



2022 ONTARIO PROVINCIAL ELECTION
ONTARIO SOCIETY OF PROFESSIONAL
ENGINEERS: DEVELOPING SOLUTIONS
FOR ONTARIO



ONTARIO
SOCIETY OF
PROFESSIONAL
ENGINEERS



At OSPE, advocacy for the engineering profession means constantly reminding government, industry, media and the public that engineers are critical to the success of all aspects of Ontario's economy and public welfare. As the only independent membership organization that represents the entire engineering community, including engineers, graduates and students, OSPE offers a space for members to provide their leadership and influence for a better future for themselves, their organizations and society at large.

OSPE focuses on several key policy areas to truly instill in Ontarians that without engineers, Ontario wouldn't work. Ahead of this provincial election, OSPE wanted to highlight key issues that engineers believe should be a priority for the next government of Ontario.

Combatting the Climate Crisis

Fighting climate change and protecting the environment are essential to promoting a sustainable and healthy lifestyle for current and future generations. As problem solvers, engineers provide important insights on system planning, efficiencies and integration, total lifecycle costing and scenario analysis for sound policy making.

Reinstate the Office of the Environment Commissioner of Ontario

On April 1, 2019, the Office of the Environmental Commissioner of Ontario was dismantled by the Ontario Government. We believe the environment would be better safeguarded under the watch of an independent office such as the Environment Commissioner of Ontario. The support of this independent body is determinant to report on government progress on climate change, energy and other environmental issues.

Ensure an OSPE representative/professional engineer serves on the Ministry of Environment, Conservation and Parks' advisory panel on climate change.

The Environment would be better protected with engineering advice embedded in the policy and decision-making process. Engineers have the expertise to analyze the risks, vulnerabilities, and impacts of climate change on key economic sectors. Innovative climate change policies require the technical and practical knowledge of engineers.

Modernize Ontario's Building Code

The construction and renovation industries employ hundreds of thousands of Ontario workers. The National Building Code (NBC 2020) and the National Energy Code for Buildings (NECB 2020) contain new guidelines for energy efficiency in homes, small buildings, and commercial and institutional buildings. NBC 2020 section 9.36 focuses on energy efficiency and reducing GHG emissions to support a long-term goal of a net zero energy ready (NZER) model building code by 2030. Provinces have the option to adopt these provisions. **Ontario should adopt these sections of the NBC 2020 into the Ontario Building Code O.Reg. 332/12 and define clear steps and deadlines to achieve a NZER code by 2030.**

By doing so, not only would Ontario decrease its carbon footprint, but would also create jobs moving forward, especially under the lens of more energy efficient buildings and retrofits. This would also provide opportunity to lower life cycle costs to building owners and retrain workers.

Accelerate electric vehicle uptake and adoption

Electric motors are about three times more energy efficient than the internal combustion engine under ideal operating conditions. They also reduce greenhouse gas emissions and take advantage of the province's largely low carbon electricity grid.

By increasing the uptake of EVs in Ontario and encouraging recharging during evenings, EVs will in effect store Ontario's surplus energy supply, which will significantly reduce the amount of surplus energy that is sold for a loss to external jurisdictions and/or curtailed, which is currently [costing Ontario energy ratepayers approximately \\$1 billion per year](#).

According to the Windfall Centre, if EVs were to reach a 10% share of the total vehicle population by 2025, Ontario would experience a GDP increase of over \$3.6 billion. Ontario would benefit from a growing industry that would be modern, efficient, and create new employment opportunities across the province.

As Ontario historically has been a leader in automotive manufacturing, OSPE is pleased that the government is partnering with the private sector to ensure that Ontario counts with the necessary charging stations throughout the province. However, although this is a positive step, OSPE believes that more can be done. The Ontario Government cancelled the EV incentive program, which resulted in a 53% decrease of EV purchases in the first half of 2019. Ontario is the only province in Canada not experiencing an increase in EV sales.

Some of the uptake barriers encountered with EVs, such as a shorter range, longer recharge times, and a higher upfront cost can be addressed by smart government action. Some jurisdictions like California have committed to achieving a "tipping point" of EV adoption by enacting EV sale mandates requiring automakers to sell a specified number of EVs per year, as percentage of sales. In Quebec, such action has resulted in a 131% percent increase in one year.

To ensure Ontario accelerates the electrification of its transportation system, the province should:

1. Work with the federal and municipal governments to allocate specific resources to the electrification of the public transportation system.
2. Develop and implement an incentive program for electric vehicles, until mass adoption "tipping point" is achieved.
3. Enact an EV sales mandate like the ones established in Quebec and California, requiring automakers to sell a minimum percentage of electric vehicles.
4. Continue establishing a robust network of electric vehicle charging stations across Ontario.

5. Amend the Building Code to ensure that there is a minimum percentage of electric vehicle supply equipment (EVSE) in residential and non-residential buildings, including condo and apartment buildings.

Train engineers for the skills required to succeed in low-carbon emerging sectors

As Ontario and Canada transition towards a low-carbon future, new emerging sectors, such as the energy efficiency and building sectors will be at the forefront of change. To accelerate this, we need to strengthen the capacity of the existing workforce and attract more people to work in these sectors, especially engineers.

Engineers believe that sustainability, investing in talent development and retention, and fostering innovation must be the priority of new government funding allocations. While the climate emergency is a defining challenge, we must acknowledge it is happening while employment and skills are being reshaped by digitalisation, automation and the response to COVID-19.

Further investment in this sector would not only help fight climate change, but would also stimulate the economy by creating more jobs for Ontarians. Ensuring an adequate supply of skilled workers is crucial to supporting the sector's growth.

Government policies that help low-carbon emerging sectors thrive will lead to a more productive and sustainable workforce that will help grow the economy while protecting the environment.

Therefore, we suggest the Government of Ontario:

- a) **Ensures an in-depth skills gap and needs assessment of the energy efficiency sector is conducted**, including the building sub-sector and occupations across the full ecosystem, from design and construction to building operation and management.
- b) **Strengthen training provisions** by increasing the capacity of educators and trainers, specifically with emphasis on green literacy basics, low-carbon skills and latest technologies training content.
- c) **Support training uptake** by aiding new entrants and incumbent workers to build in-demand skills and rapidly up-skill for re-employment, especially work such as building retrofits for energy efficiency and indoor air quality improvements.
- d) **Create incentives to support a strong culture of lifelong learning across Ontario**, where employers and employees are provided with the tools and resources to up-skill and retrain local talent.

Ensure all provincial infrastructure projects adhere to the following principles:

- a) **Use of a Qualifications-Based Selection (QBS) framework**

Given Ontario's current economic and fiscal situation, it is essential that all public infrastructure investments be transparent and return the greatest possible value for money. By adopting Qualifications-Based Selection (QBS) as its best practice for the selection of consultants, the government can realize the greatest possible value for investment in its infrastructure projects.

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.

QBS was codified as part of the *Brooks Act*, passed into law by the United States Congress in 1972, to protect the interests of taxpayers. The Act stipulates that public owners negotiate engineering and architectural services contracts based on demonstrated competence and qualifications for the type of professional services required and at fair and reasonable prices. Its intent is to discourage public owners from contracting for professional services based exclusively on price. The *Brooks Act* requires a competitive process in which professional services firms submit their qualifications to the project owner. The owner selects the consultant from this pool based on their technical competence, experience on similar projects, managerial ability, personnel to be dedicated to the project, local knowledge, industry reputation and integrity.

This process provides the owner with a clearer and accurate understanding of overall project costs. This process also provides for vigorous and open competition among firms, assuring the owner they are selecting the most capable professionals, while at the same time obtaining a price that is “fair and reasonable.”

The Benefit to Ontarians:

i. Better value to taxpayers

QBS encourages innovation which in turn drives better value on the infrastructure investment. It provides accountability by ensuring that fees will directly correspond to the level of service and the value of deliverables to be provided. QBS also results in more realistic and predictable budgets and schedules for project expenditures.

ii. Significant life-cycle savings

QBS maximizes the value of the consultant’s contribution to a project while reducing the project’s life cycle costs. A recent American Public Works Association study shows that using QBS for professional services reduces construction cost overruns from an average of 10% to less than 3% - equivalent to a savings of up to \$700K on a \$10M capital project.

iii. Benefits small firms

QBS helps small firms compete by providing them a process through which to demonstrate the advantages that they often have over larger firms, including a greater degree of niche market expertise, greater knowledge of the local market and greater involvement of senior level management in the execution of the project.

iv. Promotes communication and technical innovation

Using QBS provides owners the opportunity to fully define the scope of work of the project during the selection process. This results in a project that is thoroughly thought out and fosters innovative, creative, cost-saving, and timesaving approaches to problems. It also fosters better communication and business relationships between owners and proponents as the process makes them partners in the job.

b) Effectively report life-cycle costing

It is essential that all infrastructure projects conducted by the province properly report and consider life-cycle costing. In order to gain the maximum value for money, all costs incurred over the whole life span of infrastructure projects must be estimated. This will ensure that taxpayer's money is used for infrastructure projects that are able to produce multigenerational benefits for most Ontarians at a proper cost.

c) Consider diversity and inclusion

The provincial government should implement supply chain diversity policies. This will enable the province to use procurement to advance equity, diversity, and inclusion. The benefits of a diverse supply chain are well documented in research done by the Centre for Diversity and Inclusion and the Conference Board of Canada. Small to medium enterprises owned by women and members of other equity seeking groups provide value to large organizations, reduce the risk of streamlined supplier pipelines, and lead to economic growth. The federal government has committed to increasing the participation of under-represented groups and Indigenous businesses in federal procurement, while cities like Toronto have established social procurement programs with similar objectives. It is imperative that the provincial government establish this to ensure that engineering companies led by women and members of equity seeking groups are provided with access to public procurement opportunities.

Cancel Highway 413

The Ontario Government is moving forward with the construction of Highway 413. However, the project lacks an up-to-date Environmental Assessment and a thoughtful stakeholder consultation. Its construction would lead to loss of thousands of hectares of prime agricultural lands, including about 1000 hectares in the Greenbelt in Vaughan. Adding highway capacity could induce more vehicular travel, and potentially further undermine complete community policy goals and provincial commitments to reduce greenhouse gas emissions. Further, experts also found that Highway 413 could negatively impact natural areas such as rivers, valley lands, wetlands, conservation areas and forested areas, including approximately 53 river and stream crossings.

Background:

- The GTA-West Transportation (GTAW) Corridor, otherwise known as Highway 413, was under an Environmental Assessment (EA) study by Ontario since 2007.
- The highway portion of the EA was cancelled by the previous provincial government in spring 2018, based on a report by an expert Advisory Panel that found that the highway would deliver few benefits, and could not be justified.
- The cost of the transportation corridor was estimated in 2012 to be \$4.8 Billion. This cost will undoubtedly be more now due to inflation, as well as increased construction and land acquisition costs. The bill will be paid by taxpayers.
- [An expert panel](#) estimated in 2018 that the average saving to people's drive-times would only be between 30-60 seconds.

The government should consult appropriately with stakeholders and the communities affected by the project. These consultations must be transparent and information should be shared

throughout the entire process. A recent Environmental Assessment (EA) needs to be undertaken to determine whether the project should proceed to subsequent stages of design, permitting and construction. The Government should address all these concerns before moving forward with it.

Research and Innovation

Ontario's engineers are uniquely positioned to contribute exponentially to Ontario's R&I ecosystem. Investments will create a more innovative and dynamic business environment and modernize the Canadian economy.

Support local manufacturing innovation and production.

The Government of Ontario has launched a procurement tool that will remove barriers and leverage Ontario manufacturing capacity in the fight against COVID-19. In these uncertain times the government must continue to support the manufacturing sector to maintain strong supply chains.

The government should keep investing in "Made-In Ontario" solutions and products. This could be achieved by working with the federal government to identify nationally strategic products and services and establish a minimum level of domestic production of these. Items such as medical supplies, personal protective equipment (PPE), food, energy, and other essentials should be included.

The uptake of technology and digitization will improve the sector's ability to be able to switch production to respond to consumer demand more quickly, not only in times of crisis but also in response to market shifts. For economic recovery it is critical that engineering expertise be deployed to ensure the safety and optimization of innovative solutions within industrial spaces.

Ontario should work with the federal government to provide additional advanced manufacturing (AM) focused programs with potential financial incentives for Ontario companies to enhance their competitiveness both domestically and internationally. Supporting businesses in improving current manufacturing processes and methods, developing and implementing digital technologies and focusing on more sustainable and energy-efficient products will help create resiliency in this sector and improve Ontario's export potential.

Support the generation, protection, and commercialization of intellectual property (IP) in small to medium enterprises (SMEs).

Ontario 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 R&D has become crucial to their ability to remain competitive. All SMEs are integral to the economic recovery and long-term prosperity of Ontario and Canada. According to a recent report by the Ontario Chamber of Commerce titled *Small Business, Big Impact*, Canada is home to 1.2 million SMEs (426,490 are in Ontario). SMEs are responsible for employing 90% of Canada's private sector workforce.

SMEs are being forced to pivot their operations to adapt to new realities and remain competitive. These enterprises play an important role in fueling innovation through the creation and commercialization of new products, services, and processes. As a result, it has become increasingly important for these companies to invest in research and innovation. These

investments are not only critical to the long-term sustainability of organizations but also to the overall economic health of the province and its workforce.

A key driver of this innovation potential is the generation, protection, and commercialization of associated intellectual property (IP). As noted in the province's IP report titled [Intellectual Property in Ontario's Innovation Ecosystem](#), Ontario has fallen significantly behind other jurisdictions in its economic growth and prosperity. The report outlines the potential to recover Ontario's economic position through R&D with a specific focus on increasing IP assets.

We commend the government's recent announcement to develop a Made-in-Ontario Intellectual Property Action Plan to ensure that the social and economic benefits of research and innovation are incentivized and retained within the province. Many engineers and engineering graduates are either entrepreneurs involved in launching SMEs or otherwise associated with SMEs. As such, we recommend that the government address three key barriers currently preventing all types of SMEs from pursuing the generation, protection, and commercialization of IP:

- Limited access to IP professionals with practical expertise (patent agents or patent lawyers)
- Lack of transparency and uniformity in the process to engage research institutions in IP development and commercialization
- Cumbersome administrative requirements that impact the access for funding

The Government of Ontario should:

- a) **Provide a dedicated fund for small to medium enterprises (SMEs) to access IP expertise alongside their R&D efforts.** SMEs require practical IP advice at every stage of the R&D process. This includes providing a foundational understanding of the types of IP protections available for R&D, guidance on IP strategy, and how to capture and leverage IP protections to achieve business goals. The patent filing fee and legal fees associated with this are costly and a deterrent for companies to file. Current government funding programs either do not consider IP a fillable expense or do not encourage the expense as it may be a significant portion of the grant. If the government wants to increase the number of patents filed in Ontario it must make this process more affordable by assisting with the cost of IP filing.
- b) **Create a resource that effectively explains how industry can engage with universities and other research institutions to access IP assets for commercialization.** Currently, the owner of the IP is dependent on the funding program used to engage the institution. This means that working with one research institution will not be the same as working with another leading to an initial lack of transparency regarding who will own the IP until the company is engaged in the process. The negotiation can also take time and resources that SMEs do not have the capacity to provide. A resource/tool should be developed to provide distinctions between research institutions that will enable companies to make informed decisions in the selection of their research partner and assist in navigating the negotiation process once it begins.
- c) **Work with the federal government to reduce cumbersome red tape that impedes access to public funding for R&D efforts by implementing the following:**
 - i. **Public disclosure of funds available to disperse for that year and an up-to-date version available regularly.** This should avoid the filling of applications to

programs where funding may no longer be available or become highly competitive as funding is closed to being fully committed. Submitting a funding application requires a time investment that organizations can spend on other activities with higher ROI if funding is no longer available.

- ii. **Companies undertake strategic relationship building, with members from funding agencies, located within regional innovation hubs.** This relationship building process is onerous creating an added burden on SMEs. At times, these relationships may not be well established by the end of the funding cycle, and companies miss the opportunity to access funding for the year. The government must examine this process and determine how best to streamline these activities considering the potential economic burden they place on SMEs.

Diversity and Inclusion

Stereotypes, bias and discrimination continue to impact the engineering sector's ability to attract and retain diverse talent. This has a negative impact on Canada's success and competitiveness and is ultimately hindering economic growth and innovation.

Address the gender-pay gap

[OSPE's census analysis revealed](#) that the wage gap between men and women working in engineering was 12% or \$11,000 annually. Ontario has introduced robust legislation intended to tackle the gender wage gap through the [Pay Equity Act](#), however, there is an insufficient accountability mechanism within this legislative tool. Further, the wage gap for other under-represented groups should also be assessed and mechanisms similar to those developed for gender, be introduced. The government must create accountable and enforceable tools to truly address this issue.

Invest in robust labour market analysis.

In a data driven economy it is imperative that the provincial government continue to make investments in data collection, analysis, and evaluation. For the STEM sectors, most data pertaining to the unique experiences of equity seeking groups in the Canadian labour market focuses on gender. This remains consistent during the current crisis. It is therefore important to expand labour market analysis to be more inclusive and to ensure that reliable data is available to inform both private and public sector responses to the barriers impacting all underrepresented groups in engineering and other STEM professions.

Encourage diverse and inclusive workplace practices

Organizations must demonstrate a real commitment to diversity and inclusion through their workplace practices to access public funding. A revision of current funding frameworks to include specific measurable requirements for organizations seeking to access public funding should be included to ensure accountability. We encourage the government to look at workplace policies and practices, representation, commitment to inclusive design and/or diverse supply chains when determining eligibility.