

Climate change considerations for federally regulated pipelines in Canada

Usha Mulukutla, Patti Dods, Erin Tabah¹

Canada Energy Regulator, Calgary, Canada

1. Introduction

As Canada's federal energy regulator, the Canada Energy Regulator (CER) has oversight of over 73,000 km of interprovincial and international pipelines, which is about 10 per cent of all pipelines in Canada. The CER's mandate also includes regulation of international power lines and designated inter-provincial power lines, offshore renewable projects, and publishing fact-based information on energy markets and supply, sources of energy, and safety and security of pipelines and powerlines. While there are no federally-regulated hydrogen pipelines in Canada at the moment, we are working to make sure we are ready to oversee the transportation of hydrogen by pipeline should such a pipeline be proposed within the CER's jurisdiction. In regulating energy infrastructure, the CER enforces some of the strictest safety and environmental standards in the world.

In making decisions and recommendations on the construction and operation of new facilities, the Commission of the CER considers whether the proposed project is in the public interest based on factors outlined in the *Canadian Energy Regulator Act* (CER Act). In 2019, the CER Act introduced a new factor for consideration in decision-making for new facilities: the extent to which the effects of a pipeline hinder or contribute to the Government of Canada's ability to meet its environmental obligations and commitments to climate change. In its consideration, the Commission sets out the conditions under which a project could be found to be in the Canadian public interest. In addition to a company's proposed mitigation measures to minimize greenhouse gas (GHG) emissions, conditions of approval may be attached to any recommendation or decision.

This paper focuses on CER's GHG emissions and climate change considerations for new pipeline project assessments, and specifically discusses the challenges and opportunities related to the requirement for net-zero plans. It also endeavors to share learnings from the early days of implementation of these considerations.

2. Canada's climate change commitments and obligations

Canada is a signatory to the Paris Agreement and is taking actions to reduce GHG emissions from the oil and gas sector – the largest source of GHG emissions in Canada. The Government of Canada established the 2030 Emissions Reduction Plan in 2022 (which lays out the plan to achieve 40 to 45 per cent below 2005 levels by 2030) as an early deliverable under the *Canadian Net-Zero Accountability Act*, and to provide a credible roadmap to achieving its net-zero emissions by 2050. Also, Canada has recently published a National Adaptation Strategy, which will establish shared goals and collaborative efforts to manage climate resilience.

¹ The views, judgements, opinions, and recommendations expressed in this paper do not necessarily reflect those of the Canada Energy Regulator nor its Commission members or Board of Directors.

To support progress on the various commitments, the federal government released a Strategic Assessment of Climate Change (SACC) in October 2020. The SACC aims to enable consistent, predictable, efficient and transparent consideration of climate change throughout the impact assessment process. Among other things, the SACC requires that applicants of projects with a lifetime beyond 2050 provide a credible plan that describes how the project will achieve net-zero emissions by 2050.

3. CER's filing guidance on GHG emissions and climate change considerations

The CER has a role to play in reducing GHG emissions and tackling climate change when regulating energy projects. The CER's Filing Manual provides guidance to companies regarding the information they need to include in a project application that aligns with SACC.

The CER has recently updated its filing guidance around the GHG emissions and climate change factor. This updated guidance supports the Commission in determining the extent to which the effects of the project may hinder or contribute to Canada's climate change commitments. Key elements that applicants are expected to provide for the Commission's consideration include:

Magnitude of GHG emissions

In assessing the magnitude of emissions, the Commission considers the sources of direct and acquired energy (purchased from a third-party) that would be expected throughout the entire lifecycle of a project. GHG emissions associated with project construction generally arise from sources such as operation of construction equipment, land-use change (e.g., clearing), and biomass burning. GHG emissions associated with project operation vary based on product carried, throughput capacity, individual design, and number of components. Line compression is typically the largest direct GHG emission source for natural gas pipeline projects. Other sources of operational emissions may include maintenance activities, and fugitive emissions from valves, connectors, pumps, and tanks. For facilities with electrically-driven equipment, GHG emissions could arise from onsite power generation (direct emissions) or energy purchased from a third-party source (indirect emissions).

Applicants are required to provide a comparison of the project's predicted GHG emission intensity to the emissions intensity of projects similar in nature, scope, and scale. Applicants should also provide a comparison of the project's magnitude of predicted project emissions to national sector-based GHG emissions, total provincial GHG emissions, as well as to Canada's GHG reduction targets.

Mitigation measures for GHG emissions

Applicants are expected to consider various mitigation measures and best available technologies and environmental practices to minimize GHG emissions in each phase of the lifecycle, from clearing through to abandonment. Considering potential mitigation measures early in the design and planning phase offers opportunities to identify and plan GHG reductions. For example, in a project application, an applicant may propose situating a project in a location that requires less biomass removal, or they may propose capturing natural gas instead of venting.

Efforts to mitigate GHG emissions continue to evolve and improve. As such, applicants are encouraged to include a discussion of alternative measures or means that were considered and the rationale for selecting or eliminating certain measures. Where GHG emissions cannot be avoided or reduced, the additional measures above and beyond standard mitigation (i.e. offset measures) to further reduce GHG

emissions, including carbon dioxide captured and stored, corporate-level initiatives, and use of offset credits, may be considered. The Filing Manual states that offset measures (such as carbon dioxide captured and stored, corporate-level initiatives, and use of offset credits) should generally be considered a last resort when reasonable efforts at avoiding and mitigating the GHG emissions have been exhausted.

Net-zero plan

Applications are expected to include a net-zero plan for projects that operate beyond 2050. The Filing Manual specifies that applicants may submit either a project-specific or a corporate net-zero plan, depending on the nature, scope, and scale of the project.

The level of detail that the Commission expects in a net-zero plan depends on the nature of the project. For example, a compressor station that has significant point source GHG emissions released continually over its operating life is likely to require a net-zero plan to explain how the applicant will avoid, reduce, mitigate, or offset these emissions in either a stepwise or gradual manner by the year 2050. For activities that are incidental to a larger system that is the primary source of GHG emissions, or are managed at a corporate level (such as compliance with a company-wide fugitive emission management program), adherence to a corporate plan for achieving net-zero emissions by 2050 may be more appropriate. The Commission expects companies to demonstrate early GHG reductions and provide periodic project milestones that demonstrate progress towards net-zero.

Impact of a project on Canada's efforts to reduce GHG emissions

In assessing the extent of emissions, the Commission considers how the project's predicted GHG emissions impact Canada's GHG reduction targets. Applicants are expected to provide a discussion of laws, regulations, and policies at relevant regional, provincial, federal, and international levels as they relate to project GHG emissions. Examples might include targets, carbon pricing, mandatory reductions or offsets, reporting programs, and evolving guidance on best-in-class GHG emissions performance by oil and gas projects. The Commission also recognizes that displacing high emission intensity projects with lower emission intensity projects or facilitating GHG removals can contribute to Canada's climate change commitments.

Climate change resilience

Applicants are expected to undertake an assessment of the resilience of the project to climate change impacts. This assessment should include methods used to identify, evaluate and manage the climate risks that could affect the project itself, and the project's vulnerabilities to climate change, for example impacts of extreme weather events on project infrastructure. The scope and scale of an assessment of a project's climate related-risks and development of a risk treatment plan should be tailored to the individual project, depending on the potential vulnerabilities and complexity of interactions.

Upstream emissions

The Filing Manuals set out when applicants are required to provide an estimate of upstream emissions and the extent to which those emissions would be incremental as a result of the project. The SACC provides guidance on the thresholds for consideration of upstream emissions, and these thresholds are

applied in the context of CER-regulated projects. Upstream emission assessments may also be a key element in considering the overall cumulative effects of any proposed project. The CER does not assess downstream emissions because they are generally beyond the applicant's care and control and difficult to quantify.

Economic considerations

Given the rapidly evolving nature of climate change policy within Canada and internationally, applicants are encouraged to plan for how further changes to laws, regulations, and policies may potentially impact the economic feasibility of a project. Applicants are expected to consider potential implications of these laws, regulations, and policies on the economic feasibility of the project, and how these could be mitigated. Potential risks of changes to the regulatory environment that could require adaptive management by the applicant could include a project's available supply, market demand, utilization, costs, and financing.

4. Decision-making and Commission's conditions

The information contained in the application, and any additional information provided through the adjudicative process, informs the Commission's assessment of the GHG emissions and climate change factor. The Commission may impose legally binding conditions as part of a project's authorization which could vary based on the scope, scale, and nature of projects under review. Conditions may refer to additional mitigation measures and other requirements to avoid or reduce a project's GHG emissions. Conditions may also include a reporting requirement in which the applicant would be expected to demonstrate progress toward implementing mitigation measures and/or a net zero plan.

5. Challenges and Opportunities

As a regulator, the CER must maintain transparency and predictability while remaining adaptable to an evolving climate change policy landscape. Clear filing guidance provides certainty and transparency to the public, Indigenous Peoples and applicants around key elements considered for the GHG and Climate Change assessments.

In Canada, regulation of pipeline infrastructure can be federal, provincial or both. For example, CER-regulated companies report GHG emissions to other federal and provincial regulators. Multi-agency collaboration is often required to verify companies are in compliance with GHG-related requirements.

While applicants may rely on emerging clean technologies (hydrogen, renewables, negative emissions technologies) to achieve net-zero by 2050, uncertainties around the maturity timeline of these technologies may render estimates of future emissions to be less accurate. However, as the CER assesses and approves projects that include emerging technologies such as innovative leak detection and repair tools, electrification, carbon capture and storage etc., the business case for future projects is improved as the technology is proven, driving further innovation.

This filing guidance is a starting point for applicants and the Commission to consider emissions impacts of projects; and a number of challenges remain. A corporate net-zero plan may not account for project-specific emissions, and may instead describe decisions and investments required to achieve net-zero by 2050. Existing offset mechanisms may only be available to offset operational emissions, and there may not be strategies or mechanisms of offsetting direct construction emissions. Unintended emissions can

be a significant contributor to GHG emissions throughout the operational stage. In the face of these, we continue to evolve our guidance to companies, with the aim of building and continually improving regulatory assessment and decision-making processes. This enables decisions to be made in a predictable and timely manner, which provides certainty to investors and stakeholders, enabling sound projects with positive economic impacts.

References

Canada.ca. [Canada's climate plans and targets](#)

Canada.ca. [Strategic Assessment of Climate Change - Canada.ca. 2020](#)

Canada Energy Regulator. 2023. [Filing Manual](#)

Commission of the CER. NGTL Emerson Creek CS [Letter and Orders to NOVA Gas Transmission Ltd.](#)

Commission CER Report. NGTL West Path Delivery 2023 [NGTL West Path Delivery 2023](#)