



ONTARIO
SOCIETY OF
PROFESSIONAL
ENGINEERS





The Honourable Peter Bethlenfalvy
Minister of Finance
c/o Budget Secretariat
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RE: Ontario 2023 Pre-Budget Submission

Dear Minister Bethlenfalvy,

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 times, there is no exception.

Engineers are at the centre of a prosperous economic recovery for our province and country. Engineers generate wealth through the development and commercialization of new technologies and by designing innovative and sustainable solutions for the benefit of all Ontarians. Engineers also ensure safety and stability by designing resilient infrastructure and reliable energy and water systems that Ontarians rely on daily. Without the important work engineers perform, short and long-term economic recovery will not be possible.

Engineering profession needs an influx of talent that will fill the job market gaps and support the innovation corridor in the province. While we are still mending our economy from the effects of the pandemic, Ontario must implement measures to develop our engineering workforce, the benefits of which will trickle into other sectors of our economy. The information engineers present benefit our healthcare and economy through the fight against COVID-19 and other airborne diseases with the benefits of indoor air quality technology. When multiple disciplines integrate their talents together, vital information is produced that presents as an asset to the government.

The Ontario Society of Professional Engineers (OSPE) is pleased to respond to the provincial pre-budget consultation with the following recommendations:

Engineering Workforce Development During Times of Economic Uncertainty

- 1. Deepening the engineering talent pool** by expanding opportunities for internationally trained engineers to enter the Ontario workforce through bridging programs with international post-secondary institutions
- 2. Diversifying Ontario STEM** through investments that support our neurodiverse talents and their journey to competitive STEM professions, in collaboration with accredited organizations.

3. **Moving the Needle through Procurement Policies** by working with municipalities to implement the data-support EDI exploration in their procurement processes.

Proactively engineering after COVID-19

4. **Regulation to implement Indoor Air Quality recommendations** by to monitor, maintain and standardize infrastructure and practices for safer indoor air;
 - a. *Mitigation of Airborne Disease Transmission*
 - b. *Ventilation*
 - c. *Filtration*
 - d. *Ultraviolet Germicidal Irradiation (UVGI)*
 - e. *Avoiding Additive Air Cleaning and Alternative Methods*
 - f. *Transparency and Public Education*
5. **Review the Provincial Building Code** to consider a health-oriented standard of ventilation and filtration for new and existing infrastructure.

Mitigating The Impending Effects of Our Climate Crisis

6. **Withdrawing amendments to the Greenbelt Plan** to respect the economic and agricultural impact the protected lands have provided the past few decades.
7. **Investing in Excess Soil Aggregates Framework** to include clear guidelines to project leaders, to include a lens of transparency, and to capitalize on engineering capabilities.
8. **Engaging with climate experts and Indigenous leaders** by convening two separate panels to conduct transparent conversations with Indigenous leaders and environmental experts for the needs of climate safety and reconciliation.
9. **Subsidize EV charging station** to combat a lack of electric vehicle sales and to position Ontario as a federal leader.

Engineering Workforce Development During Times of Economic Uncertainty

Ontarians are experiencing a heightened sense of economic uncertainty since the onset of the COVID-19 pandemic. With the instability of our healthcare system, the ongoing housing crisis and the threat of COVID-19 and other airborne diseases, it is crucial we capitalize on our economic opportunities by investing in existing resources and talent.

Deepening the Engineering Talent Pool

In October of 2021, the Government of Ontario announced the removal of the required one-year Canadian experience for internationally trained engineers, eliminating an unnecessary barrier that prevents exceptional talent from supporting Ontario. Removing this barrier not only deepens talent pool of promising engineers that support our innovation portfolio and promote public safety, but it also positions Ontario to be a leader in professional inclusionary practices. Since the announcement, there has been little guidance for international engineering graduates (IEGs) to follow. The Ontario government must enforce Professional Engineers of Ontario (PEO) to implement a strategy that allows IEGs to take full advantage of the engineering opportunities in Ontario.

An opportunity Ontario should capitalize on that will heighten exposure for Ontario's competitive job market and promote post-secondary education within the province is the expansion of bridging program partnerships with international engineering schools. Investing in building competitive bridging programs that focus on bringing the brightest minds to Ontario will directly increase opportunities within the province by introducing an influx of high-performing talent and will bolster our innovation portfolio with rich opportunities for collaboration. Ontario is home to a plethora of engineering schools that produce high-performing professionals, translating curriculums to meet the needs of an internationally trained engineer is an investment that will fulfill Ontario's gap in the job market.

It is crucial Ontario takes meaningful steps to deepen our engineering talent pool to fill our widening gap in the job market. Ontario is equipped to fulfill this need, with the support of OSPE and PEO, and catapult the province into economic prosperity.

Diversifying and Supporting Ontario STEM

While Ontario is home to brilliant and competitive minds, existing barriers prevent Ontario from capitalizing on our local talent. Ontario's STEM field is thriving, with high profile public and private sector investments that position the province to be capable of market dominance. However, provincial investments into programs and policies that remove barriers for prospective STEM professionals are needed in order to realize the province's full potential. Disabilities are a crucial component of a truly inclusive economy and unfortunately, the reality is this major group is historically excluded from inclusivity efforts. Gender inclusivity has been a mainstream conversation, but the data shows there has been little progress to recruit and retain women engineers in Ontario. OSPE's recommendations propose the government invest resources into data-supported initiatives to rectify these issues.

1. Neurodiversity and STEM

Neurodiverse Ontarians are an untapped human resource in the STEM field. Neurodiversity includes individuals who experience neurological or developmental conditions such as autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD). It is estimated like 15 to 20 per cent of the world's population does have some form of neurodivergence and while not considered neurotypical, neurodivergent peoples have a competitive advantage to be brilliant leaders, scientists, professors, and engineers. The STEM field needs neurodivergent thinkers, these thinkers are naturally in alignment with many STEM fields because of their ability to creatively problem-solve.

Specialisterne, a partner of OSPE, is a global organization whose mission is to open job opportunities for neurodivergent people across the world, including Canada. Their work acts as a catalyst for the neurodivergent population seeking employment and have found competitive employment for over 10,000 autistic persons across multiple sectors. Globally, the inclusion lens is taking monopoly on economic agendas. The United Nations 17 Sustainable Development Goal (SDGs) target five is aimed to achieve full and productive

employment for all, including neurodivergent people. In 2019, the World Economic Forum's primary topic of discussion was inclusion. Intentionally investing effort into this is economically and ethically justified.

The Ontario government should invest in programs dedicated to supporting students and professionals in the STEM field will not only deepen the talent pool and strengthen the workforce, but it will diversify Ontario's innovation portfolio while solving pressing provincial issues. The invested programs must be informed by neurodiverse specialists to ensure the efficacy in untapping the full potential of the participants. Partnering with provincial and national organizations, such as Specialisterne, professional associations, such as OSPE, and postsecondary institutions will create a funnel into the workforce and postsecondary systems.

2. Moving the Needle with Procurement Policies

The province has stated being dedicated to the advancement of women and other equity-seeking groups. OSPE has commissioned the research and development of a thoughtful strategy benefits public sector investments while increasing engineering opportunities for women and other equity-seeking groups. This research correlates with a qualifications-based selection (QBS), a standard of practice OSPE has historically advocated for. QBS is a competitive, sound, and fair process that selects those that are the best qualified. Selecting a consultant is one of the most important decisions a client makes. To a great degree, the success of a project depends on securing the professional services firm with the most experience and expertise that best fits the project. Experience demonstrates that selecting a consultant through QBS ultimately provides the best value for money.

In 2022, OSPE, with the support of industry partners, published the study "[Leveraging Public Sector Procurement Policies to Expand Opportunities for Women in Engineering](#)", a project funded by the Women and Gender Equality Department of Canada. In this study, exploration of the use of public procurement policy to advance diversity goals in the procurement of engineering services shows the benefit of public sector buyers requesting the firm to disclose their diversity and inclusion initiatives and policies. Procurement policy can support greater gender equity in engineering and can do so without sacrificing quality or increasing costs. In the study, 43 interviews with subject matter experts, public sector and private sector stakeholders were conducted for an accurate analysis of the current engineering procurement landscape. An apparent finding was a commitment to gender equity will strengthen the overall capabilities of the consulting engineering sector and lead to improved service to clients. If public procurement departments emphasised the need for the selected firm to have a credible diversity and inclusion policy, engineering firms will be incentivized into investing in such policies.

The Ontario government should prioritize including the findings of this study into their procurement processes. This will fulfill the objectives set out by multiple Ministry's within the provincial jurisdiction, better the engineering field with the diversity of thought and introduce more competition in request for proposal applicant pool. Advocated by many high-profile stakeholders, including the Ontario Chamber of Commerce, Association of Consulting Engineering Companies (ACEC) Ontario and Engineers Canada, this equity effort should be made standard across all procurement disciplines. OSPE welcomes the opportunity to meet with the provincial government to introduce this strategy into provincial procurement.

Proactively engineering after COVID-19

Ontario is rebuilding since the onset of the COVID-19 pandemic. In 2020, our economy was in distress, our housing prices skyrocketed, Ontario's healthcare system was overwhelmed and while pandemic is still in full fledge, our economic recovery efforts have started to mend some of the effects. Our province underwent tremendously difficult times, the province must implement proactive measures to prevent further damage to our internal infrastructure.

Regulating to implement Indoor Air Quality recommendations In 2022, OSPE formed the Indoor Air Quality (IAQ) Advisory Group, responding to the need for evidence-based guidance around indoor air quality and transmission of COVID-19. The Advisory Group, comprised of engineers, occupational hygienists and respiratory specialists, produced a series of reports identifying how COVID spreads and how Ontarians can combat its spread through approved ventilation, filtration and other regulatory changes. The reports concluded on six core recommendations that will mitigate the risk of COVID-19 and other airborne diseases:

1. **Mitigation of Airborne Disease Transmission**
2. **Ventilation**
3. **Filtration**
4. **Ultraviolet Germicidal Irradiation (UVGI)**
5. **Avoiding Additive Air Cleaning and Alternative Methods**
6. **Transparency and Public Education**

Public Health Ontario reported that improper ventilation is a risk factor in outbreak investigation for airborne diseases, such as COVID-19, influenza and RSV, a virus that affects 64 million people globally each year. Currently, approximately 30 per cent of Ontario schools are without ventilation infrastructure, with little guidance for ventilation and filtration targets and without ongoing verification ensuring working systems. Our study, supported with [evidence gathered globally](#), shows an apparent correlation between adequate filtration and ventilation to a decline in airborne virus-related hospitalizations and workplace sick leave, saving thousands in productivity.

There are four levels of ventilation improvements Ontario should begin regulating.

1. If the ventilation already meets requirements, mandatory monitoring and maintaining should be implemented to ensure standards continue to be met
2. If the ventilation is close to meeting requirement, an adjustment to the system must happen with a cost of \$40 per person per year
3. If ventilation is incapable of requirements but is able to be upgraded, the upgrades should be prioritized, with a cost of \$20 per person per year.
4. If there is no mechanical ventilation, there must be an infrastructure upgrade.

Ontario ventilation standards should bring our buildings into compliance with current ventilation standards established by American Society of Heating, Refrigeration and Air-Conditioning Engineers and the Canadian Standards Associations. Our filtration should be upgraded in air handling units to MERV-13 or higher where possible or use a portable HEPA filter or DIY CR box in each occupied space when air pollution is a concern.

Combating airborne viruses is a public population effort and in order for individuals to accurately do their part, mandated transparency is required. Facilities should make information about their air quality measures available to the occupants, including information about what strategies have been used to ensure safe indoor air. This can include sharing information about regular maintenance strategies, the use of filtration or UVGI in the space, or basic information about the ventilation strategies and the targeted level of ACH.

Government and public health agencies should also consider public education campaigns empowering Canadians with knowledge about the importance of air quality in the context of COVID-19 and other respiratory diseases. Public education campaigns can help Canadians to understand the science behind indoor air quality and empower them to advocate for cleaner air in their indoor spaces.

Review Of Ontario Building Codes to Consider Approved Ventilation and Filtration

Ontario's Building Code Act and the regulation exists to safeguard the safety of Ontarians and to promote accessibility in all buildings. The Code applies to all buildings, whether it be under construction, being renovated or undergoing a change of use with a special application to septic systems under 10,000 litres per day. Currently, Ontario's Building Code does not account for a health-oriented standard of ventilation and filtration.

A majority of Ontario's current buildings are not meeting expert requirements for safe indoor air quality standards. Additionally, the current building code does not have any guidance on ventilation targets nor does it offer a requirement of maintenance oversight. Subject matter experts' specific recommendations regarding safe ventilation standards include:

1. A ensuring fans on thermostats are set to "on" instead of "auto"
2. Increasing outdoor air percentage for systems with recirculated air
3. Increasing air flow to the room within design limits of variable air volume systems
4. Installing or upgrading mechanical ventilation in buildings or spaces that are under ventilated.

An urgent request to review the building code and implement these changes for new and existing infrastructure projects would further ensure the protection of Ontario's healthcare system and the stability of our economy.

For more information on OSPE's Indoor Air Quality group's technical recommendations, please visit our [Indoor Air Quality Reports](#).

Mitigating The Impending Effects of Our Climate Crisis

Ontario is not immune to the effects of the global climate crisis. We must take impactful steps to protect our land, resources, economy and people and we can do that with the leadership of engineers. Ontario is relinquishing opportunities to safeguard our precious resources and to innovate competitive solutions to a global issue. According to [Deloitte's Global Turning Point Report](#), unchecked climate crisis will cost the global economy trillions of dollars over the next 50 years.

OSPE calling on the provincial government to withdraw the amendments to the Greenbelt Plan, develop a framework for our excess soils, engage our Indigenous communities and invest environmental competency panels.

Withdrawing Amendments to the Greenbelt Plan

Ontario is one of the most sustainable provinces in Canada, with investments, programs and innovations that are designed to fight the climate crisis and offset emissions. The Greenbelt contributes drastically to the sustainability of this Province. The Ontario Greenbelt, the worlds largest protected land, is responsible for offsetting 71 million tonnes of carbon each year and slows the effects of the climate crisis by absorbing carbon dioxide in the atmosphere. An impact that cannot be ignored, especially during a time where the effects of the climate crisis is globally threatening.

Ontario has ambitious environmental goals. There is a level of responsibility the Province has to the people of Ontario to take action that directly fulfills those goals and does not hinder on our progress. The amendments to

the Greenbelt Plan have been shown to be costly, carbon intensive and environmentally harmful. This will take several steps backwards in making Ontario a national leader in building sustainable cities.

The Greenbelt has provided economic and agricultural benefit while safeguarding precious natural resources. Economically, the Greenbelt provides ecosystem services that cleans our air and water, while providing flood protection, all of which contributes to the annual economic impact of \$9.6 billion. The Greenbelt lands support local agricultural by enabling farmers to grow essential crops on high quality soil and positive climate settings. The 750,000 acres of protected farmlands that reside on Greenbelt lands generate 68 per cent higher revenue than the average Ontario farm, which is approximately 4,782 farms. At a time where our economy is recovering from the effects of the ongoing pandemic, this exponential impact should not be overlooked.

The Ontario Society of Professional Engineers strongly urges the Ontario government to withdraw the recent amendments and protect our precious land from urban sprawl and the effects of climate crisis.

Investing in Excess Soil Aggregates Framework

During the end of 2022, the Ontario government opened a consultation request for comments on proposed Amendments to Certain Requirements under the Excess Soil Regulation. The proposed amendments looked to removing requirements for low-risk sites and provide an exemption from the reuse planning requirements for some projects that are within an area of settlement and will remove 2000 cubic metres or more of excess soil. OSPE provided comments in response to the proposed amendments with suggestions to couple the amendments:

1. The Ministry of Environment, Conservation and Parks (MECP) should provide additional guidance to Project Leaders regarding the due diligence that should be undertaken to confirm that a source site is truly “low risk”. In the absence of this guidance, it is anticipated that some Project Leaders may incorrectly interpret the MECPs exemptions for low-risk sites as these sites represent no risk. Project Leaders may not always have the necessary training and experience to properly assess the need for further assessment. Although institutions, parks and residential properties represent a lower risk, there are circumstances where soil historically placed at some of these sites would be considered relatively contaminated.
2. MECP should implement an accessible tracking requirement to ensure transparency when handling soil. Tracking provides confidence to reuse sites that material they are receiving is from acceptable sources and provides transparency to the public and MECP regarding the type of soil being accepted, sources of the material, and clarity regarding who is responsible for the reuse site.
3. Utilizing the power capabilities of Professional Engineers of Ontario (PEO) and OSPE to regulate, govern and guide the reuse of soil aggregates. PEO has the capabilities and authority to administer thoughtful practicing guidelines for engineering professionals to abide by while OSPE is equipped to advocate for engineers to continue protecting the public and the environment. OSPE is available to support the Ministry of Environment, Conservation and Parks (MECP) in developing regulations that are practical in nature while maintaining public trust, directly informed through the input of our qualified members.

Engaging the Indigenous Community

Indigenous bands have been long stewards of our lands and are vital contributors to our economy through innovation, education, protection and more. As we know, sustainable and effective change is not possible if the

change is not being informed by Indigenous leaders. Major decisions that effect our lands are being executed with little to no meaningful engagement with our Indigenous bands and leaders, example being the recent amendment to the Greenbelt Plan.

Additionally, environmental expert voices are being silenced by deep pocket investors during public consultations. While the need for revenue generating projects are greatly understood, it should not overshadow the priority of safeguarding our ecosystems, natural resources and lands. The effects of the climate crisis threaten our most lucrative projects, including the elevated risk of natural disasters that cause irreversible damage. To avoid the economic risk, the province should take environmental consultations as a priority.

To rectify this, OSPE is putting forth two recommendations that will enable the province to work within the best interests of environmental protection in conjunction with reconciliation promises:

1. The Ontario government has stated conversations with Indigenous leaders have been conducted and the community has been engaged before an environmental decision has been made. This current structure lacks clarity; the public does not know if the conversation content was included in the final decision. The current structure also lacks transparency, who was in the conversation and what was the content. Therefore, it is necessary to form a permanent public panel of comprised of Indigenous leaders to convene when decisions must be made. To serve the purpose of clarity and transparency, the panel meetings should transcribe and publish official minutes the government, and public, can draw from to reach respectable conclusions. The Ontario government must establish an official process that not only engages Indigenous leaders but ensures meaningful incorporations of their consultation into proposed legislation/amendments that effect Ontario lands.
2. Investing in a panel of subject matter experts to evaluate the environmental competency of a project is an asset that will return on economic and environmental resiliency. Ontario has a vast network of professional experts that are qualified to guide our investments and prevent projects from acting without climate safety imbedded in the design. Professional associations, such as OSPE, ACEC and Ontario Environmental Industry Alliance, are a great resource to source the talent needed to form this panel.

Subsidies for EV Charging Stations

The national market is moving towards an ambitious goal of total car sales to be electric vehicles (EV). The Ontario people are encouraged to replace their current vehicles with an eco-friendlier option and with the province positioning themselves to be a hub for EV battery manufacturing, the Ontario government has endorsed the mentioned federal goal. In light of the global chip shortage, manufacturing of these vehicles have stalled; the high demand for EV's is met with low supply causing an already expensive product to increase in price. To combat these prices, there have been federal incentives that aim to alleviate the financial load for purchasers. The two-tier incentive is for battery-electric, hydrogen fuel cell, and longer-range plug-in hybrid vehicles are eligible for up to \$5,000 and shorter-range plug-in hybrid electric vehicles are eligible for up to \$2,500. Provincially, there have been no incentives released.

While incentives for purchasing the model is called for, Ontarians will benefit from a provincial subsidy catered to the purchase of charging stations. Charging stations are classified by levels designed to serve vehicle types, each of which come at a different cost that wholly fall on the consumer, in addition to an increase in hydro costs. Currently, Ontario lags in comparison to other provincial jurisdictions in terms of EV sales, over 50 per cent of Ontario's are bothered by the lag while 28 per cent would like to see Ontario take a leadership position in this space, according to Clean Energy Canada. The provincial government should couple the federal point-of-sale incentive with an incentive to alleviate financial pressure to secure leading the nation into an electric future.

OSPE believes that these recommendations are essential for the economic and environmental resiliency of Ontario and look forward to working with you to further. If you have any additional questions please contact Paola Cetares, Public Affairs Manager, pcetares@ospe.on.ca or Sara Mehraban, Policy Analyst, smehraban@ospe.on.ca.

Sincerely,



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