

THE PROFESSION'S POSITION

- Essential infrastructure on First Nations Reserves and in remote communities, such as safe drinking water, reliable electricity, wastewater treatment, waste management, information technology, schools, and housing, must be properly funded, built to industry standards, and resilient.
- Roads, policing, community centres, education, and healthcare are government services that should be provided to Indigenous peoples who live on and off reserve.
- Engineers are well positioned to assist Indigenous communities in building capacity to achieve the communities' desired outcomes for the planning, design, construction, and operation of infrastructure.
- The engineering profession seeks to honour traditional and cultural practices while working with the Indigenous peoples of Canada.

The issue

Civil infrastructure and buildings are needed to meet the needs of individuals, families, and communities. In the case of on-reserve and remote community infrastructure for Indigenous peoples, the lack of adequate and resilient infrastructure is in the order of several billions of dollars, as estimated by the First Nations Financial Management Board.¹ A significant percentage of existing infrastructure in Canada is considered ageing, inadequate, and in poor conditions, further increasing the negative effects on the social and economic fabric of First Nations reserve communities.

Infrastructure deficits in Canada are not exclusive to Indigenous communities, but the level of deficiency compared to off-reserve communities and municipalities is evident. For example, two-thirds of all First Nations communities in Canada have been

under at least one drinking water advisory at some time in the last decade, a CBC News investigation revealed.² Four hundred out of 618 First Nations communities in this country had a related water-boil advisory between 2004 and 2014. The Neskantaga First Nation in Ontario, for example, has had a boil water advisory for the past 20 years.³ Housing and community infrastructure on First Nations reserves is also "substandard, dilapidated and overcrowded."⁴

Moreover, existing infrastructure on First Nations reserves remains vulnerable to extreme weather events as its effects have not been considered in the planning, construction, or operation phases of most infrastructures.

How Engineers Canada has contributed

Engineers Canada has helped First Nations communities, including the Unama'ki in Cape Breton, Nova Scotia, and the Mohawk Akwesasne Reserve in eastern Ontario, to apply the Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol to assess the climate vulnerability of their water and wastewater systems. This work includes the development of a First Nations toolkit that incorporates climate risk assessments as part of Indigenous community asset management plans.

Engineers Canada has helped with capacity building for Indigenous engineers and communities across the country through PIEVC training and risk assessment workshops. Engineering faculties across the country have also collaborated with Indigenous communities to help build capacity and improve existing infrastructure.

Recommendations to the federal government

Infrastructure that many reserves lack is usually provided in most communities by municipalities or provinces and territories. But under the Indian Act, this is the federal government's responsibility on First Nations reserves.

The government must fulfill its promise to lift the two percent cap on funding for First Nations programs and work to establish a new fiscal relationship that gives First Nations communities sufficient, predictable, and sustained funding. This funding must focus largely on resilient and sustainable public infrastructure.

This will help the government deliver on another promise—to have clean drinking water on reserves within five years of forming government. On top of funding infrastructure projects, the government must help build the capacity for Indigenous communities to assess, plan, and manage their infrastructure.

How Engineers Canada will contribute

The engineering profession is ready to share its expertise with the federal government through advise, review, collaboration, and mentorship. Professional engineers in Canada have the technical expertise to support the development and implementation of sustainable and economically feasible plans that create sustainable infrastructure.

Engineers Canada supports programs that increase the representation of Indigenous peoples in post-secondary engineering programs, with the intent to increase the number of Indigenous engineers. Engineers Canada is also dedicated to working with Indigenous and Northern Affairs Canada, Infrastructure Canada, Natural Resources Canada and directly with Indigenous peoples and their communities to build upon the necessary knowledge, skills, and experiences to assess infrastructure climate vulnerabilities and risks.

¹ First Nations Financial Management Board (2017). "First Nations Financial Management Board: Corporate Plan 2016-2017." Retrieved August 2017 from: http://www.fnfmb.com/wp-content/uploads/2011/11/Corporate_Plan_2016-2017_Amended.pdf.

² CBC News (2015). "Bad Water: 'Third World' conditions on First Nations in Canada." Retrieved August 2017 from: <http://www.cbc.ca/news/canada/manitoba/bad-water-third-world-conditions-on-first-nations-in-canada-1.3269500>.

³ CBC News (2015). "Neskantaga First Nation demands action on 20-year boil-water advisory." Retrieved August 17th, 2017, from: <http://www.cbc.ca/news/indigenous/neskantaga-first-nation-demands-action-on-20-year-boil-water-advisory-1.3256929>.

⁴ CBC News (2011). "Shacks and sloop pails: infrastructure crisis on native reserves." Retrieved August 17th, 2017 from: <http://www.cbc.ca/news/canada/shacks-and-sloop-pails-infrastructure-crisis-on-native-reserves-1.1004957>.