



# Engineers Canada's Testimony to the House of Commons Standing Committee on Indigenous and Northern Affairs

## Study on northern infrastructure projects and strategies

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Thank you for the opportunity to appear here today, Madame Chair. On behalf of Engineers Canada, I am very pleased to discuss the engineering profession's efforts towards safeguarding Canada's northern infrastructure in the face of Canada's changing climate, as well as the profession's work in assisting Indigenous and remote communities build capacity to achieve their desired outcomes for the planning, design, construction, and operation of northern infrastructure projects.

Engineers Canada is the national organization that represents the 12 provincial and territorial associations that regulate the practice of engineering in Canada and license the country's more than 295,000 members of the engineering profession. Together, we work to advance the engineering profession in the public interest.

Canada's most severe infrastructure gaps can be seen in northern, remote, and Indigenous communities. In 2017, Indigenous and Northern Affairs Canada calculated that the infrastructure gap across First Nations reserves alone would reach \$9.7 billion by 2018.<sup>1</sup>

Although the frequency of climate related disasters is expected to increase; northern, remote, and Indigenous communities are far from prepared to adequately withstand climate related risks; further widening the infrastructure gap in these communities. This stems not only from inadequate national climate data but also from the lack of consistent assessment procedures to properly address climate risks to infrastructure.

This brings me to our first recommendation: that climate vulnerability assessments be carried out on northern, remote, and Indigenous infrastructure projects to inform and prioritize adaptation actions that address potential risks associated with a changing climate.

Resilient infrastructure is the driving force behind productive societies, stable industries, and increased public confidence. With objective climate vulnerability assessments, infrastructure owners and managers can gain an early awareness of the potential impacts that extreme weather events could have on infrastructure serving Indigenous, remote, and northern communities.

Engineers Canada, in partnership with Natural Resources Canada, developed a climate risk assessment tool that greatly enhances the resilience of infrastructure projects. The Public Infrastructure Engineering Vulnerability Committee Protocol, also known as the PIEVC Protocol, systematically reviews historical climate information and consequences to define current climate risks and vulnerabilities. It projects the severity and probability of future climate extreme events. This information can be used to make informed engineering judgements to prioritize what components require adaptation as well as how to adapt them – such as design adjustments or changes to operational or maintenance procedures.

The PIEVC Protocol has been applied to select northern and remote infrastructure projects, including Yellowknife's Highway 3, as well as Moose Factory's First Nation's water and wastewater infrastructure. It has also been used to assess climate risks to three northern airports located in Churchill, Inuvik and Cambridge Bay. Engineers Canada takes pride in working alongside First Nations communities and

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<sup>1</sup> <http://firstmile.ca/closing-infrastructure-gap-in-canadas-northern-and-aboriginal-communities/>.

Indigenous engineers to develop local capacity to plan, design, construct and operate climate-resilient infrastructure. One recent example was our work alongside the Mohawk Akwesasne Reserve in Ontario to apply the PIEVC Protocol to assess climate risks to their water and wastewater infrastructure in collaboration with the Ontario First Nations Technical Services Corporation. This work included the development of a First Nations toolkit that incorporates climate risk assessments as a part of Indigenous community asset management plans. We strongly believe that federal government must work to build the capacity for Indigenous communities to assess, plan, and manage their infrastructure. In addition, Engineers Canada is currently working on initiatives that promote diversity and inclusion in the profession that reflects Canadian society. This includes supporting programs that increase the number of Indigenous people entering, thriving, and remaining in the engineering profession.

Madame Chair, the PIEVC Protocol has received national attention. The government's recent Climate Lens lists Engineers Canada's PIEVC Protocol as one of three methodologies for assessing climate change resilience that is consistent with ISO 31000. While this investment is an important first step, Engineers Canada encourages the federal government to adopt assessment and prevention tools, such as PIEVC, to be a condition for funding approvals across all Federal government departments that own and/or operate infrastructure or provide such services to others. We also urge the requirement for climate risk assessments to become an integral part of environmental impact assessments, for northern, remote, and Indigenous infrastructure projects.

This brings me to my final recommendation: that licensed engineers in Canada are included in the design, maintenance, rehabilitation, and decommissioning of Canada's northern, remote, and Indigenous infrastructure.

In Canada, engineering is regulated under provincial and territorial law by the twelve engineering regulators. The regulators are entrusted to hold engineers accountable for practising in a professional, ethical, and competent manner and in compliance with the applicable provincial or territorial engineering act, Code of Ethics, or legal framework in place. Technical and professional standards of conduct are set, revised, maintained, and enforced by the regulators for all professional engineers in their jurisdiction. Engineers are required to work with the public interest in mind and uphold public safety.

For this reason, Engineers Canada strongly supports and encourages the direct involvement of licensed engineers in the design, construction, maintenance, evaluation, use, and alteration of all engineering work related to northern, remote, or Indigenous infrastructure in Canada—not only to increase transparency and public confidence, but to uphold public safety and accountability on all infrastructure projects.

Madame Chair, thank you for allowing Engineers Canada to present to the committee today on this important topic. We hope that the committee recognizes the integral role that engineers play in Canada's northern infrastructure.

## Who we are:

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Engineers Canada is the national organization of the 12 provincial and territorial associations that regulate the practice of engineering in Canada and license the country's 295,000 professional engineers. Together, we work to advance the profession in the public interest.

Engineers drive much of Canada's economy. Natural resources, manufacturing, transportation infrastructure, technology and other sectors rely on the capability of engineers. As one of the top five exporters of engineering services in the world, the expertise of Canada's engineers contributes to both the Canadian and international economy.