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DIVERSITY, EQUITY, AND INCLUSION

THE ENGINEERING PROFESSION'S POSITION

- Diversity in engineering means engaging the best minds in the profession and bringing many perspectives and experiences to each of the problems and opportunities that the engineering profession must address.
- Increased participation of underrepresented groups, including women and Indigenous people, within the engineering workforce helps the engineering profession better understand, and therefore protect and contribute to the public interest.
- Engineers Canada believes that diversity is vital for the sustainability of the engineering profession and its contribution to society.
- Increased diversity also provides significant benefits to Canadians by delivering a solution to overcoming skills shortages and increasing innovation capacity and productivity.

The challenge(s)

The engineering profession can better understand and protect the public interest if it is representative of the demographics of the Canadian public. History offers many examples of products that were built for the people who designed them but failed to address needs of other groups of the population, for example, car airbags. Appropriate diversity, equity, and inclusion in the engineering profession means addressing the underrepresentation of a variety of demographic groups in the engineering workforce and exploring interventions to increase recruitment, retention, and equitable participation of diverse individuals.

For example, women make up more than half of the Canadian population but are significantly underrepresented in the engineering profession, accounting for only 13 per cent of practicing engineers. In 2017, women accounted for over 21 per cent of total undergraduate engineering enrolment, and just over 20 per cent of undergraduate engineering degrees were presented to women. In the same year, 18 per cent of newly licensed engineers were women.

Indigenous peoples make up more than 4.9 per cent of the Canadian population, and yet in 2016, Indigenous individuals represented under 3 per cent of the total number of engineers and engineering technologists in Canada[1]. They accounted for only 1.2 per cent of total undergraduate engineering enrolment, and only 1.2 per cent of undergraduate engineering degrees were presented to Indigenous people in 2017[2].

While the two demographics noted are predominantly underrepresented in the engineering profession, Engineers Canada is working to increase the representation of traditionally underrepresented groups in the engineering profession.

Although all Canadians should have the same opportunities to enter engineering, accessibility and feasibility are not the same for all demographic groups; largely due to systemic barriers that disproportionately impact underrepresented groups. Equity initiatives such as equal pay and equal opportunity must be continuously supported to remove or neutralize barriers that might limit the participation of underrepresented individuals. The engineering profession can better understand, and therefore protect, the public interest if it is representative of the demographics of the Canadian public. This means leveraging the best talent from all parts of society, which adds value to employers, increases the production of creative solutions, and provides a deeper understanding of clients' needs.

It is important as well that, in addition to the overall composition of the profession being diverse, that diverse teams be applied to develop solutions to solve society's complex problems. Diverse teams and workplaces are more creative, cognitively flexible, innovative, collaborative, and productive[3]. The profession requires problem-solvers from diverse backgrounds to address those challenges in the public's interest and to promote Canada's innovative capacity.

How Engineers Canada has contributed

Engineers Canada works to promote diversity, equity, and inclusion, by creating collaborative networks for regulators, higher education institutions, and employers in order to share best practices and improve processes along the engineering continuum (i.e. from K-12 outreach, to retention in the workplace, to professional development opportunities).

Some of Engineers Canada's work that supports diversity includes:

- Building strong relationships with subject matter experts in Indigenous knowledge and engineering education, women in engineering outreach programs, and regulators.
- The creation of Engineers Canada's Indigenous Advisory Committee, which provides guidance and advice on activities and programs related to Indigenous knowledge, Indigenous engagement and advocacy.
- The Award for the Support of Women in the Engineering Profession to honour outstanding Canadian engineers dedicated to supporting women in the engineering profession.
- 30 by 30 - Engineers Canada's initiative to raise the percentage of newly licensed engineers who are women to 30 per cent by the year 2030 through the creation of a national collaborative network of stakeholders from regulators, associations, industry, and academia working to increase the number of women in engineering. Engineers Canada and its members believe that 30 per cent is universally held as the tipping point for sustainable change—reaching 30 by 30 will help drive the shift in the overall membership of the engineering profession as more and more women continue to enter the profession.
- The creation of the planning resource guide Managing Transitions: Before, During and After Leave, originally authored by our member, The Association of Professional Engineers and Geoscientists of Alberta, outlines best practices for employees and employers managing maternity or parental leave in Canada's engineering and geoscience professions.
- The creation of Indigenous Peoples' Access to Post-Secondary Engineering Programs: A Review of Practice Consensus, which supports the development of engineering access programs for Indigenous peoples across Canada. Engineers Canada has identified programs that increase Indigenous peoples' access to engineering and is working towards the expansion of these programs to raise the profile, as well as improve the image, of the engineering profession in Indigenous communities.
- Supported the creation of the Canadian Indigenous Advisory Council (CIAC) to the American Indian Science and Engineering Society (AISES), of which Engineers Canada is a member. CIAC provides advice to improve AISES' program for delivery in Canada.
- Support and sponsorship of the new Canadian region of AISES, named .caISES, which works to provide support, mentorship, and networking opportunities for Indigenous peoples in STEM.

Additionally, Engineers Canada supports newcomers in Canada by providing an online tool, EngineerHere, which holds practical information about what's involved in becoming part of the Canadian engineering profession.

Engineers Canada also provides strategic advice and national best practices to provincial and territorial engineering regulators and engineering employers to support the overarching goal of a

diverse, inclusive, and representative engineering profession. Through the Canadian Engineering Qualifications Board and the Canadian Engineering Accreditation Board, Engineers Canada has supported the engineering regulators to ensure that standards for entry to the profession and requirements for continuing competence and ethics are applied fairly to all.

Recommendations to the federal government

Although there have been significant achievements made by the engineering regulators to support diversity, equity, and inclusion in the engineering profession, more work is required to truly achieve diversity, equity, and inclusion in the engineering profession.

To serve the economy as well as Canadian society at large, the federal government must support the profession's efforts to attract and retain talented individuals from Canada's diverse population. This includes funding outreach, access, bursaries, mentorships, as well as work-integrated-learning opportunities that encourage members of underrepresented groups, specifically women and Indigenous peoples, to pursue engineering education and remain in careers related to engineering. Finally, the federal government should support diversity, equity, and inclusion training modules to encourage a supportive and inclusive work culture.

How Engineers Canada will contribute

Engineers Canada will continue to support the profession in attracting and retaining qualified individuals from underrepresented groups, specifically women and Indigenous peoples, into the profession. We will continue to collaborate with the provincial and territorial engineering regulators by providing strategic advice and best practices to inform local action.

Specifically, we will:

- Continue to promote and enhance 30 by 30 and other diversity initiatives. This includes working with the federal government and keeping the government and partners informed about what is needed.
- Implement training on diversity, equity and inclusion, and unconscious bias for Engineers Canada's staff, leadership, and Boards.
- Consult with engineering stakeholders on the work that can be done to address the Truth and Reconciliation Commissions' 94 Calls to Action, as they might relate to the engineering profession.
- Support the increased participation of Indigenous peoples in the engineering profession.
- Support staff at higher education institutions who are responsible for supporting Indigenous students in engineering programs.
- Continue to be a member of the CIAC in Canada.
- Continue supporting the gathering of .caISES and facilitate participation by Indigenous students.
- Monitor and identify other underrepresented groups and aspects of diversity, equity and inclusion that may be relevant to the engineering profession and develop initiatives to ensure the engineering profession remains representative of Canadian society.
- Work with regulators, higher education institutions post-secondary institutions, and industry to provide leadership in creating a welcoming work environment for all engineers.

[1] Statistics Canada. (2016). "Census of Population Statistics Canada". Catalogue no. 98-510X2016001

[2] Engineers Canada. (2017). "Canadian Engineers for Tomorrow - Indigenous peoples' enrolment and degrees awarded". Retrieved on October 22,2019 from: https://engineerscanada.ca/publications/canadian-engineers-for-tomorrow-2017#indigenous-peoples-enrolment-and-degrees-awarded

[3] Raghda Abulsaoud Ahmed Younis. (2018). "Cognitive Diversity and Creativity: The Moderating Effect of Collaborative Climate". Retrieved February 26, 2020 from: https://www.researchgate.net/publication/329879310