounting and Reporting Standard,* p. 27.

In addition, participants that have facilities reporting to the GHGRP must include the aggregate total emissions reported to the GHGRP from all these facilities for scope 1 or submit scope 1 emissions for their Canadian operations. Companies must provide this information for the baseline year that they are using (i.e. provided in the preliminary and comprehensive net-zero Participation Checklists) and for each subsequent annual GHG emissions inventory (i.e. provided in the Annual Progress Participation Checklist).

For example, a multinational company with three facilities reporting to the GHGRP that joins the Net-Zero Challenge with a global net-zero plan must provide their global scope 1 emissions in their GHG emissions inventory AND the total emissions from those three facilities reported to the GHGRP OR their total Canadian scope 1 emissions. If the same multinational company were to join the Net-Zero Challenge with a Canadian-specific net-zero plan, then they would only have to provide their total Canadian scope 1 emissions.

This requirement is to ensure that at least some information is reported on Canadian domestic emissions, particularly from large industrial emitters. Participants that do not have facilities reporting to the GHGRP can ignore this requirement.

4.4.1.2 Identifying Scope 1 Emissions

When first compiling an emissions inventory, all participants will need to identify their direct emissions from one or more of the types of activities listed in Table 2. Each participant will have a different proportion of emissions from each category. For instance, process emissions are usually only relevant to certain industry sectors. Many Stream 2 and 3 participants, such as office-based organizations, may not have any direct emissions.

There are no specific methodologies for identifying scope 1 emissions, rather participants should have an understanding of where their direct emissions come from given their operations and given the descriptions of common direct emission sources. Participants are encouraged to be as broad as possible when identifying their scope 1 emissions and should include even the smallest of sources in their GHG emissions inventory.

4.4.1.3 Quantifying Scope 1 Emissions

GHG emissions from the identified sources can be calculated either **directly** or **indirectly**. Monitoring and measuring GHG emissions could be considered the gold standard for quantifying emissions, and thus participants with the capacity to do this are encouraged to do so. Participants should follow guidance developed by Canada's GHGRP, *Canada's Greenhouse Gas Quantification Requirements* or the GHG Protocol.

GHG emissions from many common scope 1 activities can also be calculated indirectly by using **emission factors**. These are pre-determined values that have been calculated to quantify emissions associated with various activities, following detailed methodologies. When using emission factors to quantify GHG emissions, participants should use those developed for Canada's latest National Inventory Report (Annex 6), to the extent possible. To apply these factors, participants will need to gather information related to scope 1 activities (e.g. the amount of fuel used in company-owned vehicles). Multi-national companies developing global net-zero plans should use country-specific or activity-specific emission factors whenever possible. The GHG Protocol provides several on-line calculation tools and calculation guidance, including cross-sector tools, for common emission sources like stationary combustion and transportation, and sector-specific tools for specific industries.

4.4.1.4 Greenhouse Gases to Include

GHGs include a range of gases, with carbon dioxide (CO_2) and methane (CH_4) being the most commonly known. For the Net-Zero Challenge, where relevant and to the extent possible, net-zero plans, interim targets, and the GHG emissions inventory should cover all the GHGs that are subject to reporting for the Greenhouse Gas Reporting Program. As of December 18, 2021, this includes CO_2, CH_4, nitrous oxide (N_2O), sulphur hexafluoride (SF_6), 13 different hydrofluorocarbons (HFCs), and 7 different perfluorocarbons (PFCs). The GHGRP publishes an annual notice on reporting requirements that list the specified GHGs. Emission factors break down the emissions by the relevant GHGs present in common activities. This means that participants relying solely on emission factors to calculate their GHG emissions do not need to be concerned about whether they have covered all the relevant gases listed above – this work has been done in the development of emission factors.

All of the identified GHGs that fall within the participant's operational boundaries should be quantified separately and then reported as a total in CO_2 equivalents (CO_2 eq). GHGs can be converted to CO_2 eq by using the GHG's global warming potential (GWP). The GWP is a common metric that was developed to allow comparisons of the warming impacts of different GHGs relative to CO_2. Participants should use the most recent updates to the GWPs as reported by Canada's GHG Reporting Program – currently the most recent updates were issued in the 2013 Notice.

4.4.2 Scope 2 Emissions

Scope 2 emissions are indirect emissions from electricity, heating, cooling or steam that a company **purchases for its own use**.[5] These purchased forms of energy include direct transfer of these energy forms as well as electricity from electricity grids. Participants can refer to GHG Protocol guidance on scope 2 emissions for more details.

4.4.2.1 Scope 2 Minimum Requirements

All participants must provide their GHG emissions inventory for scope 2 emissions, including a baseline, by following GHG Protocol or similar guidance.

4.4.2.2 Quantifying Scope 2 Emissions

To quantify scope 2 emissions, participants need to determine their total consumption of these purchased energy forms on an annual basis. For electricity purchased from the grid, participants can simply refer to their utility bills to determine consumption. As with scope 1 emissions, emission factors can be used to quantify the emissions from this consumption. Canada's latest National Inventory Report (NIR) includes electricity emission factors reflecting the Canadian and provincial averages (found in Annex 13 of the NIR). Participants may also use more localized emission factors should the information be available.

For guidance on determining the quantity of steam, heat and cooling, and for complex electricity situations (e.g., shared buildings), refer to the GHG Protocol's guidance for scope 2.

[5] When these forms of energy are produced and made by the company itself, they are considered scope 1 emissions. If a company purchases and sells this energy, than the emissions are considered scope 3 emissions.

4.4.2.3 Greenhouse Gases to Include

Most participants will obtain information on their scope 2 emissions in CO_2 equivalent units – for example, for electricity use. However, where known and relevant, participants should include the breakdown of emissions by the applicable greenhouse gas (see Section 4.4.1.4).

4.4.3 Scope 3 Emissions

Scope 3 emissions, also referred to as value chain emissions, include "all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions."[6] Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization. By definition, the scope 3 emissions of one organization are the scope 1 and/or 2 emissions of another organization. Depending on the reporting organization, value chain emissions can represent the majority of an organization's total GHG emissions.[7]

The GHG protocol defines 15 distinct Scope 3 categories – 8 upstream and 7 downstream (see Table 3). Not every category will be relevant to every participant. For example, investments (category 15) are often mainly applicable to the financial sector, and only some businesses have franchises (category 14).

Table 3: Scope 3 Emissions Categories[8]

Upstream Activities	Downstream Activities
1) Purchased goods and services	9) Downstream transportation and distribution
2) Capital goods	10) Processing of sold products
3) Fuel- and energy-related activities	11) Use of sold products
4) Upstream transportation and distribution	12) End-of-life treatment of sold products
5) Waste generated in operations	13) Downstream leased assets
6) Business travel	14) Franchises
7) Employee commuting	15) Investments
8) Upstream leased assets	

4.4.3.1 Scope 3 Minimum Requirements

Stream 2 participants must include, at a minimum, scope 3 emissions category 15 (investments) and, if applicable, their lending portfolio emissions in their net-zero plans (see Section 4.4.4). Stream 3 participants, except for SMEs, must include the single most relevant category of scope 3, which is the category with the most emissions compared to the other scope 3 emissions categories.

All participation streams – including Stream 1 – are strongly encouraged to include additional scope 3 emissions categories in their GHG emissions inventory. For all participants, the most relevant scope 3 emissions categories included in the GHG emissions inventory must be presented

[6] GHG Protocol, *Corporate Value Chain (Scope 3) Accounting and Reporting Standard*, p. 28.
[7] U.S. United States Environmental Protection Agency, *EPA Center for Corporate Climate Leadership: Scope 3 Inventory Guidance* (2021). EPA Climate Leadership Scope 3 Inventory Guidance.
[8] GHG Protocol, *Corporate Value Chain (Scope 3) Accounting and Reporting Standard,* p. 33.

separately from scope 1 and 2 emissions. See Table 4 for criteria to identify *relevant* scope 3 emissions categories.

Why Include Scope 3?

Although scope 3 emissions can seem daunting and difficult to quantify and address, consider this:

- **Small decisions have a big impact:** switching to selling a lower-emitting product can be a cost-effective way to have a big emissions impact, as customers' decisions to switch to a lower-emitting product amplifies the impact.
- **It supports customers looking to lower their carbon footprint** or join the zero-waste movement: reducing product packaging cuts scope 3 emissions, and helps customers reduce their waste.
- It sets up a **virtuous cycle** as one company's scope 3 is another company's scope 1 and/or 2.
- For buildings and industry, scope 3 emissions are **at least twice as much** as direct emissions.[9]

4.4.3.2 Identifying Scope 3 Emissions

Although scope 3 emissions include all indirect emissions in the value chain, the GHG Protocol recommends that companies focus on those that have the most significant GHG emissions and offer the most significant emissions reduction opportunities.[10] At the same time, companies are encouraged to include as many of the relevant scope 3 categories as possible, to form a fuller and more accurate picture of their GHG emissions.

The GHG Protocol suggests a set of criteria that companies can use to identify relevant scope 3 emissions activities. These criteria are outlined in Table 4 below. After identifying relevant scope 3 emissions activities and quantifying those emissions, companies can better assess which scope 3 emissions categories are the most relevant to their organization.

Table 4: Criteria for Identifying Relevant Scope 3 Emissions Activities[11]

Criteria	Description of Activities
Size	They contribute significantly to the company's total anticipated scope 3 emissions
Influence	There are potential emissions reductions that could be undertaken or influenced by the company
Risk	They contribute to the company's risk exposure (e.g., climate change related risks such as financial, regulatory, supply chain, product and technology, compliance/litigation, and reputational risks)
Stakeholders	They are deemed critical by key stakeholders (e.g., customers, suppliers, investors or civil society)
Outsourcing	They are outsourced activities previously performed in-house or activities outsourced by the reporting company that are typically performed in-house by other companies in the reporting company's sector
Sector Guidance	They have been identified as significant by sector-specific guidance

[9] Edgar G. Hertwich and Richard Wood, "The growing importance of scope 3 greenhouse gas emissions from industry," *Environmental Research Letters*, 1-11 (2018).
[10] GHG Protocol, *Technical Guidance for Calculating Scope 3 Emissions* (2013), p. 11. GHG Protocol Standards Scope3 Calculation Guidance
[11] GHG Protocol, *Technical Guidance for Calculating Scope 3 Emissions* (2013), p. 12.

Spending or revenue analysis	They are areas that require a high level of spending or generate a high level of revenue (and are sometimes correlated with high GHG emissions)
Other	They meet any additional criteria developed by the company or industry sector

4.4.3.3 Quantifying Scope 3 Emissions

Scope 3 emissions are the most difficult to estimate as the assets associated with these emissions are not owned or controlled by the company. Nevertheless, good faith estimates can be made using the latest available guidance and best practices. It is also acceptable to determine a range of estimates for scope 3 emissions and describe the confidence level in these estimates.

Participants are encouraged to refer to the GHG Protocol's guidance on scope 3 to help estimate these emissions.

4.4.3.4 Greenhouse Gases to Include

Most participants will obtain information on their scope 3 emissions in CO_2 equivalent units. However, where known and relevant, participants should include the breakdown of emissions by the applicable greenhouse gas (see Section 4.4.1.4).

4.4.4 Scope 3 Emissions for Stream 2 – Financial Institutions

Stream 2 – Financial Institutions – participants must develop net-zero plans that include and consider the emissions of their investments, one of the 15 categories of scope 3 emissions, and, if applicable their lending portfolios, as defined by the Net-Zero Banking Alliance or the Science Based Targets initiative. Investment and lending emissions must at least include the scope 1 and scope 2 emissions of the companies in which the investments and loans are made.[12]

There are several global initiatives targeted to the financial sector that provide guidance on identifying, accounting, and setting interim targets for scope 3 emissions. Some of these are net-zero initiatives and others are "Paris-aligned."[13] Financial institutions can refer to and follow the guidance provided by reputable initiatives, so long as their net-zero plans specify a net-zero target. In particular, it is recommended that financial institutions refer to a Glasgow Financial Alliance for Net-Zero initiative, which includes the Paris Aligned Investment Initiative, the Net-Zero Asset Owner Alliance, the Net-Zero Banking Alliance, and the Net-Zero Asset Managers Initiative, among others. Banks may also wish to consult the United Nations Environment Programme – Finance Initiative's (UNEP-FI) Guidelines for Climate Target Setting for Banks, which also underpins the Net-Zero Banking Alliance. Financial institutions can also consult the guidance provided by the Partnership for Carbon Accounting Financials.

For the preliminary and comprehensive net-zero plans, Stream 2 participants may develop their scope 3 GHG emissions inventory baseline,[14] progressively on a sector-by-sector basis, where data allows. Participants should prioritize sectors based on their GHG emissions or financial exposure in their portfolio. If this approach is chosen, the GHG emissions inventory must be updated in the

[12] This aligns with GHG Protocol guidance for Category 3. It is encouraged to also include scope 3 emissions, where these emissions are significant. (See GHG Protocol, *Technical Guidance for Calculating Scope 3 Emissions* (2013), p. 136. GHG Protocol Standards Scope 3 Calculation Guidance

[13] That is, requiring targets aligned with limiting global warming to well-below 2°C above pre-industrial levels, as per the goals of the Paris Agreement, adopted at COP 21 in Paris in 2015.

[14] Category 15 and, if applicable, lending activities. For scope 1 and 2 emissions, Stream 2 participants must follow the same guidelines that apply to Streams 1 and 3.

comprehensive plan and then in annual progress reporting until all or a substantial majority of carbon-intensive sectors are included, as per UNEP-FI guidelines or Science Based Targets initiative (SBTi) guidelines. This GHG emissions inventory must be completed at least one year prior to the date of the first interim target. In cases where one or more sectors are excluded, this must be justified and explained.

See Sections 5.3.4 and 6.2.1 for guidance on mitigation strategies and interim targets, specific to the financial sector.

4.5 Other Considerations

4.5.1 Land Use Changes Impacting Emissions

The terms “land use change” can cover a wide range of activities and it refers to human actions that impact how land is used – whether as forests, farms, wetlands or urban developments, among other uses. Some changes to how land is used could be relatively neutral in terms of the impact on GHG emissions, but usually these changes either increase GHG emissions (e.g. deforestation) or decrease them (e.g. reforestation). To achieve net-zero emissions by 2050, land-use change considerations are important – and these changes play a critical role in all mitigation pathways that limit warming to 1.5°C or well-below 2°C in the Intergovernmental Panel on Climate Change (IPCC) *Special Report: Global Warming of 1.5°C*.[15]

While changes to land use that result in the release of GHG emissions are not included in the GHG Protocol guidance for corporate accounting of emissions, Net-Zero Challenge participants are strongly encouraged to include these emissions when developing and reporting on their net-zero plans. These emissions can be integrated into scope 1, 2 or 3 emissions and targets.

Participants should disclose which methodology they use to quantify their land use change emissions. For Canada-specific guidance, participants are encouraged to refer to the technical guidance in Strategic Assessment of Climate Change (SACC). Participants can also refer to the GHG Protocol guidance, when available, or other reputable guidance.

4.5.2 Biomass Combustion

Special consideration is needed when calculating emissions from biomass. The following materials are all considered to be biomass materials:

- plants or plant materials, animal waste, or any product made of either of these, including wood and wood products, charcoal and agricultural residues;
- biologically derived organic matter in municipal and industrial wastes; and
- landfill gas, bio-alcohols, black liquor, sludge digestion gas, animal-derived oils, and plant-derived oils.

Participants may create emissions through the combustion of biomass materials in on-site combustion processes, in waste incineration processes, and in the flaring of landfill gas. These combustion processes will result in scope 1 emissions. However, in these instances, participants should not count

[15] [IPCC] Intergovernmental Panel on Climate Change, *Global Warming of 1.5°C* (2018). *An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Global Warming of 1.5 ºC — (ipcc.ch).

CO_2 emissions deriving from the combustion of biomass materials, but rather should only count the CH_4 and N_2O emissions in their GHG emissions inventory. This is because biomass materials remove CO_2 from the atmosphere over their lifetime and thus the release of CO_2 back into the atmosphere results in an approximated net-zero exchange of CO_2. However, this is not the case for CH_4 and N_2O emissions, which therefore still need to be quantified. Participants should be careful in distinguishing between biomass materials and non-biomass materials; for example, in waste incineration, there can also be fossil-fuel based carbon materials and the CO_2 emissions from these materials should be included.

Furthermore, participants may generate emissions from biomass materials even when it is not combusted. This can occur through the decomposition of biomass in waste disposal and wastewater treatment processes and in the fermentation of biomass materials. In these instances, the resulting CO_2 emissions should not be counted, but any CH_4 and N_2O emissions should be counted in the GHG emissions inventory.

The Net-Zero Challenge aligns with the GHGRP on biomass emissions and further guidance can be found in the GHGRP technical guide.

4.5.3 Avoided Emissions

In alignment with international best practices, **avoided emissions cannot be counted** towards a participant's net-zero target, as participants are expected to count and report on their direct and indirect emissions, following GHG Protocol guidance.

Avoided emissions are defined as "emission reductions that occur outside of a product's life-cycle or value chain, but as a result of the use of that product."[16] This refers to products that help avoid GHG emissions compared to other products on the market – such as selling high-efficiency appliances that result in lower in-use emissions compared to less-efficient models. Any reporting of emission impacts of these products is done outside of scope 1, 2 or 3 emissions. For this reason, avoided emissions are sometimes called scope 4 emissions.

A Clean Technology Example

Company A sells energy-efficient lightbulbs. A customer buys these lightbulbs to replace their higher-emitting bulbs. The customer now has lower electricity emissions (scope 2) as a result of using these new, energy-efficient bulbs. For example, if the customer reported 3 kg of CO_2 emissions from using the old lightbulbs, and the new ones only result in 2 kg of emissions, they have avoided 1 kg of emissions.

However, **Company A cannot deduct the customer's 1 kg of avoided emissions** from their overall scope 1, 2, or 3 emissions. They simply count the 2 kg of emissions that their lightbulbs contribute, as part of their own scope 3 emissions (category 11 – use of sold products).

Nevertheless, companies transitioning from selling higher-emitting products towards selling lower-emitting products will likely see a reduction in their scope 3 emissions, in category 11 – use of sold products. Companies can highlight these changes when presenting their scope 3 emissions mitigation strategies.

[16] World Resources Institute. *"Do We Need a Standard to Calculate 'Avoided Emissions'?",* by Laura Draucker (2013). WRI Insights

4.5.4 Accounting for the Transfer of GHG Emissions Reductions Credits

Participants must avoid double-counting emissions reductions. They cannot both sell emissions reductions and discount these reductions from their own GHG emissions inventory. Therefore, participants that generate and sell offset credits, surplus credits, allowances, or other performance credits generated from GHG emissions reductions or removals from their own operations must take additional steps when accounting for these emissions in their GHG emissions inventory.

Double counting GHG emissions reductions can occur when one company that generates and sells a credit to another entity, also claims those GHG emissions reductions as their own. Any reductions sold to another entity must not be counted by the participant as their own.

Therefore, participants should report on the sale of any offset credits, surplus credits, allowances, or other performance credits generated from GHG emissions reductions or removals from their own operations and add those reductions or removals to their total GHG emissions. If credits or units are transferred between entities under the participant's company, then this adjustment in emissions is not required.

Participants that generate and sell credits often do so through a crediting system following specific rules and requirements. Often projects registered in a crediting system will have a limited and specific time period where they can generate credits and, the credit "vintage" corresponds to the year in which the reductions occurred. Participants that are generating and selling credits should follow the rules and requirements of the crediting system being used and consider how selling credits, including the timing specifications, can impact their GHG emissions accounting and implementation of their net-zero plan.

Illustrative example

Let's say a company registers and implements a GHG emissions reduction project at one of their facilities in the year 2020 and is able to sell one offset credit per year for 10 years from the years 2021 to 2030. If the company chooses to sell the offset credit each year, then as part of their annual GHG reporting, they would need to account for that transfer by adding that one tonne of GHG emissions (typically it is one tonne per offset credit) to their total GHG emissions for that same year. For example, if they sell the 2025 vintage offset credit, then they would have to add the GHG emissions associated with that credit back to their total GHG emissions for the year 2025. Now, let's say the company has a 2030 interim target that they would like to achieve, and the company still generates a credit for the year 2030. Instead of selling the credit, the company can choose to retire the credit themselves and the GHG emissions reductions will be reflected in their GHG emissions inventory. In 2031 when the company is no longer generating credits from the offset project, the company can report normally the emissions from that facility, which would be lower and should reflect the GHG emissions reductions arising from the actions taken from the original project in 2020.

Participants should be transparent in how they are accounting their GHG emissions, especially when they are also generating and selling credits, in order to avoid the double counting of emissions and emissions reductions. Importantly, participants should note that if they do generate and sell credits, their reported GHG emissions may be higher in the near-term, but may eventually reflect those emission reductions in the long-term, depending on the nature and continued implementation of the activity generating the reductions. It is recommended that participants who plan to generate and sell offset credits consider this in their scenario analysis, when developing pathways to net-zero, and when selecting interim targets.

5.0 Scenario Analysis and Pathways to Net-Zero

Developing scenarios and identifying pathways to net-zero is at the core of net-zero planning; without it, the net-zero target risks being little more than an aspiration. Potential pathways to net-zero form the basis for choosing robust interim targets, grounded in carefully developed scenarios, whether by external organizations or in-house. As the Principles of Responsible Investment (PRI) notes:

A detailed and plausible pathway to net-zero that clearly describes the actions to meet net-zero is one way a company can avoid "greenwashing".

"While adopting an ambition to reach an end goal such as Net Zero 2050 is laudable, a lack of pathway definition showing how the objective will be achieved leads to potential "greenwashing" by current executives who will not ultimately be there to be accountable – even when executive pay is linked to achieving targets that move towards their own set goals. So **some idea of the expected pathway in terms of a scenario and actions to meet that scenario is crucial** in order to monitor and verify the action towards that."[17]

Scenarios are **not** predictions of **what will happen** in the future; they are narratives of **possible futures** based on a set of assumptions.

Scenarios serve as the framework for modelling different pathways to net-zero. Different scenarios are based on different assumptions and mitigation strategies so that a variety of different futures can be explored. The IPCC *Special Report: Global Warming of 1.5°C* defines a scenario as: "A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces (e.g., rate of technology change, prices) and relationships."[18] While any one scenario is meant to be a *plausible* description of the future, it is not necessarily going to occur. This is especially evident in net-zero planning, since the path to net-zero, especially in later years, may not be known.

With the exception of SMEs, participants are required to provide information on climate-related financial disclosures based on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), which includes engaging in scenario analysis (see Section 8.2). The TCFD emphasizes the development of **exploratory scenarios** to explore a range of various *possible* futures. The Net-Zero Challenge encourages the development of these types of scenarios to inform decision-making and to assess climate-related risks and uncertainties. However, **normative scenarios** that plan for a desired future outcome, such as net-zero by 2050, can form the basis for identifying a pathway to net-zero and selecting interim targets. In this type of scenario, the end-point (in this case, net-zero by 2050) is pre-determined and participants will need to work backwards to identify plausible pathways to reach this goal.[19] Participants can use either or both types of scenarios in their net-zero plans.

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[17] Principles for Responsible Investment, *Pathways to net zero: scenario architecture for strategic resilience testing and planning* (2020) p. 9. UNPRI Climate Change Pathways To Net-Zero.

[18] IPCC, *Global Warming of 1.5°C* (2018). *An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. IPCC Chapter Glossary.

[19] Task Force on Climate-related Financial Disclosures, *Guidance on Scenario Analysis for Non-Financial Companies* (2020). 2020 TCFD Scenario Analysis Guidance

A **pathway** to net-zero informs how a participant can go from their current level of GHG emissions to net-zero GHG emissions by 2050 or earlier. There can be multiple possible pathways to net-zero because each pathway is a future projection based on different scenarios, assumptions, and mitigation strategies. In general, a pathway to net-zero will demonstrate the overall rate of emissions reductions needed to be consistent with net-zero by 2050, and whether a larger proportion of emissions reductions will occur earlier, later, or be consistent throughout the timeframe. Developing pathways to net-zero will allow participants to select appropriate interim targets along the pathway that are achievable and consistent with their net-zero goal.

Figure 2 illustrates the interaction between the GHG emissions baseline, possible pathways to net-zero, and interim targets. It demonstrates three different possible pathways to net-zero, each based on different scenarios, assumptions, and mitigation strategies. Although each pathway starts and ends at the same place, some pathways may achieve earlier emissions reductions than others. In practice, a pathway to net-zero may not be a smooth curve or a straight-line. Furthermore, different participants will likely have very different pathways to net-zero, based on the scenarios, assumptions, and mitigation strategies that they use, and based on whether their company operates in a hard-to-abate sector. In all instances, **participants are encouraged to prioritize pathways that result in early emissions reductions**, as these better align with the goals of the Paris Agreement – to limit global warming to well below 2 degrees Celsius, and preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

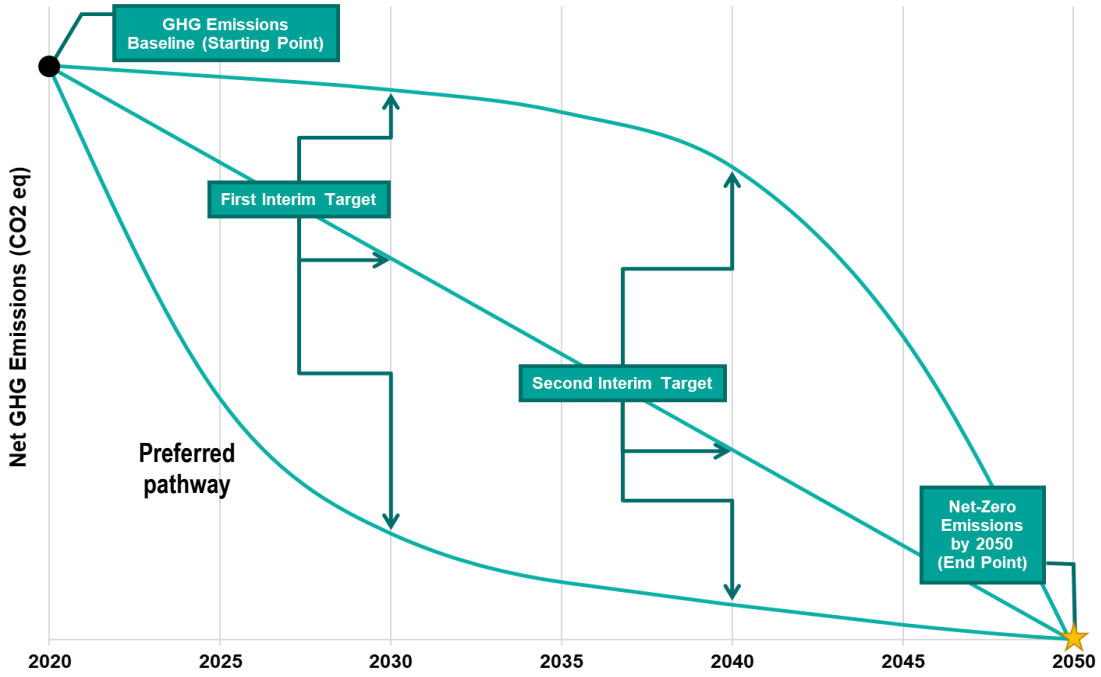

Figure 2: Illustration of Pathways to Net-Zero by 2050

When illustrating pathways to net-zero emissions by 2050, participants can begin with a simple figure that includes their net GHG emissions in CO_2 eq on the x-axis and the years on the y-axis. Participants will know their starting point, which includes their GHG emissions baseline specified for a specific base-year. This starting point will be the first plotted point on the figure. Participants will also know their end point, which is net-zero GHG emissions by 2050 or earlier. This end point will be the second plotted point on the figure. Participants can then connect these two points with lines, which represent pathways to net-zero. Pathways can be a straight-line, a curved line, or any other iteration that begins at the GHG emissions baseline and ends at net-zero GHG emissions. Pathways can be determined via scenario analysis and can be revised overtime. Participants may have one pathway to net-zero or they may have multiple pathways to net-zero. A preferred pathway is one that focuses on early emission reductions. Along these pathways, participants can identify interim targets for specific years. For the Net-Zero Challenge, participants will be required to set at least two interim targets along the pathway to net-zero.

Scenario development is an iterative process. Participants will need to continually assess their scenarios and adjust their assumptions and mitigation strategies based on changing information. The pathways to net-zero should be modified based on any changes made to the scenarios. This is why the Net-Zero Challenge requires that participants update their net-zero plans at least once every five years.

5.1 Minimum Requirements

Participants must demonstrate that they have engaged in scenario analysis to develop their net-zero plans, based on authoritative information. This could involve using global scenarios developed by external sources, such as those developed by the IPCC or the International Energy Agency (IEA), or developing scenarios in-house while using credible sources of information, such as the Canadian Energy Regulator, Statistics Canada, or United Nations agencies, to inform various inputs. If developing in-house scenarios, participants must indicate some of the information sources used to develop these scenarios. Participants are required to provide high-level information of their scenarios in their net-zero plans. Participants do not need to disclose detailed parameters of their scenario analysis; however, it is strongly encouraged that participants make as many details of their scenario analysis publicly-available, to the extent possible.

5.2 Scenario Development

Internationally recognized scenarios cover a range of possible future developments and are developed from a global perspective. Many of these scenarios take a top-down approach and are derived from integrated assessment models, while other scenarios take a hybrid approach, which are intended to achieve a specific goal and are derived from sub-global perspectives, back-casting, and sectoral roadmaps.[20] These scenarios are useful as a starting point and are most useful for companies with a global-reach.

Developing scenarios in-house can allow for a more tailored approach and inclusion of more granular details specific to the participant's business. This approach, either alone or coupled with global scenarios, may be the most useful approach for developing a Canada-specific net-zero plan, although it carries the risk of being considered less robust by outside sources. When using in-house scenarios, participants should draw on credible sources as described in the minimum requirements.

With either approach, participants should couple the scenarios with modelling of potential mitigation strategies to identify potential pathways to net-zero emissions in 2050. The rest of this section provides guidance for the development of an in-house, normative scenario.

[20] Science Based Targets initiative, *Pathways to Net-Zero: SBTi Technical Summary* (2021), p. 12. SBTi Pathways to Net-Zero.

5.2.1 General Principles for Scenario Development

To ensure that net-zero scenarios are as credible and effective as possible there are a few general principles that should be followed. The SBTi provides a description of these principles[21]:

Plausibility	Consistency	Responsibility
"A plausible scenario is a scenario based on a credible narrative. The degree of plausibility in a scenario is linked to the probability of it being realized, i.e. a scenario with high plausibility may be considered relatively likely to occur."	A plausible scenario must also be consistent. "A scenario is consistent if it has strong internal logic and is not built on assumptions or parameters that completely overturn the evidence of current trends and positions without logical explanation."	"A responsible scenario is predicated on minimizing the risk of not achieving the Paris Agreement [or the net-zero target]." A responsible scenario is objective, meaning it is developed with no regard for the preferences of the organization.

5.2.2 Key Inputs for Scenario Development

For a normative, net-zero scenario, there are a few key inputs that should be included:

- The GHG emissions baseline (the pathway starting point);
- Relevant assumptions on the policy and socio-economic environment, and future technology and/or infrastructure development;
- Mitigation strategies; and
- Net-zero emissions 2050 (the pathway end point).

In the case of a normative net-zero scenario, 'relevant' assumptions are those that have the potential to impact the choice of mitigation strategies or that could influence the modelled pathway in some other way. For example, assumptions on future availability of infrastructure could determine what mitigation strategy is modeled in the net-zero pathway. Similarly, assumptions on global carbon pricing levels could influence what mitigation strategies are chosen in the model and for implementation.

5.2.3 Policy, Socio-economic, Infrastructure and Technology Assumptions

It is possible to develop a scenario by only modelling the chosen mitigation strategies. This may be sufficient to identify a reasonable – and actionable – pathway to net-zero, without taking into consideration a broader context, especially for participants with a relative small gap between their starting point and net-zero. However, most scenarios, whether they are developed by a participant, or are an internationally recognized scenario, will make several assumptions on policy, socio-economics, infrastructure, and technology to model a pathway to net-zero emissions. Since the net-zero goal is in the future and the overall pathway to net-zero for a particular participant may be unknown, there needs to be a balance between plausibility – the likelihood of something occurring – and responsibility – ensuring that the scenario reaches the intended goal. This balance means that some assumptions, especially in later years, may appear ambitious. Therefore, when developing or selecting a scenario it is important to make realistic assumptions in the early years and use more optimistic assumptions in the later years, as needed, to ensure that the goal is reached (see Figure 3 for an illustrative example).

[21] Science Based Targets, *Foundations of Science-Based Target Setting* (2019), p. 10-11.

Most scenarios will need to make several assumptions regarding the following contents:

- Policy and regulations (e.g. carbon pricing, offset credits, GHG emissions regulations);
- Socio-economics (e.g. expected prices or costs, population growth);
- Infrastructure (e.g. future availability of clean electricity, hydrogen pipelines); and
- Technology (e.g. when known but nascent technology will become commercially viable; the potential for technology that is in the RD&D phase).

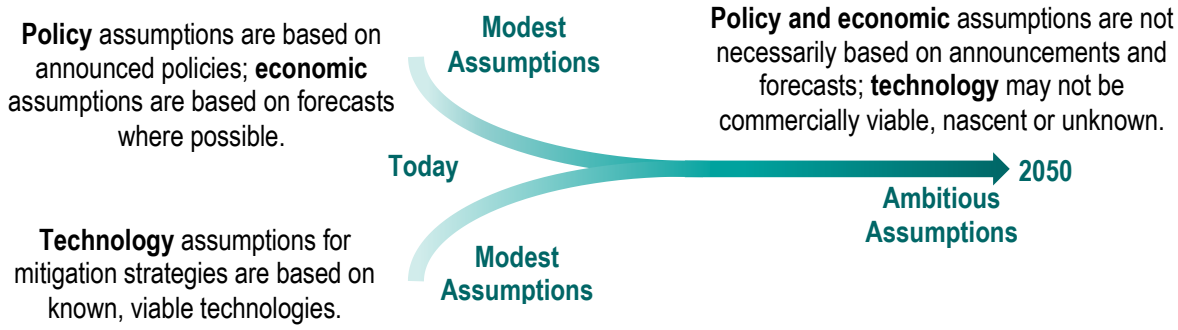

Figure 3: Policy, Economic and Technology Assumptions on the way to 2050

When making assumptions on policy, economics, and technology when developing scenarios, participants should make more modest assumptions in the present and near-term and more ambitious assumptions in the future. For instance, in the near-term policy assumptions are based on announced policies, economic assumptions are based on forecasts, where possible, and technology assumptions for mitigation strategies are based on known and viable technologies. In future years, especially as participants approach 2050, policy and economic assumptions are not necessarily based on announcements or forecasts, and technology assumptions for mitigation strategies may be more ambitious and consider technologies that are not currently commercially viable, that are nascent, or that are unknown.

When developing or selecting a scenario, participants should ensure that the scenario is plausible, consistent, and responsible. In the context of the Net-Zero Challenge, this means that any scenario used by a participant should result in net-zero emissions by 2050, and ideally, a responsible scenario would focus on early emissions reductions to help ensure that goal is achieved. The scenario should have realistic assumptions in the early years and can have increasingly more ambitious assumptions in the later years – as needed – to help ensure that the goal is met.

The below text boxes illustrative examples of what making these assumptions might look like in practice, with increasing ambition in the assumptions in the later years. It is important to note that the preferred scenario is one that uses the most modest assumptions possible and that prioritizes early emissions reductions. Some participants may be able to use a ‘base case’ type of scenario that does not need to make any assumptions beyond currently announced policies and available technologies to develop their pathway to net-zero. For other participants, especially in hard-to-abate sectors, more complex assumptions might need to be made.

Policy and Regulations

2020-2030: Assuming that current and announced policies will occur. For example, assuming that the announced trajectory for carbon pricing will be implemented and that Canada will be on track to achieve its goal of a net-zero electricity system by 2035.

2030-2040: Modest assumptions on future policies – those that are beyond the time horizon of announced polices. For example, assuming that existing regulations are made incrementally more stringent.

2040-2050: More ambitious assumptions on the changing policy/regulatory environment, whether locally or globally. For example, assuming that there is a level playing field globally for carbon prices.

Socio-economics

2020-2030: Assuming that current socio-economic factors remain the same. For example, assuming that the costs of goods and services will continue to increase at the current trajectory.

2030-2040: Assuming many changes occur to current socio-economic trends. For example, assuming that economics-of-scale allow for certain clean technology components to become cost effective.

2040-2050: More ambitious assumptions are made on the socio-economic environment, as needed, to allow for a plausible scenario. This could include assumptions on population growth (as long as this is aligned with credible international scenarios) or costs.

Infrastructure

2020-2030: Given the long timeframe of infrastructure projects, assuming that only existing and shovel-ready projects will be available to use by 2030. For example, it could be assumed that nuclear refurbishment projects that are already underway will be completed by 2030.

2030-2040: Assuming that announced and high-profile infrastructure projects, not yet shovel-ready, are completed and available to use by 2040. For example, participants could take into consideration the proposed Atlantic Loop project.

2040-2050: More ambitious assumptions can be included. However, as infrastructure projects take many years to come to fruition, only infrastructure that has been part of public policy discussions should be considered. For example, some hydrogen infrastructure may be available for use by 2050, especially in places dubbed ‘hydrogen hubs’.

Technology

2020-2030: Assuming that only commercialized technologies are available for use in the near-term. For example, assuming that light-duty electric vehicles will continue to be available and prices will continue to decline in the near-term.

2030-2040: Assuming that technologies currently in the development or demonstration phases will be commercialized in the mid-term. For example, carbon capture technologies are not currently widely available, but given current developments it can be assumed that this technology might be more available in the mid-term.

2040-2050: Assuming that a variety of technology developments could occur over the long-term. For example, it could be assumed that new and currently technologies to reduce emissions from agriculture, shipping, or aviation are developed and available over the long-term.

Participants are encouraged to think about their assumptions in the near-term (i.e. 2020-2030), mid-term (i.e. 2030-2040), and long-term (i.e. 2040-2050). When making near-term assumptions, participants should assume that the current policy, socio-economic, infrastructure, and technology environment continues into the near-term. In the mid-term, participants can make modest assumptions about the direction of policies and socio-economic factors and the development and implementation of infrastructure and technology. In the long-term, participants can make more ambitious assumptions about the future, but should avoid making assumptions that completely overturn existing trends without a logical explanation.

5.3 Mitigation Strategies

Identifying mitigation strategies that maximize emissions reductions early on, are as cost-effective as possible, and are feasible to implement, are critical to the success of a net-zero plan. They are also a

key component in pathway development. Potential mitigation strategies can be modelled in various scenarios to determine how they impact emissions reductions based on different assumptions, which can then help participants select the best pathway to net-zero.

Mitigation strategies that include early actions and that result in early emissions reductions should be prioritized whenever possible, as these are involved in the most likely pathways for Canada and the world to meet net-zero by 2050.

Mitigation strategies should also be prioritized by the amount of emissions reductions they achieve. Mitigating actions can be conceptualized according to three categories: those that **avoid** emissions, those that **reduce** emissions, and those that **offset** emissions. Actions that avoid emissions[22] are those that avoid creating emissions in the first place or that eliminate emissions at their source. Actions that reduce emissions are those that work to reduce the amount of emissions coming from a source. Actions that offset emissions are those that reduce or remove GHG emissions in the atmosphere and are issued offset credits from an offset system or program, which can then be used to compensate for residual emissions.

Like the famous “reduce, reuse, recycle” slogan, there is a hierarchy to these actions. Strategies that avoid creating emissions in the first place are preferred. Emissions that cannot be avoided should be reduced, and emissions that cannot be reduced should be offset (see Figure 4).

Participants can use any methodology they wish to identify mitigation strategies. One recommended methodology is the Best Available Technologies/Best Environmental Practices Determination process described in Environment and Climate Change Canada’s Technical Guide Related to the Strategic Assessment of Climate Change.

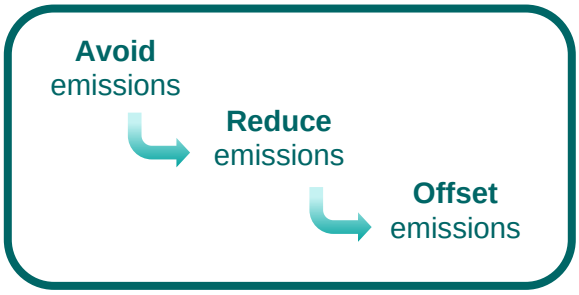

Figure 4: Avoid, Reduce and Offset Emissions
When it comes to mitigation strategies, there is a preferred hierarchy. Mitigation strategies that avoid creating emissions in the first place should be prioritized. Then mitigation strategies that reduce emissions should be considered next. Finally, mitigation stratgeies that offset emissions should be considered as a last resort.

[22] Not to be confused with “avoided emissions” discussed in Section 4.4.3

5.3.1 Mitigation Strategies Minimum Requirements

In the Participation Checklists, participants must provide high-level information on planned mitigation strategies, for each applicable scope of emissions. One example per emissions scope will be considered sufficient to meet this minimum requirement.

5.3.2 Scope 1 Mitigation Strategies

There is a wide range of mitigation strategies that can be deployed to reduce scope 1 emissions, and the examples provided throughout these sections are meant to be illustrative. The examples are neither an exhaustive, nor prescriptive list. Participants are encouraged to consult the resources produced by reputable organizations to inform their mitigation strategies, such as the IEA, United Nations reports, Government of Canada documents, the Canadian Net-Zero Advisory Body, and non-profit think-tanks, to name a few.

Electrification and energy efficiency are recognized as key mitigation strategies. Canada's Net-Zero Advisory Body states that "[these measures] are fundamental across all scenarios"[23] and the International Energy Agency says that energy efficiency is the "first fuel".[24] Companies that own vehicle fleets can consider transitioning their fleets to zero-emission vehicles. Companies that own buildings can look to replace boilers with more energy efficient heating and cooling systems.

Industrial emissions can be eliminated or reduced by employing a variety of clean technologies, such as carbon capture, use and storage, electrification, capturing fugitive methane leaks, switching to cleaner fuels, or using renewable energy.

When identifying mitigation strategies for scope 1 emissions, participants should also be aware of any regulatory requirements that they must meet. This can help participants be more efficient in their net-zero planning by selecting mitigation strategies that simultaneously meet their regulatory requirements and avoid, reduce, or offset their emissions. For example, the oil and gas sector is subject to *Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds (Upstream Oil and Gas Sector)*, which introduces emissions limits and requires industry to regularly inspect and repair equipment to reduce emissions. Participants impacted by these regulations might find it more efficient to focus on mitigation strategies that help them meet these requirements earlier on in their net-zero plans, rather than later.

5.3.3 Scope 2 Mitigation Strategies

Participants should first seek to reduce their purchased electricity (and heat/steam/cooling) by reducing demand (where possible) and employing energy efficiency measures. This can range from simple and modest measures such as using less air conditioning, installing energy efficient appliances or lightbulbs, to investments in renewable energy produced on-site.

Once the available demand reductions and energy efficiency measures have been incorporated into the net-zero plan, remaining scope 2 emissions can be addressed through the purchase of offset credits (see Section 5.3.5), by entering into off-site power purchase agreements, or by participating in utility green power programs.

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[23] Canada Net-Zero Advisory Body, *Net-Zero Pathways: Initial Observations* (2021). NZAB 2050 Publications.
[24] International Energy Agency, *How Energy Efficiency Will Power Net-Zero Climate Goals,* by Alyssa Fischer (2021). IEA Commentaries.

5.3.4 Scope 3 Mitigation Strategies

While scope 3 emissions are, by definition, outside a company's direct control, there are several levers that participants can use to help reduce these emissions, other than purchasing offset credits. SBTi describes seven types of reduction levers:[25]

- Business model innovation
- Supplier engagement
- Procurement policy and choices
- Product and service design
- Customer engagement
- Operational policies
- Investment strategy

It is recognized that plans to reduce scope 3 emissions will likely be the most imprecise of the three scopes. Participants should make their best estimate of how their actions – whether engaging suppliers or finding cleaner procurement options – will reduce their emissions. As these actions are implemented, the net-zero plans can be refined and corrected, to reflect the actual outcomes of these actions.

Participants are encouraged to consult this and other guidance for strategies to address scope 3 emissions. Table 5 provides some examples of mitigation strategies and the types of emissions they can avoid, reduce, or offset.

Table 5: Mitigation Strategy Examples

Illustrative Examples of Mitigation Strategies Applied Across Scopes[26]			
Mitigation Strategy*	**Scope 1**	**Scope 2**	**Scope 3**
Avoiding Emissions			
Install renewable energy	✓	✓	Limited applicability
Purchase zero-emission vehicles[27]	✓	n/a	n/a
Eliminate business travel/employee commuting (e.g. remote work)	n/a	n/a	✓
Reducing Emissions			
Install or sell energy-efficient lightbulbs**	~	✓	✓
Install leak detection equipment (and repair leaks)	✓	n/a	n/a
Reduce product packaging**	~	n/a	✓
Install CCS technology	✓	n/a	n/a
Offsetting Emissions			
Purchase offset credits	✓	✓	✓

* For the sake of brevity, the above examples have been presented in only one category, but many strategies (e.g. CCS) can either avoid, eliminate or reduce emissions, depending on the extent to which they are deployed.

** These measures usually mitigate scope 2 or 3 emissions, but in certain circumstances can reduce scope 1 emissions – for example, in operations that produce electricity on-site or that produce their own product packaging.

[25] SBTi, *Value Change in the Value Chain: Best practices in scope 3 greenhouse gas management*, Version 3.0 (2018), p. 13. SBT_Value_Chain_Report-1.pdf (sciencebasedtargets.org)

[26] These are illustrative examples of well-known mitigation strategies and are not recommendations of what strategies companies should adopt. Each company will need to determine what works best in their own context.

[27] Assumes connection to a zero-emissions electricity grid or fuel source.

5.3.4.1 Scope 3 Emissions and Financial Institutions

The primary source of scope 3 emissions for financial institutions is their investment and lending portfolios. As investors and lenders, financial institutions are in a unique position to influence the climate change plans of their clients. As one mitigation strategy, financial institutions could consider divesting from certain GHG emissions intensive sectors or not investing in new projects in GHG emissions intensive sectors that do not have sufficient mitigation strategies or net-zero plans in place. For example, the Powering Past Coal Alliance (PPCA), cofounded by the Government of Canada in 2017, requires that financial institution members commit to no new financial services and investments for unabated coal power.

Another strategy is to work with corporate clients (borrowers and investees) to ensure that they are developing net-zero targets and plans for their scope 1 and 2 emissions, and where possible, scope 3 emissions. To help achieve emissions reductions from scope 3 emissions, participants can encourage other companies in their investment or lending portfolios to develop their own net-zero plans with similar ambitions. For instance, membership and active participation in engagement groups, including Climate Action 100+ and Climate Engagement Canada, can be leveraged to demonstrate planned mitigation strategies for scope 3 emissions.

5.3.4.2 Scope 3 Emissions and the Co-Benefits of a Circular Economy

Incorporating circular strategies as part of a company's value chain strategy could yield notable scope 3 emissions savings. For scope 3 emissions, category 1 (purchased goods and services), prioritizing recycled material in both production-related (i.e., feedstock) and non-production-related products (e.g., office supplies) is one strategy to reduce supply chain emissions, particularly in products with high emission factors such as aluminum, cement, steel, certain chemicals, agricultural imports, etc. Participating in industrial symbiosis schemes could also reduce category 1 emissions.
Other scope 3 emissions savings could focus on waste minimization along the value chain. For example, retailers can reduce their scope 3 emissions by reducing the plastic packaging of their products, eliminating single-use items, and promoting re-use. Common packaging material such as plastics, paper, and metals contribute GHG emissions at various points along their value chain. Upstream GHG emissions are generated by extractive operations, harvesting and land use, and energy-intensive industrial processes used in the production of material and the manufacturing of packaging products. Downstream, varying emissions profiles are associated with different waste management options for disposal at their end of life – recycling (chemical and mechanical), landfilling or incineration. Packaging, recycling and disposal also produce GHG emissions, particularly in ocean environments or landfills without methane capture and recovery systems. By reducing packaging, companies can reduce their upstream category 1[28] emissions and potentially their downstream category 12 (end-of-life treatment of sold goods) emissions.

Innovative circular economy business models have the potential to reduce emissions tied to resource and material management along many value chains. Participants are encouraged to work towards creating a circular economy and align with Canada's efforts to reduce plastic pollution. Between 2018 and 2020, federal, provincial and territorial environment ministers launched the Canada-wide Strategy and Action Plan on Zero Plastic Waste. Together, they provide a framework for a circular economy approach to plastics through actions by governments, industry and Canadians. Key areas of intervention are described for product design, single-use plastics, collection systems, markets,

[28] This assumes that the packaging is purchased, not produced by the company. Companies that produce plastic packaging would report scope 1 emissions associated with this production.

consumer awareness, and recycling capacity. For information regarding actions taken by the federal government on plastic pollution, please visit Plastic Pollution.

5.3.5 Offset Credits

Participants may use offset credits as a strategy to achieve net-zero emissions in their net-zero plans. In all cases, participants should first seek to avoid and reduce as much of their own scope 1, 2, and 3 emissions as possible, and then use offset credits as a last resort to compensate for any residual emissions, including hard-to-abate emissions.

All participants must report whether or not they plan to use offset credits in their net-zero plans and for which scope of emissions they anticipate using those offset credits.

To reach the Gold tier in the participation tiers (see Section 9.0), participants will have to provide increased disclosure on the planned and implemented use of offset credits. For instance, participants will have to specify what project types they intend to support and from what program(s) they intend to source the offset credits, if known (or indicate that this information will be disclosed at a later date). To reach the Platinum tier in the participation tiers, participants must ensure that at least 50% of the offset credits used to reduce emissions at their Canadian operations and facilities, for current and future reporting years, are issued by Canadian federal or provincial government offset systems. This requirement increases to 100% if a participant wishes to reach the Diamond tier.

All participants should ensure that all offset credits used in their net-zero plans follow the below guidelines and recommendations. All participants are encouraged to be as transparent as possible when it comes to the use of offsets in their net-zero plans.

5.3.5.1 General Guidelines

Offset credits can be generated by projects that avoid releasing emissions to the atmosphere, such as landfill methane destruction, as well as from projects that remove carbon from the atmosphere, such as nature-based solutions (e.g. reforestation) or technology-based solutions (e.g., direct air capture and storage of carbon). Offset credits can be purchased by the participant from compliance-based offset systems or voluntary programs.

Participants should ensure that all offset credits used in their net-zero plan, regardless if they are from a compliance-based system or a voluntary program, are high quality, reflecting additional, quantified, verified, unique, permanent and real emissions reductions.[29] When purchasing credits, participants may also wish to consider the project type, as well as other social or economic goals such as job creation, economic opportunities for local and Indigenous communities and supporting broader efforts related to reconciliation. Once purchased, offset credits are retired, voluntarily cancelled, or otherwise removed from circulation in the associated offset system registry.

Participants should also ensure that any offset credits used are valid at their time of use and reflect reductions or removals with comparable timescales and environmental integrity as emissions reductions achieved in house. This means that offset credits can only be used if they reflect emissions reductions that have occurred after the participant's baseline year (i.e. if you have a baseline of 2015, you cannot

[29] In line with ISO 14064-2: 2019 *Greenhouse gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements* and the Pan-Canadian Greenhouse Gas Offsets Framework, agreed by the Canadian Council of Ministers of the Environment in 2018.

use a credit that represents emissions reductions from the year 2014). In a given year, participants should aim to use offset credits that have been issued no more than 8 years ago. Offset credits should represent emissions reductions or removals for one or more of the GHGs (i.e. CO_2, CH_4, etc.) reported in Canada's most recent National Inventory Report. In addition, if an offset credit is used, and is then found to be invalid at a later time, the participant must add those emissions back to their GHG emissions inventory, or compensate for those emissions by purchasing and retiring additional offset credits (see Section 4.5.4).

5.3.5.2 Domestic Offsets

For Canadian operations, it is strongly recommended that participants only use offset credits that are issued by Canadian federal and provincial government offset systems, as doing so can help ensure that the offset credits meet all of the general guidelines mentioned above and can help participants achieve a higher participation tier. This also includes offset credits issued by Canada's *Federal Greenhouse Gas Offset System*.[30]

Participants may choose to purchase domestic offset credits generated from the voluntary offset market. These offset credits should meet the general guidelines mentioned above. For Canadian operations, it is strongly recommended that participants seek offset credits generated from voluntary offset programs that align with the best practices outlined in the Canadian Council of Ministers of the Environment *Pan-Canadian Greenhouse Gas Offsets Framework*.

5.3.5.3 International Offsets

Participants are allowed to use international offset credits. It is strongly recommended that these credits be used only for a participant's international operations. International offset credits should be generated from established and reputable offset systems or programs and any offset credits used should have high environmental integrity. These offset credits should meet the general guidelines mentioned above. For domestic operations, it is strongly recommended that post 2025, international offset credits should only be used if they fully comply with the rules for Internationally Transferred Mitigation Outcomes (ITMOs) established in Article 6 of the Paris Agreement, and with all subsequent applicable decisions adopted by the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties, and any further criteria for international offsets developed by Environment and Climate Change Canada. For example, international offset credits must represent real, quantified, verified, unique, permanent and additional mitigation outcomes, which have been authorized by the host country for use toward Canada's national emissions targets under the Paris Agreement, and are subject to robust accounting to avoid double-counting.

6.0 Setting Targets

6.1 Net-Zero Target

All participants in the Net-Zero Challenge agree to set a target of net-zero emissions by 2050 for their scope 1, scope 2, and, if applicable, scope 3 emissions. Participants can choose to be even more ambitious by choosing an earlier target year or by aiming to achieve negative emissions by 2050.

[30] Once these credits become available.

The net-zero target must include all emissions that are contained within the GHG emissions inventory, including scope 1, scope 2, and scope 3 emissions. This includes scope 3 emissions categories that participants are required to include (e.g. Stream 2 must include scope 3 category 15) and additional scope 3 emissions categories that participants choose to include (e.g. a stream 1 participant can choose to include an additional, relevant scope 3 category (such as category 11: use of sold products)).

Companies can choose to have an absolute reduction or an emissions intensity net-zero target. The net-zero target can be a single target for all emissions or it can be a set of targets for each emissions scope. For example, a participant can have an absolute net-zero target for all their emissions, including scope 1, scope 2, and scope 3. Alternatively, a participant can also have a set of targets, including for example, an absolute emissions reduction target of net-zero by 2050 for their scope 1 and/or scope 2 emissions, and an emissions intensity target of net-zero by 2050 for their scope 3 emissions.

It is strongly recommended that participants set an absolute reduction net-zero target for all of their emissions.

6.2 Interim Targets

Selecting interim targets along the path to net-zero is a key component of a credible net-zero plan. Interim targets help monitor progress and provide accountability for the net-zero commitment.

There are two main ways to select interim targets: choosing two points along a straight line path to net-zero or choosing two points along a pathway identified through the scenario analysis. The first approach is largely a “top-down” approach, as the targets could be chosen based on only two inputs – an initial GHG emissions inventory to determine the company’s starting point and the end point of net-zero by 2050. The second approach is like a “bottom-up approach”, requiring many more inputs, as described in the scenario analysis section (see Section 5.0). Both approaches are valid and have advantages and disadvantages.

For the Net-Zero Challenge, participants must have two sets of interim targets, unless the net-zero target date is set for 2040 or earlier (see Table 6). A set of interim targets refers to multiple targets that collectively include all emissions contained within the GHG emissions inventory, including scope 1, scope 2, and scope 3 emissions. Each set of interim targets must be anchored to a specific year. For instance, the first interim target might include one target for scope 1 and 2 emissions and a separate target for scope 3 emissions, and both of these targets are meant to be achieved by the year 2030.

The following sections provide more details on the minimum requirements for the interim targets.

6.2.1 Key Parameters for Interim Targets

The Net-Zero Challenge stipulates a few key parameters for the interim targets to ensure that they meet a minimum level of credibility and rigour, as described in the table below. Participants are encouraged to be as transparent as possible when publicly disclosing their interim targets.

Table 6: Key Parameters for Interim Targets

Parameter	Description
Number of Targets	Participants must set **two sets of** sequential interim targets: • This refers to two sets of interim targets **set at different points in time** – such as 2035 and 2045, at the latest. • The second interim target can be left undefined until participants update their net-zero plans for the first time (up to 5 years after submitting the comprehensive net-zero plan). • If a participant has set their net-zero target for the year 2040 or earlier, then only one interim target is required. • If a participant has set their net-zero target for the year 2030 or earlier, then no interim targets are required.
Target Timelines	The date of the first interim target must be **at least five years** from the date of joining the Challenge, but **no later than 2035.** The date of the second interim target must be **at least five years** from the date of the first interim target, but **no later than 2045.**
Target Dates	Interim targets must be **anchored to specific years**, such as 2030 and 2040. Participants can choose the years they wish, so long as the interim targets adhere to the timeline parameter described above.
Target Boundaries (what to include in the interim targets)	Interim targets must include **all GHG emissions** in the GHG emissions inventory. Interim targets can therefore be considered **a set of targets**, including a target for scope 1 and/or scope 2 emissions, and a target for scope 3 emissions. • **Scope:** Participants must set interim targets for each emissions scope required by their participation stream and for any additional scope 3 emissions categories they voluntarily include in their net-zero plan. • **Target Aggregation:** Participants may have a combined scope 1 and 2 target. However, participants must have a separate scope 3 target(s) for their most relevant scope 3 emissions categories. If a participant chooses to include additional scope 3 emissions categories that are not deemed the most relevant, then these scope 3 categories can be included in the scope 1 and/or 2 targets. • **Example:** Financial institutions must include scope 1, scope 2, and scope 3 (category 15) emissions in their GHG emissions inventory. Scope 3 category 15 is the most relevant scope 3 emissions category for financial institutions. Therefore, their interim targets must include a scope 1 and/or scope 2 target and a separate scope 3 target for their category 15 emissions. If a financial institution were to include another scope 3 emissions category, such as category 6 (business travel), this scope 3 emissions category can be combined with their scope 1 and/or scope 2 target.
Target Threshold (minimum ambition requirement)	The first interim target for scope 1 and scope 2 emissions must meet a minimum threshold of ambition, as described below (Section 6.2.2). More ambitious targets will allow participants to access a higher participation tier.
Target Type	Emissions reduction targets can be stated in terms of **emissions intensity** or **absolute emissions** reductions, as described below (Section 6.2.3).
Stream 2 Specific Criteria	As with the GHG emissions inventory, the first interim target for scope 3 category 15 emissions can be developed progressively, on a sector-by-sector basis. Under this approach, the first interim target will need to be updated as the GHG emissions inventory is updated, to reflect the expanding baseline. See Section 4.4.4 for details. Portfolio coverage targets are permitted, so long as this is clearly stated. [Note: portfolio coverage targets do not qualify for the platinum tier in the participation tiers].
Modifying Targets	Interim targets can be modified, if necessary, when the net-zero plan is updated (at least once every five years).

6.2.2 Target Threshold – Minimum Threshold

As much as possible, participants should strive for and prioritize early emissions reductions. However, the pathway to net-zero will look different for each sector and each company. To accommodate these differences, while ensuring a minimum level of ambition for the first interim target for scope 1 and 2 emissions, the Net-Zero Challenge stipulates a minimum ambition threshold. There is no minimum ambition threshold for the first interim target for scope 3 emissions; however, participants are encouraged to follow this guidance for scope 3 emissions if possible. Note that there is no maximum threshold, participants are encouraged to be as ambitious as possible with their first interim targets.

The **minimum ambition threshold** is determined from a straight-line reduction path to net-zero: participants are allowed to set the first interim target for scope 1 and scope 2 emissions up to 40% less than an interim target based on the straight-line path.

6.2.2.1 Example: Choosing a Target Based on a Straight-Line Path to Net-Zero

Suppose a participant selects 2020 as their base year, this would mean emissions need to be reduced by one third each decade to arrive at net-zero by 2050 (see Figure 5). In this case, a participant could set a 2030 target of 33% emissions reductions relative to 2020 (Figure 5A). Based on this example, a participant could choose to set a 20% emissions reduction target in 2030 and still meet the minimum ambition threshold of no more than 40% less than the straight-line reduction target (Figure 5B).

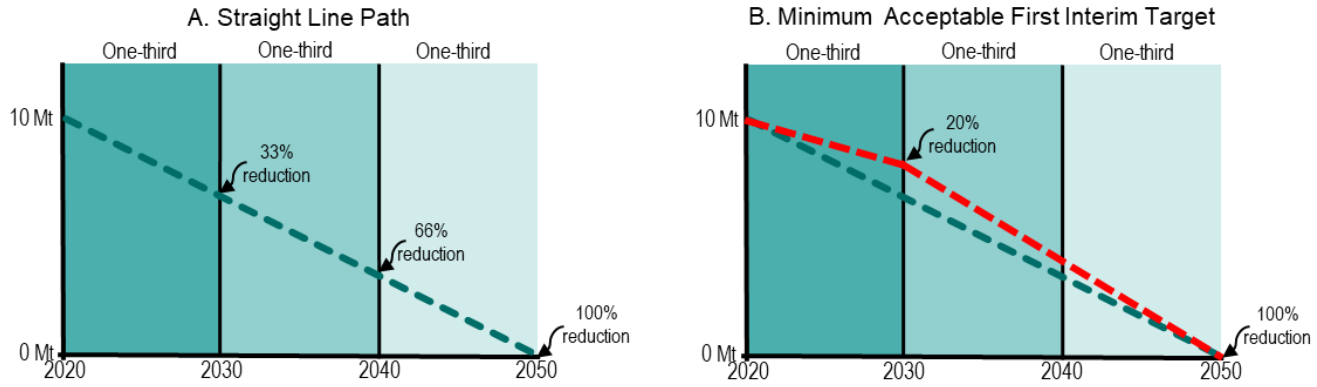

Figure 5: Choosing a Minimum Ambition Threshold Target

The Net-Zero Challenge requires the first interim target to have a minimum level of ambition. The minimum level of ambition is set as a 40% deviation from the straight-line path to net-zero. Figure 5A describes the straight-line path to net-zero. On the y-axis are total emissions, in this case the company has a starting baseline emissions of 10Mt. On the x-axis is years, going from the base year, which in this case is the year 2020. If the company wishes to achieve net-zero emissions by the year 2050, then they can include a point at their baseline emissions and base year, in this case 10Mt at the year 2020, and then draw a straight-line to the point that corresponds with 0 emissions at the year 2050. This specific straight-line path to net-zero would result in a 33% reduction by 2030, a 66% reduction by 2040, and 100% reduction by 2050 (this is simplified and refers to net-zero). Figure 5B describes the minimum acceptable first interim target based on the straight-line path described in figure 5A. If the company wanted to set their first interim target for the year 2030, then the minimum that target can be is 40% less than the reduction target determined by the straight-line path. In this case, the straight-line path determined that there would have to be a 33% reduction for the year 2030. Thus, the minimum target for 2030, as described in figure 5B, is a 20% emissions reduction target, which is 40% less (or 60% of) the 33% reduction target described in figure 5A. Note that figure 5B described the minimum first interim target, for the year 2030, for this specific scenario, a company using this scenario can select any first interim target equal to or greater than the minimum.

6.2.2.2 Calculating the Minimum Ambition Threshold Target

The minimum ambition threshold can be determined by calculating the minimum ambition annual reduction rate and multiplying that by the number of years to the first interim target. Using the above example involving a 2020 base year and a first interim target set for 2030, the calculations are described in table 7 below. Note that these calculations are only used to determine the minimum ambition for the first interim target, they should not be used to determine the second interim target or to describe the pathway to net-zero. For example, the annual reduction rate calculated in these equations is only the minimum annual reduction rate needed to meet the minimum ambition for the first interim target and using this annual reduction rate for all years will not achieve the net-zero target. Participants are strongly encouraged to have a first interim target that is much more ambitious than then minimum.

Table 7: Calculating the Minimum Ambition Threshold

There are two equations to calculating the minimum ambition threshold for the first interim target. The first equation describes the minimum ambition annual reduction rate. The straight-line annual reduction rate describes the straight-line path to reach net-zero from the base year. This is calculated by dividing 100%, which represents 100% GHG emissions reduction, by the difference between net-zero target year, which in this case is 2050, and the base year, which in this case is 2020. The difference between the net-zero target year and the base year represents the number of years a company has to meet their net-zero goal. In this example, the company has 30 years to reach their net-zero target. To reduce 100% of GHG emissions in 30 years, a straight-line path to net-zero would result in a 3.33% decrease in emissions each year. The Net-Zero Challenge allows a 40% deviation from the straight-line path for the first interim target. This means to calculate the minimum ambition annual reduction rate, we multiply the straight-line annual reduction rate by 0.6. In this example, this results in a minimum ambition annual reduction rate of 2%. The second equation describes the minimum ambition threshold, which is the minimum first interim target that a company can have based on their selected base year, net-zero year, and interim target year. This calculation involves the minimum ambition annual reduction rate calculated from equation 1 and the number of years between the baseline year and the first interim target year. In this example, the first interim target is set for 2030 and the base year is 2020, therefore there are ten years between the base year and the first interim target year. Overall, this results in a minimum ambition threshold of 20%, which represents the minimum first interim target that the company can have in this example.

Equation 1
$\text{Minimum Ambition Annual Reduction Rate} = 0.6 \times (100\%/(\text{Net Zero Target Year } - \textit{Base Year}))$
$\text{Minimum Ambition Annual Reduction Rate} = 0.6 \times (100\%/(2050 - 2020))$
$\text{Minimum Ambition Annual Reduction Rate} = 2\%$
Equation 2
$\text{Minimum Ambition Threshold} = \text{Minimum Ambition Annual Reduction Rate} \times (\text{Interim Target Year - Base Year})$
$\text{Minimum Ambition Threshold} = 2\% \times (2030\text{-}2020)$
$\text{Minimum Ambition Threshold} = 20\%$

6.2.3 Target Type

Emissions reduction targets can be stated in terms of **emissions intensity or absolute emissions** reductions. Companies may set their interim targets in either manner, although an absolute emissions reduction target is preferred. Companies can also use a combination of target types in their interim targets. For example, a participant can have an absolute reduction target for their scope 1 and/or scope 2 emissions and an emissions intensity target for their scope 3 emissions.

An **absolute emissions reduction target** is based on total emissions and is expressed as a percentage reduction relative to a base year, irrespective of any other metric. For example, Canada's new emissions reductions target under the Paris Agreement is an absolute emissions reductions target: "Canada will reduce its economy-wide GHG emissions by 40-45% below 2005 levels by 2030."

An **emissions intensity reduction target** specifies emissions reductions relative to productivity or economic output. For example, this type of reduction target could be the percentage of emissions per

unit sold. This type of target can be expressed as “Company ABC will reduce its emissions intensity by 40% by 2030.”

Although the examples above are expressed as percentages, this is not a mandatory requirement. Interim targets can be expressed as a specific reduction amount (e.g. 5 Mt), so long as it is measurable against the GHG emissions inventory baseline and meets the other parameters described above.

7.0 Net-Zero Reporting

Participants are required to **report on progress annually** by filling out the Annual Progress Participation Checklist. The first Annual Progress Participation Checklist must be submitted within 18 months of submitting the Comprehensive Net-Zero Plan Participation Checklist. The 18-month timeframe is to allow participants to strategically align the submission of these checklists with other reporting requirements, such as annual sustainability or ESG reports, should they choose to do so. Following the submission of the first Annual Progress Participation Checklist, participants must submit subsequent Annual Progress Participation Checklists on an annual basis (i.e. within 12 months of the previous submission).

Like the other Participation Checklists, annual progress reporting can be completed using publicly available information (see Section 7.1). Annual progress reporting is meant to ensure that participants remain in compliance with the Net-Zero Challenge, to provide transparency, and to assess progress in net-zero planning and implementation. Once participants begin to submit Annual Progress Participation Checklists, they will move to the Implementer stage in the Participation Tiers (see Section 9.0). Failure to meet this ongoing requirement will result in reconsideration of a participant’s status in the Challenge (See Section 2.6).

7.1 Elements of Annual Progress Reporting

Participants are encouraged to publish progress on the implementation of their net-zero plan publicly, whether as part of another annual report or as a stand-alone report.

Below is a list of elements to include in annual progress reporting, many of which are required in the Annual Progress Participation Checklist:

- A statement reiterating the interim and net-zero targets (and any explanations regarding changes to the targets);
- An annual update of the GHG emissions inventory (see Section 4.0), including scope 1, scope 2, and if applicable, scope 3 emissions, using the most recent available data;
- A clear comparison of the most recent GHG emissions inventory to the baseline GHG emissions inventory (see Section 4.2), including an explanation for any changes to the GHG emissions baseline, and highlighting any emissions reductions (in Mt CO_2 eq or kt CO_2 eq);
- An indication of whether carbon offsets were used in the reporting year and the emissions scope they were used against, and information regarding the type of offsets and the program that issued the credits;
- Information on climate-related financial disclosures for the reporting year;
- A high-level description of progress on any mitigation strategies that were initiated or implemented; and,

- A high-level description on progress towards the next interim target and, if applicable, whether a target has been achieved.

8.0 Other Requirements and Considerations

8.1 Corporate Governance

As part of the comprehensive net-zero plan, participants must provide a description of their corporate governance strategy. This should demonstrate how net-zero planning, climate change targets, and, more broadly, climate change risks and opportunities, are incorporated into business and/or investment decisions. Some questions that could be considered include:

- How will the net-zero plan be incorporated into capital investment decisions to ensure that the right investments are made in a timely manner (e.g. when there is a capital stock turnover) to allow the company to meet its emissions reduction targets?
- What role does the board and the executive leadership have in overseeing net-zero planning and implementation? Have climate-related responsibilities been assigned to management-level positions or committees?
- How is management informed about progress on implementing and meeting the targets of the net-zero plan?

In addition, many companies have found it useful to have Environmental, Social, and Governance (ESG) criteria as a metric in executive compensation. Companies are encouraged to consider linking net-zero planning and/or ESG criteria to executive compensation, where possible. It is recommended that participants consult the guidance developed by Principles for Responsible Investment when considering how to integrate ESG issues into executive pay.

There are no specific criteria that participants must present in their net-zero plan to demonstrate that they are meeting this requirement, since a corporate governance strategy may look different for each participant. Rather, participants must simply provide evidence that there is publicly-available information on their corporate governance strategy and how it considers the net-zero plan.

8.2 Climate-Related Financial Disclosure

As part of the preliminary and comprehensive net-zero plan, all participants (except SMEs) must provide information on climate-related financial disclosure. Through the Participation Checklists participants must provide evidence that they are providing climate-related financial disclosures based on the recommendations identified by the Task Force on Climate-Related Financial Disclosures.[31]

Participants should note that some recommendations of the TCFD are related to other requirements of the Net-Zero Challenge. This includes the disclosure of scope 1, scope 2, and if applicable, scope 3

[31] Task Force on Climate-related Financial Disclosures, *Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures* (2021). 2021 TCFD Implementing Guidance

emissions, and the disclosure of climate-related targets. Participants are strongly encouraged to follow all recommendations of the TCFD; however, where there are differences between the requirements of the Net-Zero Challenge and the recommendations of the TCFD, the requirements of the Net-Zero Challenge will prevail for participation in this program.

8.3 Public Disclosure

In order to promote transparency and credibility of net-zero plans and targets, participants are strongly encouraged to publicly disclose as much of their net-zero planning as possible on their websites, and to report on their progress annually. Participants are encouraged to publish stand-alone net-zero reports (i.e. the net-zero plan information is not embedded in sustainability, ESG, or annual reports) in order to provide complete transparency with their net-zero plan and progress towards net-zero emissions. In the simplest form, a stand-alone net-zero report should be a downloadable document that includes all the required elements in the comprehensive net-zero plan (see Section 3.2), and if the stand-alone report is produced when participants are required to provide annual progress reporting, then it should also include all elements required in the Annual Progress Participation Checklist (see Section 7.1).

Participants' names will be published on the Net-Zero Challenge website once they join the Challenge. After submission and review of the Comprehensive Net-Zero Plan Participation Checklist, participants will receive a participation tier, which will also be added to the website. Completed Participation Checklists can be made available to the public upon request.

8.4 Stand-Alone Net-Zero Plans for Canadian Facilities and Operations

Often net-zero plan information is embedded across multiple company reports, such as an annual or sustainability report, rather than in a single report dedicated to climate action and net-zero planning. In all instances, it is encouraged for participants to develop stand-alone net-zero plans, whether they be at the global or regional level, as stand-alone plans increase transparency and accountability.

Given that the Net-Zero Challenge is a made-in-Canada approach to net-zero planning, one additional requirement to obtain the Platinum and Diamond participation tiers (see Section 9.0) is to publish a stand-alone net-zero plan for Canadian facilities and operations. The stand-alone plan for Canadian facilities and operations must include all elements required by the comprehensive net-zero plan (see Section 3.2).

Multinational companies that choose to meet this requirement are still encouraged to have a net-zero plan for their global facilities and operations in addition to their Canadian facilities and operations. A stand-alone global net-zero plan that contains a section specific to Canada and the company's Canadian facilities and operations (a section, Annex, Appendix, etc.) and that meets all of the requirements mentioned above, will count as a stand-alone net-zero plan for Canadian facilities and operations.

9.0 Participation Tiers

The Net-Zero Challenge Participation Tiers recognize both **interim target ambition** and **implementation of net-zero plans**. As participants implement their net-zero plans and meet

successive stages, they will advance from Planner to Implementer to Achiever and so on, as shown in Figure 6.

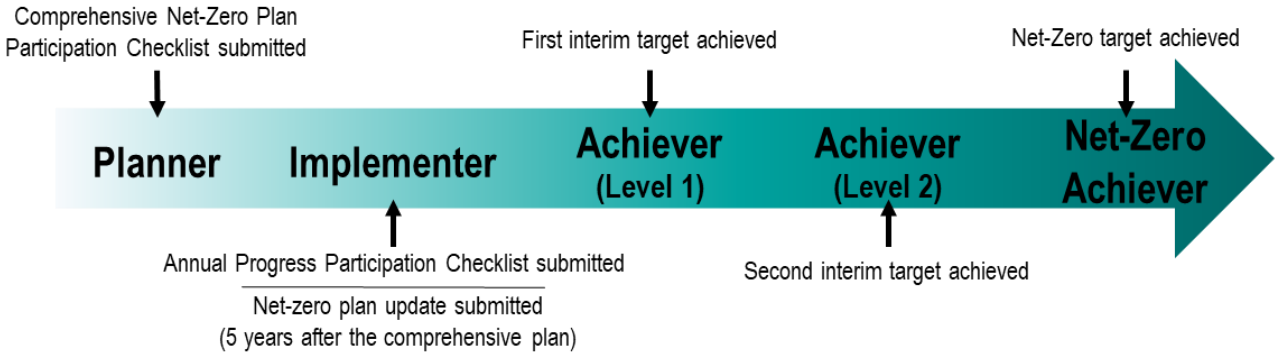

Figure 6: Participation Tier Stages
The Net-Zero Challenge has five different stages for the participation tiers. The first stage is the Planner stage. Participants attain the Planner stage once they submit their Comprehensive Net-Zero Plan Participation Checklist. The second stage is the Implementer stage. Participants attain the Implementer stage once they submit their first Annual Progress Participation Checklist. To maintain the Implementer stage participants must continue to submit Annual Progress Participation Checklists each year and update their net-zero plan at least once every five years. The third stage is the Level 1 Achiever stage. Participants attain this stage when they achieve their first interim targets. The fourth stage is the Level 2 Achiever stage. Participants attain this stage when they achieve their second interim target. The final stage is the Net-Zero Achiever stage. Participants attain this stage when they achieve their net-zero target.

Participants' progress to the 'Planner' stage once the Comprehensive Net-Zero Plan Participation Checklist has been submitted. After the submission of the first Annual Progress Participation Checklist, participants will advance to the 'Implementer' stage. To remain in the 'Implementer' stage, participants must continue to submit the Annual Progress Participation Checklist annually, and submit the Participation Checklist on updating the net-zero plan within five years after submitting the Comprehensive Net-Zero Plan Participation Checklist (see Section 3.2). Participants who do not continue to meet this requirement will have their status in the Challenge reconsidered (see Section 2.6). Participants then advance to the various 'Achiever' stages once interim targets and the net-zero target are attained.

The participation tiers also reward ambition in net-zero planning through five different participation tier levels: Bronze, Silver, Gold, Platinum, and Diamond.. All participants will achieve the Bronze tier level for meeting the minimum requirements of the Net-Zero Challenge. If a participant wishes to advance to higher tier levels, they will have to meet additional criteria as described in Table 8 and explained in Section 9.1.

The participation tier for each participant will be published on the Net-Zero Challenge website. Participants will only receive a participation tier after submitting the Comprehensive Net-Zero Plan Participation Checklist, which is required within 24 months of signing the Commitment Letter. After participants sign the Commitment Letter, they will be 'Committed' participants on the Net-Zero Challenge website. Participants can be placed in a higher tier upon submission of the Comprehensive Net-Zero Plan Participation Checklist. Participation tiers are re-evaluated each time a participant submits an Annual Progress Participation Checklist. The Participation Checklists include questions specific to the criteria in the participation tiers, which will allow participants the opportunity to adjust any criteria in their net-zero plan that may impact their participation tier. Participation tiers will be reassigned according to the latest information provided in the Participation Checklists. In order to remain in a higher participation tier, participants must continually demonstrate how they are meeting its criteria, and the criteria for all the tiers below it, through the Annual Progress Participation Checklists.

Combining the two participation tier parameters – ambition and implementation – results in a spectrum of participation tier placements that range from Bronze-Planner to Diamond-Net-Zero Achiever. The Net-Zero Challenge encourages all participants to be ambitious in their net-zero planning, so as to achieve higher participation tiers, and to progress through the Net-Zero Challenge process, so as to achieve successive participation tier stages.

Table 8: Participation Tier Ambition Criteria

Criteria	Bronze	Silver	Gold	Platinum	Diamond
Must include one additional scope 3 category in the net-zero plan (compared to minimum requirements)		✓	✓	✓	✓
Must have at least a 40% emissions reduction target for the first interim target for scope 1 and 2 emissions			✓	✓	✓
Must have absolute reduction targets for the scope 1 and 2 interim targets			✓	✓	✓
Must provide increased disclosure on planned and implemented use of offset credits			✓	✓	✓
Must include two additional scope 3 categories in the net-zero plan (compared to minimum requirements)				✓	✓
Must disaggregate scope 1, scope 2, and scope 3 interim targets				✓	✓
Must publish a stand-alone net-zero plan for Canadian facilities and operations				✓	✓
Must ensure that 50% of offset credits used to offset emissions from Canadian facilities and operations are from federal or provincial government offset systems				✓	✓
Must have at least a 40% emissions reduction target for the first interim target for scope 1, 2 and 3 emissions					✓
Must have absolute reduction targets for scope 3 interim targets					✓
Must ensure that 100% of offset credits used to offset emissions from Canadian facilities and operations are from federal or provincial government offset systems					✓

9.1 Participation Tier Ambition Criteria

1) **Must include one additional scope 3 category in the net-zero plan**: The net-zero plan, including the GHG emissions inventory, the interim targets, and the net-zero target, must include the next most relevant scope 3 category, beyond the minimum required for the participation stream (see Section 4.3.3 for defining relevant scope 3 categories). Table 9 describes the scope 3 categories that the various participation streams must include if they want to meet this criteria.

Table 9: One Additional Scope 3 Category

Stream 1	**Single most** relevant category
Stream 2	Category 15 **plus the next most** relevant category
Stream 3	**Top two** most relevant categories
SMEs	**Single most** relevant category

2) **Must have at least a 40% emissions reduction target for the first interim target for scope 1 and scope 2 emissions:** The first interim target ambition must be at least a 40% emissions reduction target compared to the baseline for scope 1 and scope 2 emissions. This applies regardless whether it is a combined scope 1 and 2 target or if scope 1 and 2 targets are set separately. In the latter case, both must meet the 40% emissions reduction threshold.

3) **Must have absolute reduction targets for the scope 1 and scope 2 interim targets:** The interim targets for scope 1 and scope 2 emissions must be expressed as absolute reduction targets rather than as emissions intensity targets (see Section 6.2.3).

4) **Must provide increased disclosure on planned and implemented use of offset credits:** In addition to the minimum requirements, participants must specify from which organizations they plan to purchase offset credits or explicitly state that this information is to be determined and will be disclosed at a later date. Once offset credits are purchased and used to declare lower emissions, participants must disclose in progress reporting the organizations from which the credits were purchased*.* If a participant does not include the use of offset credits in their net-zero plan, then they do not need to meet this criteria in the participation tiers.

5) **Must include two additional scope 3 categories in the net-zero plan**: The net-zero plan, including the GHG emissions inventory, the interim targets, and the net-zero target, must include the next two most relevant scope 3 categories, beyond the minimum required for the participation stream (see Section 4.3.3 for defining relevant scope 3 categories). Table 10 describes the scope 3 categories that the various participation streams must include if they want to meet this criteria.

Table 10: Two Additional Scope 3 Categories

Stream 1	**Top two most** relevant categories
Stream 2	Category 15 **plus next two most** relevant categories
Stream 3	**Top three** most relevant categories
SMEs	**Top two most** relevant categories

6) **Must disaggregate scope 1, scope 2, and scope 3 interim targets:** The interim targets for scope 1, scope 2, and scope 3 emissions must be stated separately.

7) **Must publish a stand-alone net-zero plan for Canadian facilities and operations:** A net-zero plan is developed and published for the participant's Canadian facilities and operations. A published stand-alone net-zero plan means the key non-confidential content of the net-zero plan is presented in a contained or stand-alone manner, rather than the information being embedded throughout sustainability or other annual reports. For multi-national companies, this could mean having a

Canadian-specific portion in a global level plan, such as in a separate section, an annex, or an appendix.

8) **Must ensure that 50% of offset credits used to offset emissions from Canadian facilities and operations are from federal or provincial governments offset systems:** For a participant's Canadian facilities and operations, they must ensure that at least 50% of the offset credits used to compensate for any residual emissions are credits issued by Canadian federal or provincial government offset systems. Note that this only applies to offset credits that are used in the current and future reporting years. If a participant does not include the use of offset credits in their net-zero plan, then they do not need to meet this criteria in the participation tiers.

9) **Must have at least a 40% emissions reduction target for the first interim target for scope 1, scope 2, and scope 3 emissions:** The first interim target ambition must be at least a 40% emissions reduction target compared to the baseline for scope 1, scope 2, and scope 3 emissions. As per criteria 6, mentioned above, this criteria will apply to the disaggregated scope 1, scope 2, and scope 3 interim targets (i.e. each target must meet the 40% threshold).

10) **Must have absolute reduction targets for scope 3 interim targets:** In conjunction with criteria 3, mentioned above, the interim targets for scope 1, scope 2, and scope 3 emissions must all be expressed as absolute reduction targets rather than as emissions intensity targets (see Section 6.2.3).

11) **Must ensure that 100% of offset credits used to offset emissions from Canadian facilities and operations are from federal or provincial government offset systems:** For a participant's Canadian facilities and operations, they must ensure that 100% of the offset credits used to compensate for any residual emissions are credits issued by Canadian federal or provincial government offset systems. Note that this only applies to offset credits that are used in the current and future reporting years. If a participant does not include the use of offset credits in their net-zero plan, then they do not need to meet this criteria in the participation tiers.

10.0 Future Updates to Requirements

Environment and Climate Change Canada reserves the right to update the requirements of the Net-Zero Challenge as required, in consultation with stakeholders. This will allow new developments, considerations, policy, regulatory and technological changes to be taken into consideration.

ANNEX A: References

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ANNEX B: Minimum Requirements

The table below outlines the minimum requirements for participation and for elements of the net-zero plans in the Net-Zero Challenge. Participants that fail to meet any one of these minimum requirements, as identified through the Participation Checklists, will be notified and will have up to 6 months to rectify the situation. Participants who have not met the requirements at the end of the 6 months will be removed from the Challenge.

Topic	Minimum Requirement	Sections
Participation Streams	Participants must select the proper participation stream. The Net-Zero Challenge reserves the right to challenge a participant's self-selection, including the selection of SME. In case of dispute, the Net-Zero Challenge has the right to remove a participant from the program.	2.3 Participation Streams
Preliminary Net-Zero Plan	The preliminary net-zero plan must contain the elements stipulated in the technical guide. These elements must meet the minimum requirements for the net-zero target, the GHG emissions inventory, and on climate-related financial disclosure, as described in other sections below. • The Preliminary Net-Zero Plan Participation Checklist must be submitted within 12 months of signing the commitment letter. • Compliance with the minimum requirements will be determined by the evidence provided in the Preliminary Net-Zero Plan Participation Checklist.	3.1 Preliminary Net-Zero Plan
Comprehensive Net-Zero Plan	The comprehensive net-zero plan must contain the elements stipulated in the technical guide. These elements must meet the minimum requirements for all elements in the preliminary net-zero plan, and interim targets, scenario analysis, mitigation strategies, offset credits, and corporate governance, as described in other sections below. • The Comprehensive Net-Zero Plan Participation Checklist must be submitted within 24 months of signing the commitment letter. • Compliance with the minimum requirements will be determined by the evidence provided in the Comprehensive Net-Zero Plan Participation Checklist.	3.2 Comprehensive Net-Zero Plan
Baseline GHG Emissions Inventory	Participants must have a baseline GHG emissions inventory. Participants may join the Challenge with a pre-existing baseline GHG emissions inventory, or they may develop a baseline GHG emissions inventory as part of their preliminary net-zero plan. In either case, it must meet the following requirements: • Must state the base year. ○ If developing a new baseline GHG emissions inventory, the base year must be no earlier than 5 years prior to developing the preliminary net-zero plan. • Must state the base year emissions in absolute terms (e.g. XXXkt CO_2 eq) for scope 1 and 2 emissions. Scope 3 emissions may be expressed in absolute terms, as emissions intensity, or as a narrow range of estimates and a description of the confidence level in those estimates.	4.0 GHG Emissions Inventory 4.2 GHG Emissions Baseline

	• Must submit scope 1 and scope 2 emissions, and scope 3 emissions, if applicable, according to participation stream requirements or if you choose to include additional scope 3 categories. ○ If a participant does not have scope 1 or 2 emissions to report, this must be explained. • The most relevant scope 3 emissions categories, when required, are presented disaggregated from scope 1 and 2 emissions in the baseline GHG emissions inventory. • All companies with facilities that report to the GHGRP must submit the total scope 1 emissions, in absolute terms, from all of these facilities OR submit their total scope 1 emissions for their Canadian facilities and operations, for the same base year as the baseline GHG emissions inventory. • Participants must avoid double-counting emissions reductions. They cannot both sell emissions reductions and discount these reductions from their own GHG emissions inventory.	
Annual GHG Emissions Inventory	Participants must report annually on their GHG emissions inventory through the Annual Progress Participation Checklist. Each annual GHG emissions inventory must meet the following requirements: • Must clearly state the reporting year. • Must state the emissions in absolute terms (e.g. XXXkt CO_2 eq) for scope 1 and 2 emissions. Scope 3 emissions may be expressed in absolute terms, as emissions intensity, or as a narrow range of estimates and a description of the confidence level in those estimates. • Must submit scope 1 and scope 2 emissions, and scope 3 emissions, if applicable, according to participation stream requirements or if you choose to include additional scope 3 categories. ○ If a participant does not have scope 1 or 2 emissions to report, this must be explained. • The most relevant scope 3 emissions categories, when required, are presented disaggregated from scope 1 and 2 emissions in the baseline GHG emissions inventory. • All companies with facilities that report to the GHGRP must submit the total scope 1 emissions, in absolute terms, from all of these facilities OR submit their total scope 1 emissions for their Canadian facilities and operations, for the same reporting year as the annual GHG emissions inventory. • Participants must avoid double-counting emissions reductions. They cannot both sell emissions reductions and discount these reductions from their own GHG emissions inventory.	4.0 GHG Emissions Inventory 7.1 Elements of Annual Progress Reporting
GHG Emissions Inventory – Scope 3 emissions	For the baseline GHG emissions inventory and the annual GHG emissions inventory, participants must follow these requirements for scope 3 emissions: • Stream 1: Scope 3 emissions are not required. • Stream 2: Must include scope 3 emissions from investments (scope 3 category 15) and/or lending portfolios.	4.4.3 Scope 3 Emissions

	○ For institutions with lending portfolios, participants must demonstrate that their lending portfolios are included in their GHG emissions inventory, following guidelines from either the Net-Zero Banking Alliance or the Science Based Targets initiative. ○ Stream 2 Participants must include, at a minimum, their clients' scope 1 and scope 2 emissions. • Stream 3: Except for SMEs, must include the single most relevant category of scope 3 emissions, which is the category with the most emissions compared to the other scope 3 emissions categories. ○ The selection of the most relevant scope 3 emissions category can be based on a reasonable estimate regarding the total scope 3 emissions. • Participants can choose to include additional scope 3 categories. If they do so, then these additional categories must be included in the GHG emissions inventory.	4.4.4 Scope 3 Emissions for Stream 2 – Financial Institutions
Net-Zero Target	Participants must have a net-zero target that meets the following requirements: • The net-zero target must be set no later than 2050. • The net-zero target can include the use of offset credits. • The net-zero target must include all the GHG emissions included in the GHG emissions inventory, including scope 1, scope 2, and if applicable, scope 3 emissions. This includes required scope 3 emissions categories and scope 3 emissions categories that participants choose to include in their net-zero plans. • The net-zero target may be expressed as an absolute emissions reduction target or an emissions intensity target.	6.1 Net-Zero Target
Interim Targets	Participants must have interim targets that meet the following requirements: • Participants must develop at least 2 interim targets, unless their net-zero target is set for 2040 or earlier. ○ Participants only have to specify their 2nd interim target when they update their net-zero plans for the first time. ○ If the net-zero target is set for the year 2040 or earlier, then only 1 interim target is required. ○ If the net-zero target is set for the year 2030 or earlier, then no interim targets are required. • The interim targets must be anchored to specific years, such as 2030 or 2040. ○ The first interim target must be set at least five years from the date of joining the Challenge, but no later than 2035. ○ The second interim target must be set at least five years from the date of the first interim target, but no later than 2045. • Interim targets must include all of the GHG emissions included in the GHG emissions inventory, including scope 1, scope 2, and scope 3 emissions, where required. This includes required scope 3 emissions categories and scope 3 emissions categories that participants choose to include in their net-zero plans. • Interim targets for scope 1 and 2 emissions can be aggregated together. Scope 3 interim targets must be stated separately for the most relevant scope 3 emissions categories.	6.2 Interim Targets

	• The 1st interim target for scope 1 and scope 2 emissions must meet a minimum ambition threshold, as described in the technical guide. • The interim targets may be expressed as an absolute emissions reduction target or an emissions intensity target.	
Scenario Analysis	Participants must provide high-level evidence of using climate scenario analysis to develop their net-zero plan.	5.0 Scenario Analysis and Pathways to Net-Zero
Mitigation Strategies	Participants must provide high-level information on planned or implemented mitigation strategies annually, for each scope of emissions included in their GHG emissions inventory • One example of a mitigation strategy per emissions scope will be considered sufficient.	5.3 Mitigation Strategies
Offset Credits	Participants are able to use offset credits in their net-zero plans, but they must adhere to the following requirements: • Participants must explicitly state whether or not they plan to use offset credits and for which scope(s) of emissions. • Participants must indicate annually whether offset credits were used to offset emissions and for what emissions scope.	5.3.5 Offset Credits
Corporate Governance	Participants must provide high-level evidence that net-zero planning and/or climate change targets are integrated into business and/or investment decisions.	8.1 Corporate Governance
Climate-Related Financial Disclosure	All participants, except for SMEs, must provide evidence that they are annually providing climate-related financial disclosures based on the recommendations identified by the Task Force on Climate-Related Financial Disclosures.	8.2 Climate-Related Financial Disclosure
Annual Progress Reporting	Participants must report on progress annually by completing the Annual Progress Participation Checklist, within the timeline specified in the Net-Zero Challenge technical guide. Annual progress reporting includes information on the net-zero target, interim targets, the annual GHG emissions inventory, mitigation strategies, offset credits, and climate-related financial disclosures, as described in sections above, and the following requirements: • Must clearly demonstrate annual changes in emissions compared to the baseline GHG emissions inventory by expressing any emissions reductions in Mt CO_2 eq or kt CO_2 eq. • Must provide a high-level description on progress towards the next target and whether a target has been achieved.	7.0 Net-Zero Reporting
Updating the Net-Zero Plan	Participants must demonstrate that they have updated their net-zero plan by completing the applicable Participation Checklist, within the timeline specified in the Net-Zero Challenge technical guide.	3.4 Updating Net-Zero Plans