Engineers Canada Pre-Budget Submission to the House Standing Committee on Finance - August 2016

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Background Information

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 more than 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, technology and other sectors rely upon the expertise of engineers. As one of the top five exporters of engineering services in the world, the expertise and skill of Canada's engineers contributes to the Canadian and global economies. Engineers work tirelessly in Canada and abroad to keep the public safe and to contribute to strong, prosperous communities.

Engineers Canada is ready and willing to help the government build a better Canada. Among Canada's more than 290,000 members of the engineering profession, there are countless experts prepared to assist the government in strengthening the middle class, tackling innovations and improving the resilience of the country's infrastructure.

Pre-Budget Submission

1) What federal measures would help Canadians generally—and such specific groups as the unemployed, Indigenous peoples, those with a disability and seniors—maximize, in the manner of their choosing, their contributions to the country's economic growth?

Engineers Canada believes that the most effective way to maximize Canadians' contributions to the country's economic growth is through improved labour market access. This can be achieved through better labour market data and planning, improved funding of bridging and training programs for underrepresented groups, enriched training and support of recent graduates, and facilitating the transition and integration of newcomers.

Recommendation #1: Invest in labour market data collection

Engineers Canada recommends that the federal government invest in better labour market data collection so that employers, governments, employees, academics and prospective newcomers have a true picture of national and regional labour market needs and opportunities. It is our view that an investment and creative partnering between governments and stakeholders would lead to improved labour market data collection, depth and analysis. This will develop a common understanding among businesses, governments, academia and individuals with regards to local, provincial and national availability, opportunities and excesses in the labour force. This will guide the education system, decision-makers and citizens to maximize and most effectively contribute to Canada's economic growth.

For example, information gathered in Engineers Canada's 2015 labour market study—*Engineering Labour Market in Canada: Projections to 2025*—demonstrated that there will be more than 100,000 engineering job openings in Canada between now and 2025 as engineers retire and the economy continues to grow. This information is an example of the data required to better contribute to national and regional labour force strategies and their implementation.

Improved labour market information and planning should also include support for research on whether the education system is meeting the needs of industry and employers. As innovation spurs changes globally, it is important to verify that Canadian learning institutions have the resources to prepare their students to meet future employer's needs. Such information will greatly improve the students' success and contribution to economic growth.

Recommendation #2: Fund bridging and training programs for students and recent graduates

The government must also work with industry and post-secondary institutions to fund and support the training of undergraduates and graduates in the first five years of their career path. Students and recent graduates are now entering a labour market that requires candidates to have greater experience. Therefore, these individuals need to receive better and more frequent opportunities for on-the-job training in order to gain work experience and to be better prepared for their future employment. The government should finance a mixture of programs that includes government subsidies for a portion of the salary to encourage employers to hire and train new staff, internship opportunities in in-demand fields and bridging programs. The better prepared individuals are upon entering the workforce, the more they will contribute to Canada's economic growth.

Recommendation #3: Establish bursaries, scholarships and programs to encourage diversity in STEM workplaces

Beyond improved data, the government should establish targeted and accessible bursaries, scholarships and national programs to encourage and support members of underrepresented groups—such as women, Indigenous peoples and newcomers—to pursue careers in engineering and STEM (science, technology, engineering and mathematics) subjects more broadly. The funding and support of underrepresented groups will lead to more diversity in highly skilled professions and trades. Promoting and funding diversity in Canada's STEM workforce will help economic growth through enhanced opportunities for underrepresented groups, which will lead to a narrowing of skills gaps, meaning an increased number of highly skilled individuals contributing to new ideas, ultimately strengthening Canada's economic growth. Truly successful organizations tend to have a workforce that reflects the diversity of both its clients and society.

Improving diversity and engagement in STEM careers, such as engineering, has an incredible return on investment, as diversity spurs innovation. Including diverse peoples fosters the capacity to solve problems, to be creative, to think critically and to embrace cognitive complexity. By bringing together people of different ages, backgrounds, genders, sexual orientations, experiences and ethnic groups, they will have new and more varied ideas, protect against each other's blind spots, and recognize opportunities that more homogeneous groups might miss. Initial investments in attracting, training and supporting more women, Indigenous peoples and new Canadians in highly skilled trades are vastly outweighed by the social and economic benefits.

Recommendation #4: Facilitate the transition for newcomers to Canada

Newcomers play, and will continue to play, a very important role in Canada's economic growth. Unfortunately there are occasions where they aren't able to share their skills and knowledge to the fullest. One reason for this is newcomers don't have the best information available to them pre-arrival in Canada. The government must work with the regulated professions and industry to develop and promote pre-arrival services, specific to regulated professions, that better informs newcomers and enables them to begin contributing to the Canadian economy and society more quickly upon arrival. Ensuring visa offices, embassies and all pre-arrival service providers are better equipped with the most accurate information about the licensing regimes and the labour market needs of the provinces and territories would go a long way to helping newcomers make the best decisions for themselves and ultimately the best decisions for Canada.

2) What federal actions would assist Canada's businesses – in all regions and sectors – meet their expansion, innovation and prosperity goals, and thereby contribute to economic growth in the country?

Engineers Canada agrees with the Minister of Innovation, Science and Economic Development when he asserted that we must mobilize all Canadians to action to foster innovation as a Canadian value. In seeking to build a stronger culture of innovation, we believe targeting engineers is a logical place to start, as the engineering profession underlies all parts of Canada's innovation agenda and is critical to ensuring economic growth and our success in tackling the 21st century's grand challenges. To truly drive innovation, the federal government needs to invest in a different way of thinking, it is essential to support inventive gatherings of thought leaders such as the Engineering Change Lab.

Recommendation: Invest in the Engineering Change Lab

The Engineering Change Lab believes that enhancements of this magnitude are possible, but will require us to employ new and innovative change approaches. In particular, the engineering profession, which drives technological innovation for others, must learn to socially innovate. Initiated by Engineers Canada and Engineers Without Borders Canada, the Engineering Change Lab was launched in January 2015 and includes senior leaders representing over 40 organizations that together represent all aspects of the engineering profession in Canada. These organizations realize that the engineering profession underlies all parts of Canada's innovation agenda, but that there are currently many structural and cultural challenges holding back the profession's contribution. This is why we've engaged in efforts to invest in the social change of the profession itself in order to permanently enhance our innovation output performance.

The Engineering Change Lab has made good progress over the past year and a half with a collaborative and action-based approach. It has generated powerful big picture insights about the current state and higher potential of the profession, and has created a portfolio of initiatives to begin unlocking this potential.

The Engineering Change Lab is on course to successfully complete its first phase by the end of 2016 as a result of significant financial investment by several key organizations in the profession and has leveraged significant in-kind contributions from an even larger diverse group of organization. This phase will establish the foundations of the Engineering Change Lab. But it requires additional financial resources to catalyze a broad movement within the engineering community in Canada to evolve the profession so that it continues to lead the charge with respect to innovation and fully contribute to Canada's economic, social and environmental objectives. The Lab now needs government participation and funding to truly unlock the potential of the engineering profession and to help scale this systems-based approach to other innovation-driving professions. Engineers Canada believes the government should invest $5.5 million over four years in The Engineering Change Lab to help drive Canadian innovation to the next level.

3) What federal measures would ensure that urban, rural and remote communities throughout Canada enable residents to make their desired contribution to the country's economic growth and businesses to expand, prosper and serve domestic and international customers in order to contribute to growth?

From the engineering perspective, climate resilience is the ability of communities to prepare, plan for, absorb, recover from or successfully adapt to actual or potential adverse climate events. As such, it is important that the government to commit to taking the next steps in making Canada's core public infrastructure more resilient.

Recommendation #1: Provide funding to infrastructure owners for climate vulnerability assessments

Proactive solutions are required to mitigate the danger, damage and the costs of infrastructure vulnerability to our changing climate. It is essential to understand climate risks and to introduce adaptations that improve climate resilience for communities and businesses. Engineers Canada has developed the Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol, a structured process that assesses risk to infrastructure in the event of extreme weather and the impacts of our changing climate. PIEVC assessments help validate design, operations and maintenance recommendations, and enable decision-makers to assure the safety and effectiveness of public infrastructure.

Provinces, municipalities and non-governmental organizations applying for government funding to build or rehabilitate infrastructure should be required to demonstrate that they have assessed their infrastructure risks and taken measures to adapt in order to protect their communities, their investments and their economies. In the second phase of the infrastructure plan, the government should provide dedicated funding to infrastructure owners, including governments and First Nations, to include climate vulnerability assessments for all infrastructure projects.

It is particularly important to ensure that new infrastructure investments incorporate measures to enhance our infrastructure and its resiliency. Canadians' health, safety and prosperity depend on reliable and accessible core public infrastructure. We strongly believe that resilient infrastructure serves economic growth by assuring business continuity and minimizing financial losses in times of extreme events.

Recommendation #2: Expand high-capacity broadband internet and telecommunications in remote communities

Another important core public infrastructure for economic growth and sustainability is reliable access to high-capacity broadband internet and telecommunications. These technologies enable remote communities to actively engage in the national economy. Investments must be made to expand the network quality and reach to remote communities including First Nations reserves. The investment model must include a plan that includes financial resources to train individuals and business in these remote communities to better use and take advantages of the technology.

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