Engineers Canada's Testimony to the Senate Standing Committee on Energy, the Environment and Natural Resources

Study on the effects of transitioning to a low carbon economy

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Testimony
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Thank you for the opportunity to appear here today, Mr. Chair. On behalf of Engineers Canada, I am very pleased to discuss the engineering sector's efforts in reducing the carbon footprint of Canada's built environment, supporting the national objective of a low carbon economy.

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 290,000 members of the engineering profession. Together, we work to advance the profession in the public interest. Engineers Canada has been engaged in the issue of climate change from adaptation and mitigation perspectives for over 16 years.

The built environment, which includes all forms of buildings, is responsible for approximately 35 per cent of Canada's greenhouse gas emissions. Our transportation infrastructure is responsible for an additional 24 per cent of emissions. Reductions in emissions from these infrastructures, achieved through government policies combined with changes in engineering design, construction, and infrastructure operation not only reduces their carbon footprint, but also reduces costs and stimulates a clean technology industry in Canada.

We strongly encourage the federal government to invest in, and support the adoption of a national strategy in order to reduce greenhouse gas emissions. The federal government must also invest in the development and implementation of clean technologies that will contribute to a lower carbon economy over time. Progressive policies mandating greenhouse gas reduction for federal infrastructure assets sets an excellent example for other levels of government and demonstrates international leadership in this area.

In addition, supporting the increased development and adoption of clean energy and clean technologies will not only enhance our internal economy, but also offer export opportunities to further enhance economic growth. Such polices and investments contribute to addressing climate change globally and towards meeting Canada's greenhouse gas reduction commitments made in the Paris Agreement.

As I mentioned, one of the greatest sources of greenhouse gas emissions is the built environment. Modelling of the most cost-effective pathways to decarbonizing the Canadian economy suggest that the building sector must reduce greenhouse gas emissions by 80-100 per cent by 2050.

Action needs to occur in two areas: new builds and existing buildings.

For new builds, policy direction from all levels of government suggests that net-zero energy ready standards could be reached by 2030. For example, British Columbia's *Energy step code* establishes performance targets and provides a consistent approach to achieving energy efficient buildings. The City of Vancouver has also developed their *Zero emissions buildings plan* with similar energy performance targets enforceable through their re-zonings policy. In addition to these energy performance targets, there are also requirements that buildings achieve a certain degree of air-tightness to minimize heat loss. Another example is the City of Toronto's *Zero Emissions Buildings Framework* which features

performance requirements for energy and greenhouse gas emissions intensity as well as a checklist for climate resilient design.

New builds account for a small portion of buildings in Canada, and addressing only this aspect will not be sufficient to achieve deep emissions reductions in the building stock as a whole. For example, in British Columbia, it is estimated that code requirements for new buildings will result in less than a third of the reductions needed in the building sector by 2050. There is a clear need to create and implement a comprehensive strategy in order to meet the greenhouse gas targets.

The *Canada Green Building Council's zero carbon building standard* has established Canada's first green building program developed to assess carbon emissions in commercial, institutional, and multi-family buildings. It is applicable to a wide range of new and existing building types across the country. Currently, the energy retrofit of existing buildings is being carried out at the research and pilot stages.

Mitigation can be a positive economic force. Energy efficiency retrofits and green buildings are significant job creation drivers in Canada and a key element of the shift to a low-carbon economy. It is estimated that every $1 million invested in energy efficiency generates $3-4 million in economic growth and up to 13 jobs. A large capacity-building effort is necessary to support this transition, particularly where these efforts overlap with the adoption of performance-based codes. We will need more energy advisors, energy modellers, and building science engineers, and these individuals need to be guided by the development and adoption of best practices and design guidelines.

Engineers Canada's national guideline on the *Principles of climate change adaptation and mitigation for professional engineers* assists professional engineers in considering the implications of climate change in their professional practice and directs them to create a clear record of the outcomes of those considerations. The principles described in this guideline provide a basis for sound professional judgment to address this element of professional engineering practice. Adapting and mitigating climate change presents opportunities to save money and to protect public health and safety.

Mr. Chair, thank you for allowing Engineers Canada to present to the committee today on this important issue. We hope that the committee recognizes the integral role that professional engineers play in Canada's environment and know that our profession is ready and willing to help the federal government on this important issue.

Who we are:

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 290,000 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.

Acknowledgement

The following individuals were consulted in the drafting of this submission;

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