ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

WRITTEN SUBMISSION

FOR THE PRE-BUDGET CONSULTATIONS IN ADVANCE OF THE UPCOMING FEDERAL BUDGET

Ontario Society of Professional Engineers (OSPE)

Submitted by:

Sandro Perruzza

Chief Executive Officer

advocacy@ospe.on.ca | ospe.on.ca

List of Recommendations

- **Recommendation 1:** That the Government of Canada, in partnership with provinces, develop and fund a National Integrated Energy Strategy that aligns electricity, thermal energy, hydrogen, nuclear, renewables, and storage systems to improve affordability, grid reliability, and long-term ratepayer value.

- **Recommendation 2:** That the Government of Canada establish a federal Qualifications-Based Selection (QBS) policy for engineering procurement and provide incentive funding to provinces and municipalities that adopt QBS frameworks for publicly funded infrastructure.

- **Recommendation 3:** That the Government of Canada introduce a flow-through share mechanism applicable to private-sector investment in product research, construction, and development, mirroring the proven structure used in the mining and energy sectors, to mobilize capital and accelerate commercialization of new technologies.

- **Recommendation 4:** That the Government of Canada renew and expand funding for STEM education, co-operative learning, and experiential learning programs at the postsecondary level, with targeted supports for underrepresented groups including women, Indigenous peoples, newcomers, and persons with disabilities.

- **Recommendation 5:** That the Government of Canada accelerate the national recognition of internationally trained engineers through harmonized credential recognition pathways and bridge training programs.

- **Recommendation 6:** That the Government of Canada invest in cybersecurity infrastructure for critical sectors including energy, water, transportation, and healthcare, and expand funding for cybersecurity research, workforce development, and public digital-literacy programs.

- **Recommendation 7:** That the Government of Canada establish an ethical AI governance framework with standards for transparency, accountability, and public-interest safeguards, and fund an AI-literate workforce development strategy for engineers, technicians, and regulators.

- **Recommendation 8:** That the Government of Canada invest in a national clean transit infrastructure fund to accelerate electrification of public transit fleets, expand charging infrastructure, and improve regional transit connectivity, particularly in high-growth and underserved communities.

- **Recommendation 9:** That the Government of Canada fund national lifecycle assessment (LCA) standards for construction materials and introduce embodied carbon disclosure requirements for federally funded infrastructure projects.

- **Recommendation 10:** That the Government of Canada support research and adoption of Canadian water and wastewater technologies, including decentralized distributed wastewater treatment, and advancing conventional treatment processes.

- **Recommendation 11:** That the Government of Canada provide targeted federal funding for climate-resilient infrastructure, including flood and wildfire mitigation, stormwater separation, and upgrades to water treatment systems, prioritizing municipalities facing the highest climate risk.

- **Recommendation 12:** That the Government of Canada invest in Indigenous engineering education, mentorship networks, and community-led STEM programs to support meaningful Indigenous participation in critical minerals, clean energy, and northern infrastructure development.

- **Recommendation 13:** That the Government of Canada continue to support the development and deployment of distributed small modular reactors (SMRs) as a source of both electricity and industrial or community-scale heat, through regulatory modernization, demonstration funding, and supply-chain investment.

- **Recommendation 14:** That the Government of Canada fund national indoor air quality standards aligned with ASHRAE guidelines, including ventilation and filtration upgrades in federally regulated workplaces, schools, and public institutions.

- **Recommendation 15:** That the Government of Canada collaborate with provinces and territories to increase employment retention and modernize flexible and hybrid work policies for engineering-intensive sectors.

- **Recommendation 16:** That the Government of Canada collaborate with industry and provinces to set realistic, achievable GHG emissions reduction targets for high-emitting sectors.

- **Recommendation 17:** That the Government of Canada enable the labour mobility of Canadian engineers with a national licence, granting the right to practise in all jurisdictions under a single nationally recognized stamp and CPD/PMP registry, with fees distributed to provincial/territorial regulators on a per-capita basis.

About OSPE

The Ontario Society of Professional Engineers (OSPE) is the voice of Ontario's engineers. OSPE engages the expertise and leadership of its members to address challenges in energy, infrastructure, public health, workforce development, and emerging technologies. Engineers are central to every priority of the Government of Canada, from building affordable housing and modernizing the grid to driving innovation in critical industries. Our recommendations are evidence-based and aligned with Canada's goals in competitiveness, climate resilience, public safety, and long-term prosperity.

Recommendation 1: A National Integrated Energy Strategy

Canada's energy system faces mounting pressure from electrification, housing growth, industrial expansion, and trade volatility. A federally led Integrated Energy Strategy is essential to align electricity, thermal energy, lower-carbon fuels, nuclear, storage, and demand-side management into a national framework. This strategy should prioritize cost transparency for ratepayers, district energy networks, grid-forming inverter technologies, and deployment of distributed SMRs capable of supplying both electricity and industrial heat.

Recommendation 2: Qualifications-Based Selection for Engineering Procurement

QBS prioritizes technical excellence, lifecycle value, safety, and innovation over lowest-bid competition. Projects procured through QBS consistently achieve better outcomes, lower lifecycle costs, and stronger public safety performance. OSPE recommends the Government of Canada adopt QBS for all federally funded engineering procurement and provide incentive funding to provinces and municipalities for adoption.

Recommendation 3: Flow-Through Shares for Research and Development

The flow-through share mechanism has enabled Canada's mining and energy sectors to mobilize private capital by transferring tax deductions to investors. Extending this model to product research and development would reduce barriers for early-stage innovators, accelerate commercialization, and strengthen Canada's position in cleantech, advanced manufacturing, life sciences, and AI. OSPE recommends the Government of Canada introduce this mechanism for R&D investments across jurisdictions.

Recommendations 4 & 5: Engineering Workforce, STEM, and Credential Recognition

Canada faces a growing shortage of qualified engineering practitioners. Most Ontario engineering graduates do not pursue traditional engineering roles, leaving a gap in engineers needed for infrastructure, housing, and natural resource priorities. Sustained federal investment is required across the talent pipeline with inclusive supports for underrepresented groups. Engineers practicing across jurisdictions must maintain separate registrations, fees, and CPD records. OSPE recommends harmonizing licensing and CPD to enhance interprovincial labour mobility. The federal government must also accelerate credential recognition for internationally trained engineers to close the gap between immigration intake and labour market deployment.

Recommendations 6 & 7: Cybersecurity and Responsible AI Governance

Canada's critical infrastructure depends on digital systems increasingly exposed to sophisticated cyber threats. Federal investment in intrusion detection, quantum-resistant encryption, AI-driven threat analytics, and workforce development is urgent. The federal government must also establish regulatory frameworks for artificial intelligence with clear standards for transparency, accountability, and public-interest alignment, and fund AI literacy programs across engineering, policy, and regulatory workforces.

Recommendation 8: Clean Transit Infrastructure

Rising capital costs make stable, long-term federal funding essential. Federal investment should accelerate fleet electrification, expand EV charging, modernize BRT and LRT corridors, improve first-mile/last-mile connectivity, and support transit-oriented development and equity-centered transportation planning across Canada.

Recommendation 9: Lifecycle Assessment Standards and Embodied Carbon Disclosure

The construction sector is a major source of embodied carbon, yet lifecycle impacts are rarely incorporated into procurement decisions. Federal mandatory LCA standards and embodied carbon disclosure requirements for federally funded projects would drive adoption of lower-carbon materials and position Canadian suppliers competitively. OSPE recommends modernizing procurement frameworks to reward lifecycle performance over upfront cost.

Recommendation 10: Supporting Water Technology Innovation

Canada has deep expertise in water technology but federal investment has not kept pace. OSPE recommends the Government of Canada work with communities, including Indigenous communities in remote locations, to examine decentralized distributed wastewater treatment (DWWT), which can accelerate community development and support housing goals. Federal investment should also address drinking water safety through adaptive management targeting PFAS, pharmaceuticals, and cyanotoxins.

Recommendation 11: Climate-Resilient Infrastructure

Floods, wildfires, extreme heat, and severe storms are increasing across Canada. Federal investment in stormwater separation, flood management, upgraded water treatment, fire-resistant construction, and nature-based solutions delivers among the highest returns available. Funding should prioritize municipalities and First Nations at highest climate risk and integrate engineering-based resilience standards into all federal infrastructure projects.

Recommendation 12: Indigenous Participation in Engineering and Critical Minerals

Canada's clean energy and critical minerals strategy depends on meaningful Indigenous partnership. Federal investment in Indigenous engineering education, scholarships, mentorship, and community-led STEM programs is essential for equitable participation in northern infrastructure, mining, and energy projects. Indigenous-led community energy projects should have access to federal energy program funding.

Recommendation 13: Small Modular Reactors

SMRs represent a significant opportunity for Canada to lead in next-generation nuclear technology while improving energy resilience and decarbonizing industrial heat. OSPE recommends advancing SMR deployment as both an electricity source and provider of community-scale heat, with federal policy explicitly supporting distributed configurations that reduce transmission costs.

Recommendation 14: Indoor Air Quality and Public Health Standards

Poor indoor air quality increases respiratory illness, long-COVID risk, and productivity loss. Engineering-based solutions including high-efficiency filtration, ASHRAE-aligned ventilation upgrades, and real-time monitoring offer cost-effective public health benefits. OSPE recommends establishing national IAQ standards for federally regulated workplaces, funding upgrades in federal buildings, and co-funding upgrades in schools and long-term care facilities.

Recommendation 15: Flexible Work and Labour Market Competitiveness

Flexible and hybrid work models improve productivity, workforce participation, and talent retention, particularly for women, caregivers, persons with disabilities, newcomers, and internationally trained professionals. Federal labour policy must reflect current workforce realities to keep Canada competitive for engineering talent globally.

Recommendation 16: Reducing Greenhouse Gas Emissions

OSPE recommends the Government of Canada set realistic, achievable GHG reduction targets with industry and provinces, concentrating efforts on petroleum and natural gas, transport, and electricity. A well-designed national cap-and-trade system with a declining hard cap and active offsets, combined with collaboration on lower-GHG freight, would deliver credible, durable emissions reductions.

Recommendation 17: National Engineering Licence

Canadian engineers must hold separate licences in every jurisdiction, paying separate fees and maintaining separate CPD and PMP records. This discourages cross-border practice and limits engineering access in smaller communities, with no measurable public safety benefit. OSPE recommends a national mobility endorsement as an add-on to existing provincial/territorial licences, granting the right to practise nationwide under a single stamp and CPD/PMP registry, with fees distributed to regulators on a per-capita basis.

Sandro Perruzza
Chief Executive Officer