**The issue**

Well-designed, properly built, continually maintained, and reliable infrastructure is critical to public safety, quality of life, and a competitive economy.

Much of Canada’s core public and private infrastructure requires significant investment now and, in the future, to ensure its sustainability for its complete life and service cycle, which can range from 25 to 100 years. According to the Federation of Canadian Municipalities’ 2016 Canadian Infrastructure Report Card – Informing the Future, one third of Canada’s municipal infrastructure is in fair, poor, or very poor condition, increasing the risk of service disruption. This can impede competitiveness, economic development, and business investment, and can threaten public safety.

Building new infrastructure or rehabilitating existing infrastructure across Canada without considering climate change and extreme weather events has the potential to cause service disruptions and premature failures in the future, thus negatively impacting public safety, increasing business and social disruptions, and increasing costs to government, public, and business sectors.

The requirements for core public infrastructure are massive and require proper planning and oversight across their lifetime to ensure taxpayer value for the dollars spent. New programs for infrastructure must reflect an open, transparent, and competitive bidding process coupled with a fair, impartial evaluation process that is accountable. Infrastructure investments should be procured in stages over several years to provide predictable and sustainable funding levels. This will take advantage of learnings from previous stages as well as technical and cost innovations.

**Recommendations to the federal government**

Engineers Canada welcomes the increased investments in public infrastructure that the federal government has made since 2007. As of August 2018, the federal government has approved funding for thousands of infrastructure projects across Canada. By 2028, the Investing in Canada Plan is expected to have provided more than $180 billion, split evenly between investments in new programs and funding for existing federal initiatives. While these types of infrastructure will contribute substantially towards improving our economy and improving Canadians’ quality of life, programs to distribute funding should be based on asset management principles and best practices that consider the service life of the infrastructure to provide effective and reliable service.

Climate vulnerability assessments on public infrastructure need to be a consideration for funding approvals, accepting environmental impact assessments, and approving designs for infrastructure projects involving new construction, rehabilitation, re-purposing, maintaining, and
decommissioning existing infrastructure. This will ensure public safety and health, decrease the direct and indirect cost of extreme weather events on infrastructure, and strengthen individual and business productivity to the benefit of all Canadians.

Evaluation criteria for project selection should be clear, transparent, and consistent. The criteria should incorporate compliance with best asset management practices. In addition, the federal government should provide flexibility in the timing of expenditures to enable proper procurement and responsible project management to ensure funds are spent wisely and effectively.

The federal government should implement a five to ten-year program to develop core public infrastructure maintenance standards and guidelines that would complement design codes, standards, and guidelines. Such instruments would provide infrastructure owners, engineers, asset managers, and other professionals with tools and guidance to properly maintain infrastructure over its complete service life. Following this guidance would ensure the infrastructure does not fall into deficit with increased risk of service disruption and costly repairs from events like extreme weather.

The federal government should work with other levels of government and stakeholders to ensure that Canadians have safe and reliable core public infrastructure that provides the basic services of water, sanitation, power, communications, and transportation.

**How Engineers Canada will contribute**

Engineers Canada will continue to collaborate with practitioners, government officials, and decision-makers on the value and benefits of long-term sustained investments in climate-resilient core public infrastructure and funding for proper infrastructure maintenance to ensure safe and reliable service and protection of public health, safety, and the environment.

Engineers Canada will secure engineering experts as needed to help policy and decision-makers to propose, develop, and implement appropriate policies, procedures, and processes for long-term solutions to improve public safety, reliability, and the value of public infrastructure. This includes supporting governments in their ongoing development and modernization of infrastructure codes, standards, and other instruments. This would include new infrastructure maintenance standards.

Engineers Canada will collaborate with other infrastructure stakeholders to provide consistent messaging on the need to inform and educate Canada’s engineers on the impacts and risks of extreme weather and our changing climate on infrastructure design, operations, and maintenance through the application of climate vulnerability assessments and practice guidance.

Engineers Canada will collaborate with other infrastructure stakeholders to provide consistent messaging on the need for, and benefits of, safe and sustainable public infrastructure.

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