

June 11, 2020

Right Honourable Justin Trudeau
Office of the Prime Minister
80 Wellington Street
Ottawa, ON K1A 0A2

RE: Canada's Post COVID-19 Economic Recovery Plan (Short-Term Recommendations)

Dear Right Honourable Prime Minister,

The Ontario Society of Professional Engineers (OSPE) is the advocacy body and voice of the engineering profession. Ontario currently has over 85,000 professional engineers, 250,000 engineering graduates, 6,600 engineering post-graduate students and 37,000 engineering undergraduate students. The engineering profession's commitment to safeguarding the public interest has always been extremely important, and in these uncertain times, there is no exception.

On May 14, 2020 we provided you with immediate and urgent recommendations for consideration as part of Canada's post COVID-19 economic recovery plan. On this occasion we would like to present you with short-term recommendations to ensure the proper economic recovery of our country and province. The short-term actions outlined below are required to sustain the initial economic growth developed in Phase 1. These measures should support technologies that drive efficiencies and sustainably maintain the initial progress achieved by the immediate actions. These recommendations were developed through an Ontario lens. We believe that a healthy and prosperous Ontario results in a healthy Canada. The Federal Government's collaboration and support is important to actualize many of these recommendations and enable our province and country to recover from the COVID-19 crisis.

Engineers generate wealth for the country, through the development and commercialization of new technologies and by designing innovative and sustainable solutions for the benefit of all Canadians. Engineers also ensure safety and stability, by designing resilient infrastructure and reliable energy and water systems that Canadians rely on daily. During this pandemic, engineers have led the redesign of manufacturing processes to create much needed Personal Protective Equipment (PPE) and ventilators. Engineers use 3D printers to create tens of thousands of face shields and frames for our front-line workers. They are in the med-tech industry working diligently to bio-engineer new medications and a new vaccine to combat COVID-19. In times of crisis, you will always find engineers working tirelessly, in the background, without much accolade, diligently supporting the communities they serve.

Unfortunately, the engineering community has been severely impacted by this pandemic, as thousands of engineering jobs are directly linked to the infrastructure, manufacturing, technology and research and innovation sectors. This has not only affected engineers and engineering graduates but the entire Ontarian and Canadian economies.

Engineering knowledge and talent is beyond capable of leading Canadian industries into the future and will play an important role in the immediate, short- and long-term economic recovery of our country. As such, the government must now support the engineering community in rebuilding the engine that drives Ontario, and the rest of the country.

To ensure preparedness for future events and build an economy that is strong and benefits all people, it is imperative that new funding allocations provide a sustainable benefit for diverse, future generations by

ensuring a targeted focus on **building sustainability, investing in talent development and retention, and fostering innovation.**

A resilient economy can be supported by:

- Leveraging Canada's existing assets
- Building the assets that both businesses and workers of the future need to succeed
- Strengthening Canada's competitive advantage

The engineering community believes that Canada's economic recovery plan requires short-term investments in key sectors, to propel our nation to continued growth in the next months and years to come. These measures should support technologies that drive efficiencies and reflect the work force reality post COVID-19.

OSPE would like to present the following recommendations:

Short-Term Actions

1. Work with provincial and territorial governments towards a sustainable transition, by encouraging the use of Distributed Energy Resources (DERs) and emissions free technology.

Restoring our economy in the wake of the COVID-19 pandemic should keep in mind our existing environmental and climate change concerns. DER technologies leverage economies of scale to produce economic, environmental and reliability benefits to the local economy. They also offer consumers the potential for lower-cost, higher-service reliability, high-power quality, increased energy efficiency, energy independence, and energy security to mitigate future effects of climate change.

Widespread use of local and regional district energy systems has been a fundamental and primary contributor to low-carbon communities in countries like Denmark and Finland. Toronto's *TOCore Downtown Energy Strategy* also concludes that district energy systems are fundamental to reducing greenhouse gas emissions from buildings at a lower cost compared to individual buildings.

The federal government should encourage the adoption of locally owned energy sources and storage systems that increase local jobs and energy costs throughout the entire province. Although this will require investment in distribution system upgrades, the upgrades will allow for a more optimal use of existing assets and, if designed correctly, can result in the elimination or deferral of other system costs. Furthermore, upgrading Canada's energy infrastructure represents an ideal opportunity to address the needs of current and future generations, while creating employment opportunities for engineers and energy innovators.

The government should also support technological innovation that reduces energy use, through grants and incentive programs for innovators. These incentives should reward technologies that are able to provide energy efficient solutions that will make Ontario's and Canada's infrastructure and energy sources more resilient to intensified weather patterns.

2. Invest in Ontario's Mining Industry to ensure proper clean-up of Ontario's orphaned and abandoned sites.

Mining is one of the economic backbones of the Canadian economy and is especially important to Northern Ontario. The materials and products delivered help Canadians stay safe, meet basic needs, and sustain northern communities. This industry produces around \$10 billion in revenues for Ontario and Canada per year and employs over 75,000 Ontarians. Mining is also the largest private sector employer of Indigenous Ontarians.

Ontario is responsible for one-third of Canada's total mined metal production. It is the largest producer of gold, platinum group metals and nickel, and the second largest producer of copper in the country. The province is also a major producer of salt and structural materials. Mining produces key metals for the development of high-tech products and batteries, as well as medical devices, including ventilators and diagnostic COVID-19 test kits.

Despite its tremendous benefits to the province and country, investment in this sector has lagged, causing serious concerns with existing legacy issues, that require attention immediately. To keep turning Canada's natural resource potential into jobs and sustainable wealth, it is essential to invest in activities that keep the mining cycle robust. These include but are not limited to encouraging more sustainable exploration, conducting appropriate project feasibility studies, design work, environmental and impact assessment studies, and ensuring mines are closed properly.

Unfortunately, the lack of proper closure of historical mines in Ontario has been a problem for decades. Ontario currently has over 5,000 known abandoned mines, containing over 15,000 hazards. These abandoned sites are an enormous environmental concern and pose health and safety risks to the surrounding communities.

It was only in 1991, under the *Mining Act*, that legislation established that all mining companies must prepare and submit for approval a Mine Closure Plan certified by a qualified professional engineer that the plan adheres to government's standards and is backed by a financial assurance bond. Therefore, there are thousands of abandoned sites that were closed prior to 1991 that have no current ownership. This means that the government, and ultimately the taxpayer is on the hook for cleaning up these sites. For example, Ontario has spent about \$75 million to date to clean up the former Kam Kotia Mine near Timmins. As we strive towards a robust economy post-COVID-19, it should be noted that these costs will continue to increase for all governments, if these legacy issues are not dealt with appropriately and in a timely manner.

The Government of Canada should work with provincial and territorial governments to ensure that the Canadian Minerals and Metals Plan (CMMP) achieves all its goals under each of its six strategic directions.

- a) Direct funding should support the re-imagination of the National Orphaned or Abandoned Mines Initiative (NOAMI)**
 - i. NOAMI should develop a long-term plan that outlines key steps for the remediation of orphaned and abandoned mine sites.**
 - ii. Federal funding to Ontario should mirror the type of funding that the government has already destined to help clean up orphaned and abandoned oil and gas wells in Alberta, Saskatchewan, and British Columbia (\$1.7 billion).**

3. Invest in talent development, knowledge training, and supports for engineers in Ontario.

Ontario boasts a diversified economy with a strong entrepreneurial base and impressive innovation capacity. The province continues to lead the country in key sectors of the economy including manufacturing and mining. Ontario generates on average 37% of Canada's GDP and is home to almost 50% of employees in knowledge industries. While COVID-19 put significant strain on the economy, forcing millions of people out of work, there is an opportunity to rebalance demand and supply for labour, and ensure that Canada is retaining its top talent.

Prior to COVID-19, some of Ontario's industries, such as infrastructure and transportation were already facing a talent-gap in their engineering departments. Engineering jobs were being given to international firms because Ontario did not have the right talent to get the job done. This is deeply concerning to the economic recovery of the province and the country as a whole, as the success of the economy depends on the ability to match talent with job vacancies and to ensure that this talent can adapt to market demands. This concern has become magnified by immediate demands for more technologically equipped engineers due to changes caused by the current crisis.

The federal government should work with the Ontario Government, to create incentives that support a strong culture of lifelong learning across Ontario, where employers and employees are provided with the tools and resources to upskill and retrain local talent. This year, OSPE launched the [Ontario Engineering Academy](#) (OEA) to up-skill/re-skill engineering graduates exclusively to meet industry needs in Ontario. Your support of this initiative is critical for engineering graduates to adequately support Ontario's economic recovery and by extension the economic growth of the country. There is an opportunity for the government to incentivize engineering companies to invest in the professional development of their employees, to ensure that they are equipped with the knowledge and know-how to design and execute based on new realities. Investing in engineering talent allows the economy to shift towards more innovative and efficient processes and systems, which in turn creates jobs for other professionals, stimulating job creation and growth.

4. Support engineering students and recent engineering graduates.

COVID-19 has negatively impacted engineering students and new engineering graduates in numerous ways. Specifically, students and engineering graduates are having difficulty accessing co-op/work integrated learning (WIL) opportunities. Co-op placements provide practical training experience that is needed as part of the work experience requirement for licensing and to obtain the necessary applied skills to succeed in the workplace.

Moreover, the decrease in access to co-op placements/WIL opportunities has a significant impact on engineering students, who use these as a source to finance their studies. As outlined in OSPE's 2019 report *Engineering Students and Graduates: Perspectives on Tuition, Job Prospects, and Co-op/internships*, tuition for engineering students in Ontario is higher than the national average and considerably higher than some other undergraduate degree programs. While survey results indicated that this did not dissuade students from pursuing an engineering degree, most respondents expressed significant concern regarding their ability to pay off student loans or debt, needed to finance these higher tuition fees and educational expenses.

OSPE recognizes that the federal government has taken significant steps to support students and recent graduates during this crisis. Specifically, through changes to the Canada Student Loans program, the Canada Emergency Student Benefit (CESB), and the Canada Student Service Grant (CSSG), as well as supports to help postdoctoral and international students.

However, the current structure of the student loans program coupled with escalating tuition costs have placed engineering students in a precarious situation. As a result, engineering students often seek loans from banks and credit unions to pay higher tuition fees and are further disadvantaged because (i) commercial bank/credit

union student loans typically carry higher interest rates than federal/provincial student loans and (ii) interest paid on student loans provided by banks and credit unions are not eligible for tax deduction purposes.

Government support programs for students and new graduates must recognize that:

- Engineering programs are far more expensive than arts programs so current financial support programs, are effectively less supportive for engineering students than arts students/other programs.
- Engineering sources of income are being significantly impacted during the COVID-19 pandemic.
- Historical pre-COVID-19 earnings tests from parents are effectively irrelevant to determining whether a student can pay forthcoming engineering tuitions.
- Parental earnings may not be available to support students going forward.
- The value of traditional tax incentives available to students and parents (RESP, Textbook tax credit, tuition credits etc.) have either been cancelled or significantly atrophied as a percentage of real student educational and living costs.

Without effectively addressing this we are compromising access to engineering programs and ultimately constraining the future engineering talent pool, and the industry's future ability to innovate in support of Canada's economy.

To address this, the federal government should:

- a) Create accessible and predictable funding opportunities for companies that are looking to hire interns, recent engineering graduates and students.**
- b) Evaluate and restructure the Canada Student Loans Program (CSLP) and other educational government support programs to account for the impact of COVID-19 on historical income data.**
- c) Provide additional income support to students and their parents in the form of tax credits through a system that bases financial supports on the cost of their educational program (i.e. implementing transferrable tax credits that are capped based on a percentage of tuition paid rather than a dollar cap).**
- d) Review and enhance the amount of tax incentives and supports available to students and their families to account for diverse family structures and dynamics (multiple children in college and university, child support payments, disabled children, high health care, financial support for aging parents etc.)**

5. Drive the transformation of engineering education.

To rebuild the Ontarian, as well as the Canadian economy in the years to come, the provinces will require engineering talent that possesses the skills to innovate and succeed in new market realities. Engineering is changing, and the requirements for engineers to demonstrate new competencies is needed. As such, the learning objectives and outcomes need to shift to recognize this reality. However, while engineers are highly competent and ready to perform in today's economy, engineering training and education has been constrained by an outdated accreditation system, which impacts the ability for higher educational institutions (HEIs) to adapt curriculum and train the engineers of the future.

Canada has an inputs-based (time allocated to learning) and not outcomes-based (what students have learned) accreditation system. Assessment is based on a measure of curriculum content and quality by Accreditation Units (AU). AUs are an inputs-based metric which measures in-class learning time, instead of focusing and organising programs around clearly defined outcomes that students should demonstrate when they leave school.

Engineering Deans Canada (EDC) has been requesting that the accreditation model be changed from an inputs-based to an outcomes-based model, allowing HEIs increased flexibility to be innovative, creative, and inclusive with their curriculum.

Changes to the accreditation model have focused on increasing the curriculum requirements that must be met by university programs, without improving the learning outcomes and skills acquired by students. This has placed an increased burden on students to acquire knowledge that does not reflect current engineering practices. An outdated model means that engineering students are graduating without the skills needed by employers.

To address this the federal government, in partnership with the provinces should:

- a) **Convene a meeting with the provincial Ministries of Colleges and Universities and other key stakeholders, including but not limited to OSPE, Engineering Deans Canada (EDC), and Engineers Canada, to discuss this issue and ensure that all provinces are taking action to improve student outcomes.**
6. **Create a dedicated fund to support Ontario businesses in Research and Development (R&D) activities with a strong focus on local commercialization, including development and protection of Intellectual Property (IP) for Ontario and Canada's benefit.**

The federal government must support the Ontario Government to create a dedicated fund that continues to spur innovation within the province. Canada should encourage research and development (R&D) that will accelerate technology transfer and commercialization of innovative products, processes, and services based on immediate demand.

As a result of COVID-19, many businesses are having to shift their operations, processes, products, and services, and the need to invest in research and development has become crucial to their ability to remain competitive. Another significant element to the economic success of these businesses and the Canadian economy are investments in IP. As outlined in Ontario's IP Report titled *Intellectual Property in Ontario's Innovation Ecosystem*, "product enhancements and services based on IP have low or even zero marginal production costs, and result in 'winner take all' economies". To address this, government must incentivize businesses to invest in developing and protecting IP.

A focus on dollars for systems/products/services most impacted by the COVID-19 crisis such as development of large-scale oxygen delivery therapies for emergency and long-term care, and more robust HVAC systems to

minimize circulation of viruses, should be of primary importance. What has emerged already and during previous crises provides lessons for our near-term, but also highlights the underlying and more critical to better resource research and innovation efforts.

It is critical that the R&D and innovation dollars provided contribute to the Canadian economy long-term. Although this will benefit all businesses, it will have an amplified benefit to small and medium sized enterprises (SMEs), as they do not have the resources to invest in product and process development at the same rate. Through this fund, the government will minimize the risk of investing in local commercialization and will support the retention of key engineering talent throughout Ontario's diverse R&D ecosystem, while promoting competitiveness and innovation.

OSPE believes that these recommendations are essential for the economic recovery of our province. We look forward to working with the government to further develop these recommendations. If you have any additional questions please contact Stuart Atkinson, OSPE Policy and Government Relations Lead at satkinson@ospe.on.ca or 416-223-9961 ext. 225.

Sincerely,



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CC:

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Hon. Mona Fortier, Minister of Middle-Class Prosperity and Associate Minister of Finance
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