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OF ONTARIO'S ENGINEERS

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Dear Members,

I hope you had a wonderful summer. If you are like me, you took some vacation, but also time to consider how to best move forward to maximize the rest of 2025. Where does the time go, right?

I always look forward to fall because it is the busiest time of year for our engineering community in Ontario. Tens of thousands of engineering students are back on campus. We will be launching our next Engineering Benchmarking Report, and OSPE has a busy schedule of events, large and small, including our annual **Engineering Conference** and the **Ontario Professional Engineers Awards Gala**, both scheduled for November.

Another activity we are deeply engaged in is sharing what we have learned from our latest collaboration with **Women and Gender Equality Canada (WAGE)**. This time, the focus has been on the advantages and pitfalls of flexible work environments, as well as how to create the right spaces for all team members to thrive. It is not easy, and it is definitely not a one-size-fits-all model, which is why, throughout the fall, we will be sharing findings and recommendations across the engineering and human resources communities. Please let us know if your organization is interested in hosting a session by contacting events@ospe.on.ca.

This is just one of many commitments to ensure the advancement of our engineering community. We are operating at a time of so much change; we owe it to our community to provide researched insight that can help them better adapt and thrive.

Another one of our commitments is to make sure that OSPE's actions are guided by the needs of the engineering community, which is why OSPE has conducted another benchmarking report.

This spring, building on feedback received in 2022, over 1,000 members of the engineering community (students, graduates, licensed engineers, and more) shared their thoughts on the profession, their prospects, and the challenges they face.

When you undertake research like this, sometimes you hear things you wish you hadn't, but what is clear to me is that OSPE is already aligned and motivated to make progress in the most critical areas, and that OSPE is listening closely to the community. If you have something you wish to contribute to the ongoing conversation about the future of engineering in the province, please share it with us on social media or by email to info@ospe.on.ca.

Speaking of OSPE listening, over the past few months, we've heard loud and clear the need for a **National Engineering Licence**, and I'm pleased to announce that we've launched a working group that will examine the pathways and levers to bring this missed opportunity into reality.

As a final thought for this fall period, I advise you all to stay focused on the whys and hows as you chase those critical end-of-year results.

It is only natural to "sprint" where you can, but equally important to the health of your organization and the engineering community, that you incorporate learning and create opportunities for people to grow.

I know it can be a challenge, but there is so much evidence to support having a long view when it comes to success, in terms of profitability, and especially when it comes to talent management. We are all too familiar with situations where urgency challenges thoughtful execution and the damage that can ensue. As an engineering community, we need to continue to stand by our ability to deliver what is required and practical, standing up for the value created and the outcomes achieved that go beyond the bottom line.

As an engineering community, we need to continue to move forward together in ways that set us up to thrive in an environment where the challenges are more nuanced than ever.

Despite the many obstacles ahead, I am confident we can succeed because we have all of the fundamental ingredients available. It is up to leaders like you to determine how we deploy our talent, technical expertise, and determination. OSPE is here to help remove obstacles, break down barriers, and encourage our community to move forward.

Please join us!

Sincerely,

Sandro Perruzza
Chief Executive Officer
Ontario Society of Professional Engineers

WHAT COVERAGE DO I NEED?

AN INSURANCE GUIDE FOR ENGINEERS

Risks to engineering firms are as diverse as the businesses themselves. Whether you're working for an organization, opening one for the first time, or are already up and running, it's important to check that you and your business are covered.

While this table is comprehensive, it only provides an outline of common practice scenarios only and other coverage may be required. Please speak with a BMS broker if you have questions about the most appropriate coverage for your specific practice circumstances.

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- ✓ Primary Professional Liability*,
- ✓ Secondary Professional Liability *(automatically included in OSPE membership)*, and
- ✓ Cyber Security & Privacy Liability.

*The Engineering firm that holds the Certificate of Authorization should carry primary professional liability insurance for all engineers working on behalf of the firm. The firm will typically carry cyber insurance that also extends to their employees and their devices.

I'm an independent contractor

- ✓ Primary Professional Liability,
- ✓ Secondary Professional Liability *(automatically included in OSPE membership)*,
- ✓ Commercial General Liability, OR
- ✓ Business Package *(if you have contents and/or equipment)*, and
- ✓ Cyber Security & Privacy Liability.

I'm a business owner

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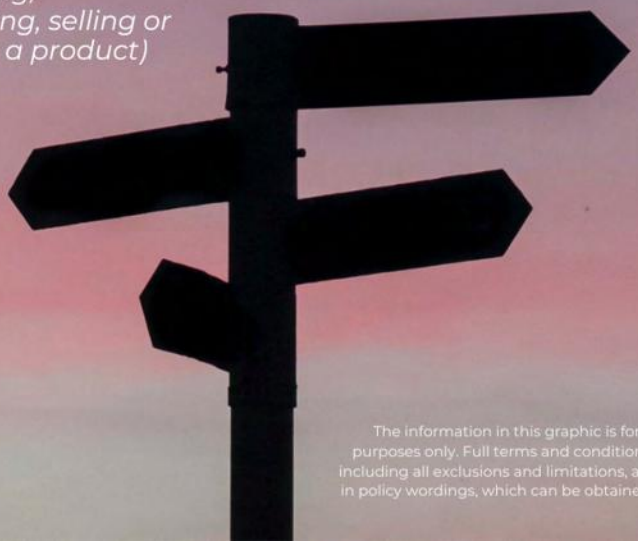
- ✓ Secondary Professional Liability *(automatically included in OSPE membership)*,
- ✓ Commercial General Liability, OR
- ✓ Business Package *(if you have contents and/or equipment)*,
- ✓ Cyber Security & Privacy Liability,
- ✓ Employment Practices Liability, and
- ✓ Directors' and Officers' Liability *(if publicly traded and/or have a board of directors)*.

Additional Options for Independent Contractors & Business Owners

- Commercial Automobile Insurance *(if your business owns a vehicle)*
- Builder's Risk and Wrap-Up *(if you are responsible for the oversight of a construction project)*
- Equipment Floater *(if you have equipment that you bring on-site)*
- Products Liability *(if you are developing, manufacturing, selling or proto-typing a product)*



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ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

News from the Front

In the last few months, the **Ontario Society of Professional Engineers (OSPE)** has been proud to advance several key advocacy initiatives and celebrate four new policy wins.

OSPE's advocacy efforts have resulted in renewed investment in Ontario's **Critical Minerals Innovation Fund**, a landmark court ruling on bike lanes, a $10 million increase to the **Indigenous Energy Support Program**, and new agreements removing barriers to interprovincial mobility for engineers.

Additionally, OSPE worked with the **Tunnelling Association of Canada (TAC)** to release a joint statement on the Feasibility Study for the Proposed Highway 401 Tunnel Project, a topic that created a lot of discussion in Ontario's engineering community.

July 2 – OSPE Releases a Joint Statement with the Tunneling Association of Canada - Statement on the Feasibility Study for the Proposed Highway 401 Tunnel Project

The **Ontario Society of Professional Engineers (OSPE)** and the **Tunnelling Association of Canada (TAC)** collaborated to release a joint statement on the feasibility study for the proposed tunnel under **Ontario Highway 401** connecting Mississauga and Scarborough.

OSPE and TAC support the government's decision to study the feasibility of a proposed 50 km tunnel along Highway 401 and emphasize that the project must be guided by rigorous, evidence-based analysis.

You can read the joint statement here.

POLICY WINS

July 23 – Ontario Renewed Investment in the Critical Minerals Innovation Fund (CMIF)

The **Critical Minerals Innovation Fund (CMIF)** provides funding to projects that help strengthen Ontario's critical minerals sector. **The Ministry of Energy and Mines** committed $7 million more to the CMIF to support projects related to key priorities in the sector. Some of the key priorities identified are innovative mining techniques and building an end-to-end **Electric Vehicle (EV)** battery supply chain in Ontario. These funding priorities align with OSPE policy recommendations, including those outlined in our 2021 submission to the **Environmental Registry of Ontario: Ontario's Critical Minerals Framework (ERO-019-3281).**

July 30 – Ontario Society of Professional Engineers Quoted in Ontario Superior Court Bike Lanes Ruling

On **July 30, 2025**, the **Ontario Superior Court of Justice** released a landmark decision in *Cycle Toronto et al. v. Attorney General of Ontario*. The court struck down the province's plan to remove protected bike lanes on Bloor Street, Yonge Street, and University Avenue. The decision explicitly referenced OSPE's submission regarding Bill 212, recognizing the contribution of engineers to the public discourse on urban transportation. The ruling is a significant win for advocates of multimodal transportation and a validation of the concerns raised by OSPE.

August 27 – $10 Million Increase to the Indigenous Energy Support Program (IESP)

The Ontario government announced a $10 million increase to the **Indigenous Energy Support Program (IESP)**, a 66% boost over last year- bringing the program's annual funding to $25 million. The increase provides funding for Indigenous communities to plan and build energy projects that deliver affordable, clean, and reliable power, transition away from diesel reliance, partner on emerging technologies, and access skills training and energy champions. This year's expansion also introduces a new funding stream of up to $500,000 per project for diesel-reliant communities, accelerating the transition to sustainable energy systems while lowering carbon emissions. This policy win is a direct recognition of what OSPE and its task forces have consistently advocated for.

September 1 - The Government of Ontario to Remove Barriers to Interprovincial Work for Engineers

Ontario has signed agreements with provinces and territories to create interprovincial mobility for in-demand professions, including engineers. These agreements allow Ontario engineers to move and work in other provinces and territories and vice versa. OSPE has met with the **Minister of Labour, Immigration, Training and Skills Development David Piccini**, and appeared at the **Standing Committee on Finance and Economic Affairs** to advocate for interprovincial mobility, making this move by the provincial government a major policy win.

Read more about these policy wins in the Society Notes Blog.

LETTERS AND SUBMISSIONS

June 11 – Integrating Indoor Air Quality into Toronto's Net Zero Strategy

OSPE submitted formal correspondence to the **City of Toronto's Infrastructure & Environment Committee**, urging the integration of stronger **Indoor Air Quality (IAQ)** considerations into the **TransformTO Net Zero Strategy**.

Read the full submission here.

August 26 - Federal Pre-Budget Submission

OSPE's 2025–2026 federal pre-budget submission reflects the collective insight of our members and task forces. It presents evidence-based recommendations showing how engineering expertise can help Canada tackle its most urgent challenges: climate adaptation, industrial revitalization, infrastructure resilience, workforce development, and equitable economic growth.

Read the full submission here.

August 29 – Recommendations to Build Canada Homes

In August, the federal government created **Build Canada Homes**, a new housing agency designed to dramatically scale up affordable housing by financing projects, streamlining approvals, and modernizing construction practices. The **Ontario Society of Professional Engineers (OSPE)** welcomes this initiative and has submitted recommendations to ensure engineering expertise is front and center in its work.

Read the full submission here.

Advancing Gender Equity by Embedding Flexible Work Options

Women and caregivers, especially in demanding STEM fields, face challenges when balancing their work and family responsibilities and often must choose between one or the other. OSPE, in partnership with Women and Gender Equity Canada, has begun an exciting 3-year initiative to address this issue and drive systemic change by promoting the adoption of the flexible work model.

In 2024, approximately one in four Canadians (24%) worked from their home at least part of the week. This is a 17% increase from before the COVID-19 pandemic.

Survey evidence has shown that working from home is not only practical in many industries but also allows employees to benefit from greater flexibility. OSPE members cited improved work-life balance, reduced commuting time, fewer interruptions, and reduced personal expenses.

Contrasting the strong employee desire for more flexibility, many organisations are reducing their work-from-home options or curtailing them altogether, with 83% of organizations expecting a full return to the office in the next three years.

Finding the Right Balance - An Evidence-Based Examination of Flexible Work Arrangements

The purpose of this report is to provide evidence-based guidance on striking the right balance between the clear desire of employees for more flexibility and the needs of the organisations that employ them.

Read more ↗

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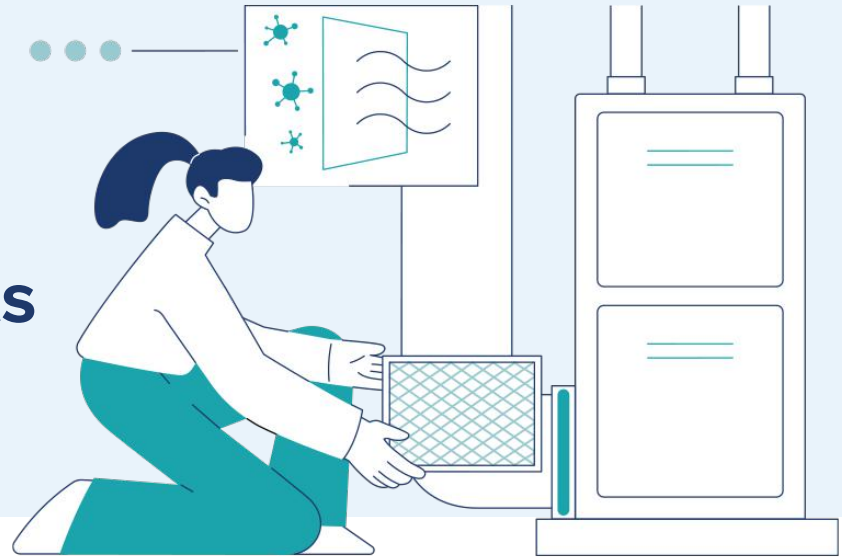
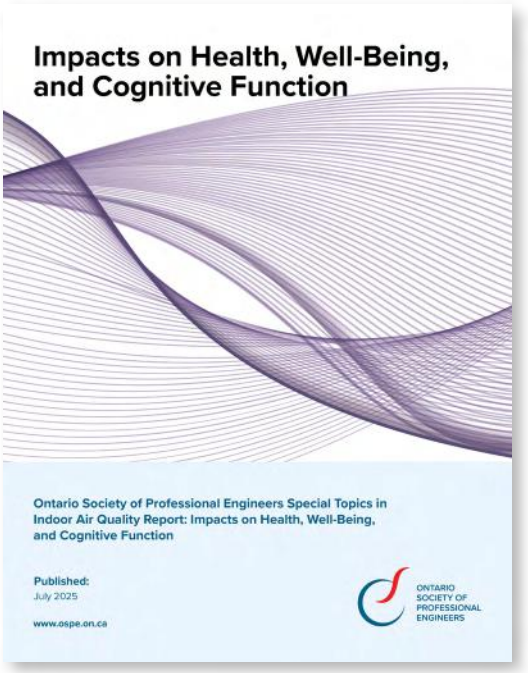
Special Topics in Indoor Air Quality Reports



People on average spend 80–90 percent of their lives indoors. With that in mind, OSPE has continued the work of our ***Indoor Air Quality (IAQ) Working Group***, developing recommendations to bring light to, and ultimately increase, the quality of the air we breathe. These documents are intended to be introductory guides, to provide readers with a robust foundational knowledge on IAQ. The goal is to support efforts to improve the spaces where we live, work, and play.

To access our growing library of research and policy documents, click here or on the linked reports below:



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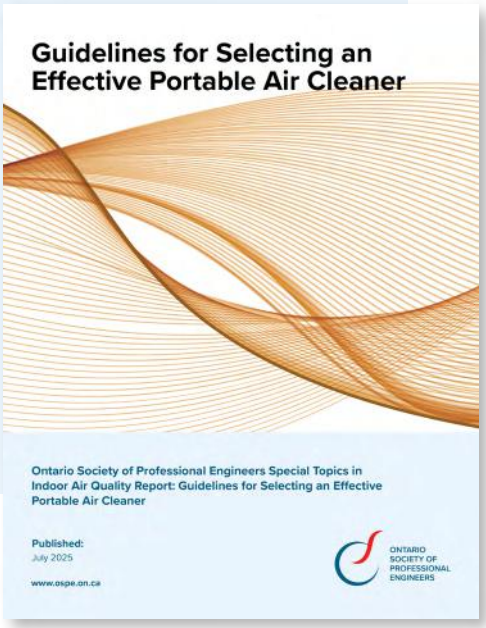

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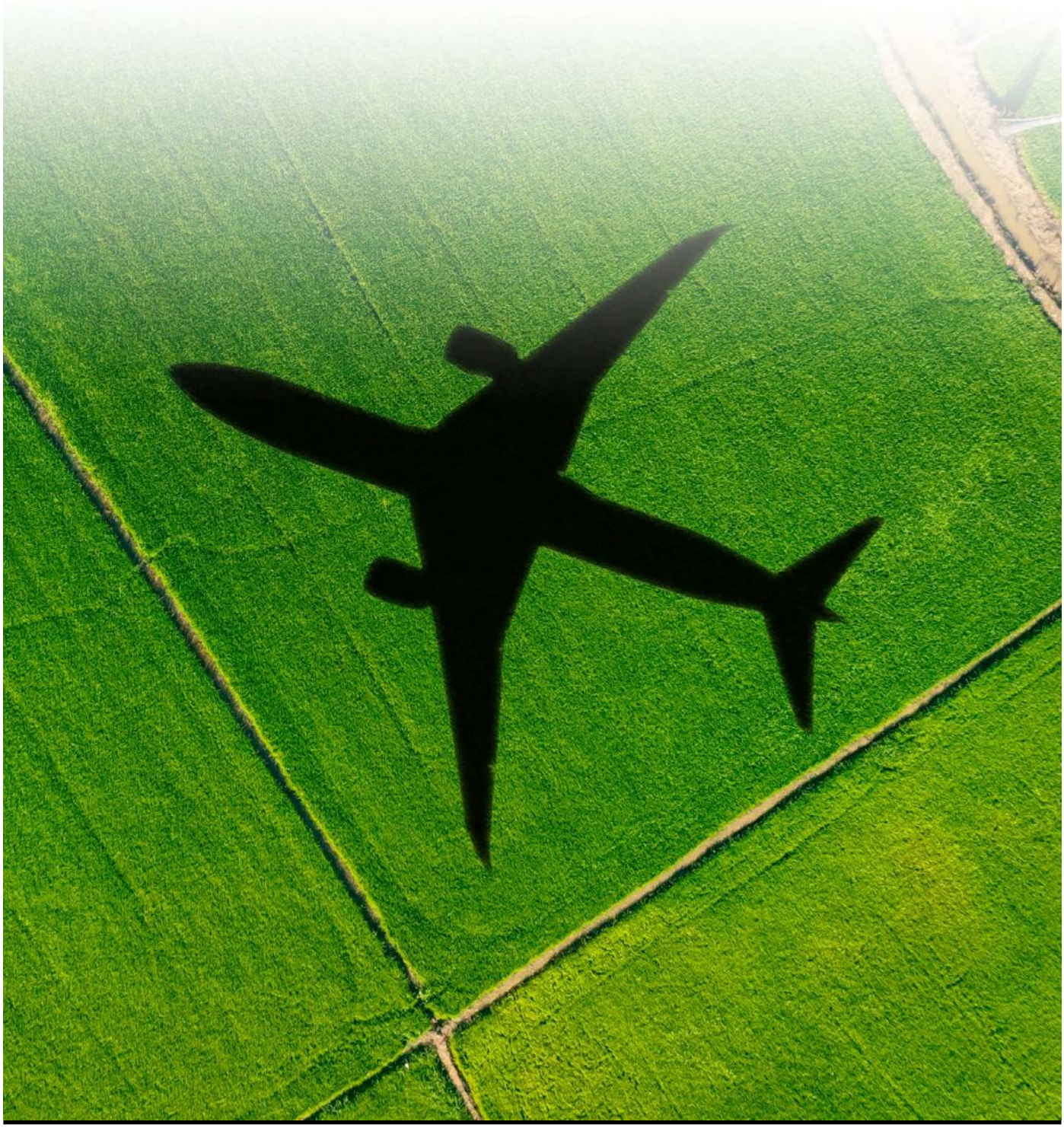
All reports now available at **go.ospe.on.ca/iaq**

Advancing Canadian Leadership in Sustainable Aviation

Michael Monette, P.Eng., MBA



When thinking of sustainable aviation there is a significant opportunity to strengthen and expand Canada's aerospace industry. Canada is at the forefront of this transformative journey, driven by innovative technologies and strategic collaborations like those facilitated by **STRIX** and the **Initiative for Sustainable Aviation Technology (INSAT)**.

STRIX has the mandate to support the growth of the aerospace industry by showcasing Canada as the best choice for new programs, designs, systems and technology demonstrations on a large scale for dual use in aerospace and defense applications. STRIX has the vision to position Canada as a global leader in aerospace innovation by fostering multi-sectoral collaboration and access to resources – driving sustainable development and integration of technologies and platforms of the future.

For the national engineering community, this means more opportunities for employment to further energize Canada's aerospace industry.

The global aviation sector currently accounts for approximately 2% of global **Greenhouse Gas (GHG)** emissions. While seemingly modest, the anticipated tripling of commercial aircraft emissions by 2050 underscores the dire need for immediate and sustained action. Reduced carbon emissions from aviation will combat climate change, foster cleaner air, and preserve delicate ecosystems. This commitment aligns with Canada's Aviation Climate Action Plan 2022–2030, which outlines a pathway to achieve net-zero emissions by 2050 for the aviation sector.

Research and development for net-zero emissions from aviation is a global effort. Some research will take a long time to develop, prototype and demonstrate practically. For example, in the Tech Explorist June 2025 issue, new sodium fuel cell technology is highlighted with 3x more energy per kg than today's lithium-ion batteries. Imagine an electrically powered aircraft fed by cheap and widely available liquid sodium metal and emitting sodium oxide, which absorbs CO2 from the air, and sodium carbonate. That output, if it reached the ocean, would help reduce water acidity caused by greenhouse gases.

Though these advancements are inspirational, STRIX is focused on what is practical now. Project proposals must demonstrate real world application and pass strict criteria ensuring funding is applied to realizable technology deployment.

STRIX and INSAT: Catalysts for Canadian Leadership

STRIX and its flagship program, **INSAT**, were launched with a substantial $350 million investment from the **Ministry of Innovation, Science and Industry** in 2023, to serve as a pan-Canadian, industry-led network. Its **mission** is to coordinate and accelerate the development of sustainable aviation technologies, foster cross-industry collaboration and drive innovation within Canada's aerospace sector. With the multiplier effect, as projects are funded up to 33% of their costs, the total benefit to Canada is a targeted $890 million of combined public and private investment.

INSAT's strategic focus is structured around four key pillars:

- **Hybrid and Alternative Propulsion:** Advancing green propulsion technologies, including electric powertrains, battery systems, hydrogen fuel cells, and new thermal cycles.
- **Aircraft Architecture and Systems Integration:** Improving aircraft efficiency through innovations such as aerodynamic shapes, lightweight materials, Artificial Intelligence (AI)-powered flight control systems, and onboard smart microgrids.
- **Transition to Alternative Fuels:** Supporting technologies for the widespread adoption and certification of alternative aviation fuels, including high-ratio Sustainable Aviation Fuel (SAF) that blends, hydrogen combustion technologies, and onboard cryogenic storage.
- **Aircraft Support Infrastructure & Operations:** Developing airport-level technologies for hydrogen infrastructure, digital twins (virtual replica of a physical object, process or system), and advanced manufacturing processes.

STRIX, through the INSAT initiative, plays a vital role in creating a vibrant ecosystem that supports businesses of all sizes across the Canadian supply chain. The program mandates that all supported projects must be collaborative and include at least one small or medium-sized enterprise to ensure broad involvement and talent development across the country.

Technological Leaps for a Lighter Footprint

The path to sustainable aviation is paved with groundbreaking technological advancements across several fronts:

- **More Fuel-Efficient Aircraft:** Continuous innovation in aircraft design and aerodynamics leads to more streamlined planes requiring less fuel for the same performance. Lightweight materials, advanced engine designs, and optimized flight paths contribute significantly to reducing fuel consumption and, consequently, emissions.
- **The Rise of Biofuels:** SAF represents one of the most promising immediate solutions for decarbonizing aviation. Produced from renewable sources such as agricultural waste, forest residues, and even industrial CO2 emissions, SAF can reduce carbon emissions by up to 80% over its lifecycle compared to conventional jet fuel. The increased adoption and production of high-ratio blends of SAF are crucial for the industry's green transition.
- **Alternative Methods of Propulsion, Electric and Hydrogen:** Looking further into the future, electric and hydrogen propulsion systems hold the potential for truly zero-emission flight.
  - » **Electric Propulsion:** While primarily suited for smaller aircraft and shorter regional flights currently, advancements in battery technology and electric powertrains are rapidly expanding their capabilities.
  - » **Hydrogen Propulsion:** Hydrogen, as a fuel, offers the promise of zero carbon emissions at the point of combustion. Technologies supporting hydrogen fuel cells, hydrogen combustion in engines, and onboard cryogenic storage systems are being developed to facilitate its widespread adoption for larger aircraft and longer distances. This also necessitates the development of airport-level infrastructure for hydrogen distribution, storage, handling, and refueling.

STRIX Funding in Action: Strengthening Canadian Aerospace

STRIX's funding through INSAT is already making a tangible impact, fostering innovation and strengthening the Canadian aerospace industry through concrete projects. The new wave of funded projects can be found on the strix.aero website and an assortment of in-stream projects are listed below. These projects involve well-known aerospace players as well as many lesser-known entities. The projects intentionally engage new players in the industry and educational institutions which are fostering the ongoing growth of the Canadian talent pool.

- **Hydrogen Combustion and Production: Pratt & Whitney Canada** is demonstrating hydrogen combustion technology on a regional turboprop engine. This project is significantly bolstered by the involvement of **Next Hydrogen Solutions Inc.**, which is developing the high-efficiency, low-cost electrolyzers essential for establishing a robust hydrogen production infrastructure. This collaboration directly advances zero-carbon emission aviation and builds Canadian expertise in this critical area.
- **Electric Aviation Pioneers:** Harbour Air, a seaplane airline, is leading the electrification of the **DHC-2 Mk. I Beaver** aircraft. This pioneering effort is supported by **Elevate Aviation**, which is helping to identify knowledge gaps between electric and traditional aviation and establish a learning centre in Vancouver, BC. This initiative is not only developing cutting-edge electric aviation technology but also nurturing the next generation of professionals vital for this evolving field.
- **Next-Generation Propulsion Systems: Duxion** is receiving support to enhance its 250kW eJet motor, preparing it for its first flight. This project focuses on improving system redundancy, reducing weight, and expanding altitude capabilities, contributing to the development of highly efficient and reliable electric propulsion systems.
- **Sustainable Aviation Fuel Production:** Significant investments are being made to establish Canada as a leader in SAF production:
  - » **Project Avance:** A joint venture between **Bioenergie AECN** and **Alder Renewables** in Port Cartier, Quebec, is converting wood residuals from sawmills into a low-carbon intermediate "biocrude." This biocrude will then be refined into SAF, with future projects in Quebec forecasted to produce 10 million gallons of unblended SAF annually. This initiative leverages Canada's natural resources and creates new revenue streams for the forestry industry.
  - » **Dimensional Energy:** This power-to-liquid technology provider is scoping the scaled development of a pioneering carbon utilization project. With **Boeing**'s investment, **Dimensional Energy** aims to convert industrial CO2 emissions into synthetic aviation fuel. This study supports future projects across North America, with the potential to convert 500,000 tonnes of CO2 emissions into over 40 million gallons of SAF annually, showcasing a circular economy approach to fuel production.
- **Understanding and Mitigating Non-CO2 Emissions: Airbus**, in collaboration with major Canadian aerospace academic and research organizations (potentially involving INSAT and CRIAQ), has launched a project to measure non-CO2 emissions from different jet fuels, including 100% SAF. This crucial research will provide scientific data to improve contrail models and identify engine technologies and fuels that can minimize the climate impact from contrails, further solidifying Canada's role in comprehensive aviation sustainability research.

These projects exemplify how STRIX, through the INSAT program, is not only accelerating the green transformation of Canada's aerospace industry but also generating high-value jobs, strengthening supply chains, and positioning Canada as a global leader in sustainable aviation technology. By fostering a collaborative environment, leveraging strategic investments, and supporting practical groundbreaking research and development, Canada is truly charting a course for a greener and more sustainable future in the skies.

Michael Monette, P.Eng., MBA, Independent Board Member STRIX

Sustaining Healthy Environments: A Long-Term Commitment to Indoor Air Quality

Rob Castor

Indoor Air Quality (IAQ) is a crucial but often overlooked aspect of facility management. IAQ can have effects on the health and safety of everyone in the building, and is important for conforming with regulatory standards. A comprehensive IAQ strategy involves everything from HVAC system design and high-efficiency filtration to proactive control at any source of potential air contamination.

Modern facility management demands an adaptable, long-term plan to address IAQ challenges. This article explores the importance of building a complete IAQ strategy, with a focus on tools and methods that help control contaminants during construction and restoration work, ensuring long-term air quality maintenance for healthier, safer indoor environments.

Building a Complete Indoor Air Quality Strategy

A successful IAQ strategy begins with assessing and maintaining **Heating, Ventilation, and Air Conditioning (HVAC)** systems, ensuring proper ventilation, filtration, filter changes, and air exchange. Humidity control is equally significant, preventing mould growth and material degradation. Ongoing monitoring helps to identify and address IAQ issues early, allowing for swift corrective action.

Source control is as important as the HVAC system to maintaining healthy indoor air. During construction,

renovation, and restoration work, controlling contaminants becomes especially challenging as these activities can disturb and introduce pollutants. These hazards can spread quickly once airborne and pose significant health risks, making it critical to control their reach.

Understanding the IAQ Challenges of Construction and Restoration

Traditional construction containment methods do not always meet modern control requirements. Materials like plastic sheeting or drywall often fail to fully isolate contaminants. They can also release their own airborne particulates during setup and may not support consistent negative air pressure, which is often a requirement for construction zones in healthcare and other regulated environments. Failure to contain airborne hazards can endanger occupant health and risks non-compliance with local, provincial, and federal guidelines.

Sustaining high levels of IAQ in occupied buildings such as hospitals, airports, malls, schools, and offices is paramount during renovation and construction. Demolition, sanding, and painting can introduce airborne hazards like dust, mould spores, **Volatile Organic Compounds (VOCs)**, and other particulate matter. These contaminants pose serious health risks—from respiratory issues to long-term illness—and can easily spread beyond the work zone through HVAC systems or improperly sealed barriers. Identifying and using the proper tools to mitigate their effects is key to a complete IAQ strategy.

Tools for Supporting IAQ During Construction and Restoration

Facilities need effective, adaptable tools that go beyond traditional methods of particulate containment to meet modern IAQ standards. These tools should support a targeted approach to addressing contaminants directly at their source.

- **Mobile Containment Carts:** These carts limit the release of airborne contaminants ensuring work in sensitive environments doesn't compromise air quality. Mobile containment carts offer localized, sealed environments for ceiling access and maintenance work directly at the source. They limit the release of airborne contaminants. Certain models can be paired with additional equipment to maintain negative pressure within the cart, keeping particulates contained. This makes them particularly useful in environments such as hospitals, data centers, and cleanrooms.
- **Temporary Modular Wall Systems:** These versatile wall systems provide reliable containment of dust and debris for larger work areas. They help maintain a controlled, healthy indoor environment in high-traffic or sensitive spaces and reduce the risk of cross-contamination. They can be installed and removed quickly, reused across job phases and for subsequent jobs, and configured to meet safety and infection control requirements. Some modular wall systems are compatible with **High Efficiency Particulate Air (HEPA)** filtration and negative air machines, creating safe work areas in both high-traffic and sensitive environments.
- **Negative Air Machines (NAM):** Critical for maintaining negative pressure in enclosed work zones and ensuring contaminants stay contained and filtered before being safely exhausted, NAM help prevent the spread of pollutants to other parts of the facility. They draw air through HEPA filters and out of the enclosed space, creating a pressure differential where the air pressure is lower than outside. This is essential in hospitals and any facility where contaminants cannot be allowed to spread.
- **Portable Air Scrubbers (PAS):** PAS help remove particulates from the air through a series of filters. The decontaminated air is released back into the space or outside of the containment area. Their portability offers flexibility of use at multiple stages of construction or restoration while ensuring air quality remains safe and breathable in occupied spaces.
- **Dehumidifiers:** Dehumidifiers are essential for controlling moisture levels after water damage or during humid conditions. They help prevent mould, mildew, and bacterial growth, while speeding up drying times to maintain both air quality and building integrity while supporting the effectiveness of other IAQ equipment (such as PAS).

Creating a Strategy to Protect Indoor Air Quality

The best time to develop a sustainable, long-term IAQ strategy is before any issues arise. Proactive planning allows facility managers to anticipate potential IAQ risks and take necessary precautions, ensuring streamlined responses and better outcomes.

An effective IAQ strategy does not stop when construction is finished. After any major construction

project or restoration, facilities should reassess their HVAC systems. This includes reviewing both the system and filter status and documenting any changes. Regular IAQ testing and filter replacements can then resume as part of ongoing system and facility maintenance.

Maintaining Cleaner Indoor Air is a Commitment

Maintaining healthy indoor air quality is not a one-time task but a commitment requiring long-term planning and attention. The key to sustaining high IAQ is a comprehensive strategy that continuously addresses everything from HVAC system maintenance and filtration to controlling contaminants at their source. With ongoing system monitoring, regular maintenance, and swift intervention when necessary, building owners can create environments that remain resilient, adaptable, and conducive to long-term health.

For more information on these topics, you can reference the **Ontario Society of Professional Engineers (OSPE)**'s research and guidance reports on filtration, ventilation, and humidity.

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Rob Castor, Director of Sales, ATL Filtration by Abatement Technologies

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Helping Municipalities Build Flood-Resilient Communities

Municipalities looking to build flood-resilient communities and reduce costs related to property and infrastructure damage can benefit from **the Municipal How-to Guide for CSA Community Water Standards**. This step-by-step resource helps urban planners, managers, and municipal officials by providing descriptions of CSA water-related standards. The guide also includes examples of wording that municipalities can adopt for their bylaws and policy documents. **Download the guide.**

A Framework for Conducting Coastal Flood Hazard and Risk Assessments

The National Standard of Canada, CSA W224:24, provides guidance for conducting coastal flood hazard and risk assessments to help inform community planning, design, and retrofitting measures and protect lives, property, and the environment. These assessments are intended to inform the design of new buildings and infrastructure, and retrofitting measures for existing buildings and infrastructure. **Read more about CSA W224:24.**

Helping Manage Growing Stormwater Systems Service Demands Across Canada

With increased urbanization and more extreme weather, service demands on stormwater systems across the countryare growing. The National Standard of Canada, CSA W211:21, a new standard CSA W211:21 introduces a holisticapproach to managing critical water infrastructure. Any municipality can use this National Standard of Canada to helpimprove the climate change resiliency of their communities by implementing proactive and preventative strategiesbeyond just physical infrastructure. **Get view access to CSA W211:21.**

New Standards Can Help Protect Communities from Flooding

Did you know that over 1.5 million homes across Canada are located in areas of high flood risk? Over the last decade, flooding has become the costliest extreme weather disaster affecting Canadians. CSA Group has facilitated several research studies, guidance documents, and standards to help improve the resiliency of property and infrastructure to flooding. **Learn more about Standards for flood mitigation and resiliency in communities.**

Engineering for Environmental Equity: Understanding Urban Air Pollution Disparities

Equity, Diversity, Inclusion, and Accessibility Task Force

Poor air quality increasingly affects Ontario residents, but its impacts are not felt equally across communities in the province. Research shows that marginalized communities in Toronto face higher cumulative exposure to air pollution compared to other cities.

At the same time, certain segments of the population, such as infants and children, pregnant people, seniors, and individuals with pre-existing respiratory conditions, are especially vulnerable to the effects of poor air quality. Long-term exposure has been directly linked to lung disease, heart disease, and diabetes, making the health risks even more severe for those already at risk.

This reality underscores the need for stronger protections for the most vulnerable in our cities. For engineers, it also points to a deeper challenge: addressing environmental equity.

Environmental equity refers to the fair distribution of environmental benefits and burdens across all communities, regardless of race, income, ethnicity, or socioeconomic status. It means that:

- No group bears a disproportionate share of negative environmental consequences (such as pollution, hazardous waste, or climate change impacts).
- Everyone has equal access to a healthy environment, including clean air, water, green

spaces, and protection from environmental hazards.

- All communities have meaningful involvement in environmental decision-making processes that affect their health and surroundings.

Environmental equity is a key principle of environmental justice, which seeks to address and correct historical and systemic environmental inequalities.
Where we build roads, zone industry, and how we design infrastructure can disproportionately affect vulnerable communities. Environmental equity must become a core consideration in engineering practice.

Disproportionate Exposure

Demographic data shows that the highest proportion of racialized residents in Toronto live in the inner suburbs. Toronto's inner suburbs also have the highest concentrations of traffic-related air pollutants (e.g. NO2, PM2.5), O3 (which is photochemically produced downwind of precursor emissions), and SO2 (due to industrial zoning).

Poor air quality has the worst impact on low-income groups. Those who are socio-economically disadvantaged often have high exposures to air pollution and low capacity to protect themselves from those risks.

Additionally, vulnerable residents may live in lower-quality or poorly maintained housing that allows outdoor pollution to seep indoors. This problem especially impacts renters and newcomers, who may move frequently and lack control over their living conditions.

Three Ways Engineers Can Respond

Engineers play a crucial role in creating healthier, more equitable environments. Air pollution and its uneven distribution are design and planning issues. Here's how engineers can take meaningful action:

1. Design with Equity in Mind

Infrastructure decisions can reinforce or reduce exposure to air pollution. Engineers must evaluate how these choices affect different communities, particularly those already at risk.

Key Actions:

- Conduct equity-focused environmental assessments before new transportation, industrial, or housing projects. These should include mapping how pollution exposure overlaps with demographics such as income, race, or housing tenure.
- Design pollution buffers like green corridors, sound barriers, or setback zones to protect residents living near high-emission areas like highways or industrial zones.
- Prioritize upgrades in vulnerable zones. Focus capital improvement and infrastructure renewal projects in areas facing high pollution levels.

Example: A transit expansion incorporates low-emission vehicles and community input to avoid creating additional pollution in already burdened neighborhoods.

2. Leverage Data for Action

Data can be used to inform decisions and improve outcomes. Engineers can champion the use of environmental and health data to guide infrastructure planning, retrofit strategies, and building design.

Key Actions:

- Utilize tools such as HealthyPlan.City to better understand equity considerations in project areas. (HealthyPlan.City is a publicly accessible web application that incorporates built environment datasets with demographic data to present a picture of environmental equity in cities across Canada).
- Install localized air quality sensors in neighbourhoods. Use real-time data to guide public warnings, infrastructure investment, and targeted mitigation efforts.
- Use air quality data to measure the impact of new filtration and ventilation systems in public buildings and housing developments. Incorporate these upgrades into standard retrofits and new buildings.
- Use data on pollutant exposure to guide the planning of green urban spaces that absorb pollutants and improve outdoor air quality in underserved communities.

Example: A school located near a busy traffic corridor receives upgraded HVAC systems with HEPA filtration, roadside tree plantings, and indoor air quality monitors.

3. Advocate for Policy Alignment

Engineers are influential voices in bridging the gap between technical expertise and public health policy. As trusted professionals, they can help shape policies that embed environmental equity into the design and regulation of the built environment.

Key Actions:

- Participate in local policy and planning consultations, ensuring engineering decisions reflect an understanding of health, environmental justice, and community needs.
- Support changes to building codes and standards that require air filtration, proper ventilation, and resilience to outdoor pollutants in multi-unit and affordable housing.
- Collaborate with public health professionals, urban planners, and community leaders to create cross-sector solutions that address both the symptoms and root causes of air quality disparities.

Example: Work with public health departments to update municipal standards, so all new affordable housing projects are built to high indoor air quality standards, especially in pollution-exposed areas.

Moving Forward

To more fully understand inequities in air pollution burdens, it is critical to capture what people breathe where they live, work, learn, and play. In addition, it is important to understand how different experiences intersect (e.g. race, age, ability, immigration status, household composition, socio-economic status) to drive the observed disparities.

Pollution isn't evenly shared across our cities, and neither are its consequences. Place-based, community-engaged approaches will ensure analytical choices reflect the priorities and perspectives of marginalized communities. Engineers have the responsibility and opportunity to design and lead solutions that protect the population, especially those most at risk.

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Explore equity in your city. HealthyPlan. (n.d.). https://healthyplan.city/en

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Breathe Easy: Why Engineers Must Take Indoor Air Quality Seriously

The air we breathe indoors is often taken for granted, yet it influences our health, safety, productivity, and even the sustainability of our buildings. From offices and classrooms to hospitals and homes, **Indoor Air Quality (IAQ)** matters everywhere people live and work. This article explores why engineers need to take IAQ seriously.

Health and Safety

Skin, eye, throat, nose, and general respiratory irritation are commonly reported issues resulting from poor indoor air quality. However, more severe health effects have also been reported, like neurotoxicity, reproductive and development effects, and internal lesions. These potential health risks extend well beyond minor discomforts.

Further, it's important to remember that inadequate ventilation can significantly increase the risk of airborne disease transmission. For example, COVID-19 is primarily transmitted when airborne particles containing the virus are emitted by one person and inhaled by another. That's why during the COVID-19 pandemic, poorly ventilated indoor spaces were identified as high-risk environments for airborne disease transmission.

As we also saw during the COVID-19 pandemic, the dangers are especially pronounced for vulnerable populations. Inadequate ventilation can worsen existing conditions in immuno-compromised older adults and create environments where mold and other airborne pathogens thrive. Ensuring proper indoor air quality is therefore essential for protecting both general and high-risk populations alike.

Cognition and Productivity

A correlation between poor IAQ and negative health outcomes like cognitive, and performance effects have

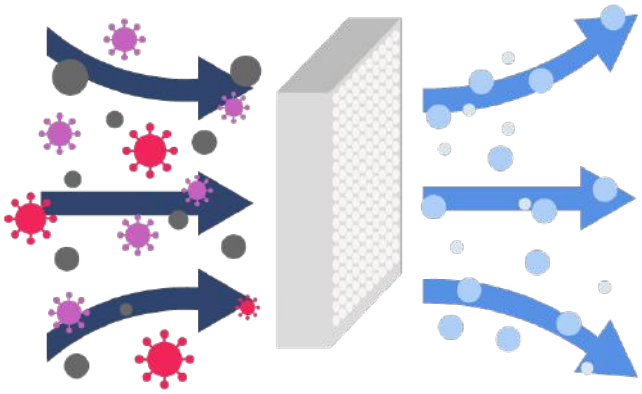
also long been observed. Cognitive impacts show slower response times and less accurate scores on cognitive tests based on level of exposure to **Particulate Matter (PM)** and **Carbon Dioxide (CO_2)**.

These findings connect IAQ not only to individual health, but also to broader social and economic outcomes. When poor air quality diminishes focus, learning, and decision-making, it affects everything from student performance in classrooms to worker productivity in offices. For organizations, the implications translate into lost efficiency, higher health costs, and reduced overall well-being.

Sustainability and Energy Efficiency

Poorly designed or unmanaged ventilation systems can waste energy, while strategic CO_2 monitoring allows engineers to optimize air exchange—avoiding both over-ventilation and under-ventilation.

Over-ventilating wastes energy, driving up operational costs and increasing carbon emissions, while under-ventilating can compromise occupant health and comfort. By using CO_2 monitoring strategically, engineers can strike the right balance, ensuring adequate fresh air, protecting occupants, and reducing energy waste.



Engineering Tools and Best Practices

Carbon dioxide is an indicator of ventilation effectiveness. Humans exhale CO_2 continuously and in poorly ventilated spaces concentrations can rise quickly. Indoor CO_2 levels above 1000 parts per million (ppm) may suggest inadequate ventilation. For sensitive environments like schools or childcare centres, experts recommend indoor CO_2 levels remain within 600 ppm of outdoor concentrations.

To help engineers and facility managers assess ventilation needs, the **Ontario Society of Professional Engineers (OSPE)** has developed a CO_2 Calculator based on the **American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)** 62.1 and the **Canadian Standards Association (CSA)** data.

The **OSPE Air Quality Calculator** calculates appropriate CO_2 levels for a given space based on use, occupancy, and recommended outdoor airflows.

To properly collect CO_2 data OSPE recommends:

- Positioning sensors in the “breathing zone” (1.3–1.5 meters above the floor).
- Avoiding areas near windows, doors and HVAC supply vents.
- Avoiding putting sensors too close to individuals or combustion sources.
- Calibrating sensors annually.
- Displaying readings visibly and notifying target CO_2 levels and what to do when the targets are not met.
- Tracking CO_2 trends over time rather than relying on single measurements.

Modern HVAC systems commonly include **Demand-Controlled Ventilation (DCV)**, which adjusts airflow based on occupancy and CO_2 readings. Carrying out this kind of measurement and analyzing the data requires skill and experience, which may put it outside the capability or scope of practice of typical building users.

This is where engineers step in. Whether designing new systems or retrofitting existing infrastructure, engineers must prioritize ventilation and filtration. Moreover, engineers should work collaboratively with health and safety officers, building managers, and policymakers to establish and meet IAQ standards.

Engineers must lead the way in defining and implementing IAQ best practices. Through research, monitoring, education, and advocacy, we can create healthier indoor environments for everyone. OSPE is proud to support the profession with tools like the Air Quality Calculator and resources like OSPE’s published reports on special topics in indoor air quality.

Image: (1248336166/Shutterstock.com)

Quantifying HVAC Sustainability: Building a CO_2e Emissions Calculator

Macey Clandfield, Blade Air

Introduction

In the world of engineering, new ways to optimize performance and quantify the impact of solutions are continuously being sought out. With the rising concerns of air pollution and **Greenhouse Gas (GHG)** emissions on a global scale, innovative sustainability initiatives are becoming more prevalent.

The buildings and infrastructure we live and work in, often referred to as the built environment, represent one of the most significant fronts in addressing climate change. Buildings account for approximately **40%** of global energy consumption (Whitney et al., 2020), making them one of the largest contributors to greenhouse gas emissions.

Although HVAC systems have long been optimized for thermal comfort and air quality, they also represent a major opportunity for emissions reduction in terms of how we think about filtration.

That's why, at Blade Air, we began asking the question; how can we quantify the sustainability impact of our filters to generate valuable data for stakeholders?

Searching for an answer to this open-ended inquiry, I began the development of a CO_2e Calculator.

Background

One truth that often goes overlooked is that filters are the single largest choke point in an HVAC system. Upgrading a fan or motor in the system without upgrading the filter is like improving water pressure without unclogging

the pipe; the system will continue to run below optimal efficiency.

While standards such as **ASHRAE 52.2** and **ISO 16890** provide excellent frameworks for evaluating filtration performance in terms of pressure drop, dust loading, and particulate capture, there are currently no standards or methodologies to quantify the carbon impact of a given filter over its lifetime.

What Is CO_2e and Why Does It Matter?

CO_2e, or carbon dioxide equivalent, is the standard metric used to measure the climate impact of all greenhouse gases in terms of the **Global Warming Potential (GWP)** of carbon dioxide. It accounts for gases such as methane (28x more potent than CO_2) and nitrous oxide (273x more potent), by converting their effect into the amount of CO_2 that would have an equivalent global warming effect. Using the CO_2e metric allows for comparison of dissimilar emissions on a level playing field (Carbon Dioxide Equivalent (CO2e), n.d.).

The decision to use CO_2e as the foundational metric was rooted in 3 key factors:

1. **Standardized Metric:** CO2e emissions allow for a consistent comparison of emissions regardless of the gas involved which simplifies complex data.
2. **Actionable Insight:** Provides insight to identify the highest contributing sources of emissions allowing for effective prioritization of reduction efforts.
3. **Alignment with Global Standards and Climate Goals:** CO_2e is widely used in international frameworks such as the **Paris Agreement**, carbon footprint analyses, and sustainability reporting. Using CO_2e enables tracking progress toward net-zero or emission reduction targets.

By building out formulae and an established process to calculate CO_2e emissions, we can effectively quantify and communicate how exactly upgrading a filter contributes to sustainability initiatives.

Translating Filter Upgrades into Emission Reductions

At its core, CO_2e is calculated using a simple formula:

CO_2e Emissions = Activity × Emission Factor

- Activity: A measurable amount of activity that generates emissions, such as energy use, material use, or transportation.
- Emission Factor: The associated carbon intensity of that activity, typically pulled from standardized databases such as **The Environmental Protection Agency (EPA)** or **Natural Resources Canada (NRC)**.

When developing the model, 3 main areas or activities resulting in CO2e savings were considered.

The GHG Protocol's Scope 1–3 framework (US EPA, 2020) categorizes emissions as:

- Scope 1: Direct emissions from owned operations.
- Scope 2: Indirect emissions from purchased energy.
- Scope 3: Indirect emissions from supply chain and product lifecycle.

The associated GHG Emission Scope was identified to further help stakeholders understand how something as simple as a filter changeout can tackle holistic sustainability.

1. **Energy Consumption (Scope 2):** Considers the reduction in Electricity Usage due to the lower pressure drop across filters.
2. **Logistics (Scope 3):** Considers the increase of Waste Diversion due to increased filter lifespan and a reusable filter frame. Only the filter media is changed during maintenance.
3. **Operations (Scope 3):** Considers the reduced Shipping Frequency due to the increased filter lifespan and decreased annual replacements.

External unit of commercial air conditioning and ventilation system installed on industrial building roof.

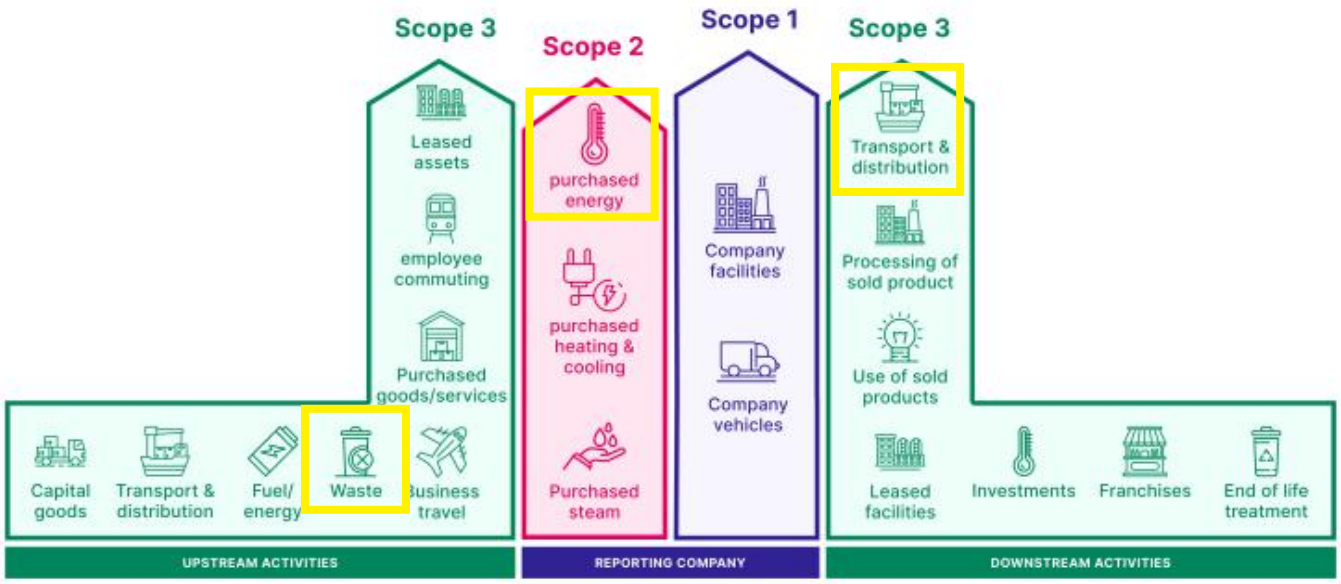


Figure 1: Overview of GHG Emission Scopes (Admin, 2023)

Why This Matters: Regulatory, Social, Economic, and Environmental Drivers

- **Regulatory:** As building codes evolve to include carbon performance targets and reporting requirements tied to GHG emission scopes, tools like this calculator provide the evidence base for informed compliance and accountability.
- **Social:** Stakeholders, including students, patients, and employees, are increasingly aware of indoor air quality and climate accountability. Demonstrating sustainability in HVAC operations builds trust and legitimacy.
- **Economic:** Reduced energy consumption and lower filter turnover translate into operational savings, and potentially eligibility for green incentives, grants, or LEED credits.
- **Environmental:** HVAC systems drive energy use and emissions, optimizing performance helps reduce a building's overall carbon footprint and supports cleaner, more sustainable operations.

Conclusion: Quantifying What We Already Know

The development of CO2e calculators allows for the turning of assumptions into data, and from data into impact. By connecting filtration performance with sustainability initiatives, this tool supports more informed, responsible decisions, without compromising indoor air quality or system efficiency.

In a world where carbon literacy is becoming essential to engineering design, this is one more way we can ensure every component in a system, even something as simple as a filter, is contributing to the larger carbon conversation.

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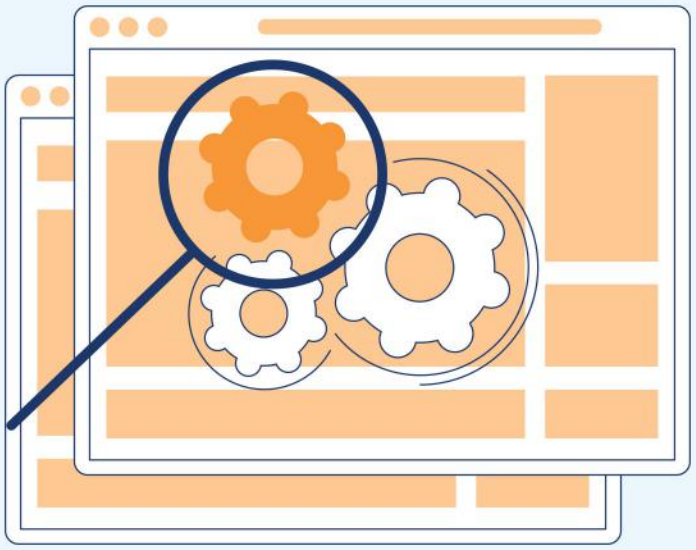

Article Length: 800-1500 words

Anything longer probably is best published as a white paper (although an executive summary could be in the magazine to promote it).

Subject Matter: Something Newsworthy

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Collective Action Needed to Adapt Ontario's Infrastructure to a Changing Climate

Kadra Branker, P.Eng. and Kenzie Lewis, P.Eng.

Abstract

Rising greenhouse gas emissions and extreme weather are revealing critical vulnerabilities in Ontario's infrastructure. Building on recent discussions in **The Voice Magazine** and findings from the **Ontario Society of Professional Engineers (OSPE) Climate Crisis Task Force**, this article emphasizes the role of engineers in advancing climate resilience and preparing communities for the challenges of our changing climate.

Introduction

As greenhouse gas emissions continue to rise at an alarming pace, the changing climate has begun to challenge the resilience of the infrastructure we rely on every day. The unprecedented impacts are already evident in Ontario, ranging from record-breaking spring floods along the Ottawa and Grand Rivers to prolonged heatwaves reaching a humidex of 45 degrees Celcius, straining the provincial power grid and contributing to severe wildfires. These wildfires have forced evacuations in northern communities, and contributed to poor outdoor air quality, triggering weather alerts in cities across the province.

These disruptions not only threaten public health, public safety and economic stability, but also expose the vulnerability of existing roads, bridges, energy systems, HVAC systems, and water management facilities to

increasingly volatile weather patterns.

In this evolving landscape, investing in climate resilient infrastructure is no longer an option but a necessity to ensure that Ontario's communities can withstand and adapt to the challenges posed by a rapidly changing climate.

Building on the discussions of the fire and water related engineering challenges featured in the past two issues of The Voice Magazine, this article focuses on the broader need for the engineering community to continue to develop and apply competencies to integrate climate resilience and adaptation into infrastructure design and maintenance.

Growing Interest and Evolving Landscape

Recent history solidifies the growing interest from regulators and governments in developing and maintaining climate resilient and adapted infrastructure.

In terms of national efforts, Canada's 2023 National Adaptation Strategy was created to outline ambitious targets for increasing climate resilience and emphasize the urgent need to shift from planning to implementation when it comes to infrastructure.

Additonally, **Engineers Canada** has set out guidelines for engineers to adapt infrastructure to the realities of the changing climate. With the support of the government and others, they created the **Public Infrastructure Engineering Vulnerability Committee (PIEVC)**, which created the PIEVC Engineering Protocol to introduce a consistent approach to conducting climate risk assessments.

Furthermore, the **Infrastructure Resilience Professional (IRP)** designation equips engineers with tools and training for climate-resilient design. Although awareness of the PIEVC tool remains limited, efforts are underway to update and expand its use globally, especially after the ownership was transferred to an international collaborative partnership. National progress in other sectors can be seen, such as the **Task Force on Climate-Related Financial Disclosures (TCFD)**, which produced recommendations for managing both physical and transition climate risks for business continuity.

In terms of provincial measures, the Ontario government also released its first Provincial Climate Change Impact Assessment in 2023, which evaluates sectoral risks using the PIEVC Protocol. This has led to initiatives such as enhanced flood hazard mapping and climate risk assessments for major infrastructure projects. Agencies across the province are working to integrate climate resilience into planning and operations, including Emergency Management Ontario, Infrastructure Ontario, and the Ministry of the Environment.

Amid these developments, there is growing interest in ensuring Ontario's engineers are adequately prepared to support the province's climate adaptation goals.

However, **Professional Engineers Ontario (PEO)** refers engineers to Engineers Canada's national guideline on climate change adaptation and mitigation rather than releasing its own guideline or action plan around climate resilience, as was done by Engineers and Geoscientists BC which even houses a climate information portal.

OSPE has also recognized the importance of climate resilience in engineering. The OSPE Climate Crisis Task Force completed a desktop review on available guidance for engineers to support climate resilient infrastructure design in Ontario, aimed at identifying strengths and gaps related to the efficacy of existing resources and guidelines.

A Concerning Pattern for Ontario

The growing interest in climate resilience is promising, but our review identified several gaps that point toward a trend of inactivity, rather than leadership, when it comes to sharing climate resilient infrastructure resources and progress within Ontario. These gaps include a lack of Ontario specific guidelines and standardization, a lack of educational forums and events for sharing best practices, and a lack of transparency about adaptation strategies and progress.

Ontario lacks a coordinated, province-wide framework to guide engineers in creating climate resilient infrastructure. While the province provided some climate adaptation support as part of the 2023 ORCCA Staff Capacity Program, the funding is temporary and falls short of more comprehensive support programs in other jurisdictions. Additionally, the responsibility to invest in climate data for risk assessments falls to individual organizations rather than a central agency. **Ontario's Provincial Climate Change Impact Assessment** includes adaptation recommendations, but it remains unclear as to how or when these will be translated into standardized policy.

A lack of regulatory clarity from engineering bodies, like PEO, on how climate risks must be incorporated into infrastructure leaves engineers without consistent expectations or resources.

Existing resources and best practices used to be shared through events like the **Ontario Climate Consortium**

Symposiums, which brought experts across sectors together to foster discussion and share lessons. However, the last event was held in 2019, and local events to discuss similar topics remain limited in scope and frequency. Ontario risks falling behind on innovation and collaboration in climate adaptation without these platforms for facilitating collaboration across organizations and sectors.

The last notable gap concerns transparency around progress tracking and public reporting for adaptation plans. In several cases, timelines for implementation have been vague and progress reports for strategies may only be available upon request, such as the **Ministry of Natural Resources and Forestry's Climate Adaptation Plan**.

Ontario's slow progress is evident in federal reporting as well, with little action shown compared to other provinces. Furthermore, many reports focus primarily on broad successes without acknowledging missteps or the financial impacts of certain adaptation decisions.

Greater transparency, including the publication of both achievements and setbacks, would help foster accountability and enable others to build on critical lessons from real case studies within the province.

These gaps have been caused by a variety of structural and systemic barriers, financial and resource constraints, data and technology limitations, and cultural and organizational resistance. Closing these gaps will require commitment from the government, organizations, and individual engineers alike.

Where Do We Go from Here?

To address the concerning trends in Ontario, and ensure that engineers understand their responsibilities for climate resilient infrastructure, the following are some recommended actions:

- PEO should take an active role in integrating climate resilience considerations in engineering guidance and continuous learning requirements (e.g. The PEAK program can be leveraged to draw more attention to practice guidelines). This should include following the example of **Engineers and Geoscientists BC (EGBC)** to create its own Ontario action plan to ensure awareness and clarity around professional obligations, accountability, and guidance for building climate resilient infrastructure. PEO can also focus on creating Ontario specific guidance, similar to the **Ontario Professional Planner Institute** with their Climate Change Adaptation Practice Guide.

- Government should ensure infrastructure procurements include a requirement for climate-informed design. There is an opportunity for the government to implement cost-effective completion of climate risk assessments (e.g. joint procurement, combined with environmental assessments, etc.) for areas that could service multiple projects.
- Government and government agencies at all levels responsible for critical infrastructure should have transparent resilient infrastructure action plans that are reported on regularly, so the public can stay aware of progress and hold organizations accountable.
- The government must make Ontario specific climate data available as a starting point for climate informed design. While BC and Quebec have enduring climate service providers (**Pacific Climate Impacts Consortium** and **Ouranos**) which support their province, Ontario does not. An enduring climate service organization would be essential to collect and share climate data, which should be made available to all government agencies and professionals.

How Can an Engineer Get Started?

While policy and regulation may not be consistently in place, engineers already have a duty and obligation to ensure their work appropriately addresses known risks to infrastructure. Engineers can start to develop a mindset to incorporate climate resilience and adaptation into their work by reflecting on the following guiding questions:

- Does my infrastructure project or initiative have an effective life that exceeds 20 years?
- If the effective life is greater than 20 years, do the design conditions consider the impacts of a changing climate over the intended effective life span? Do they reflect the best available climate data? (Consider climate risk assessments to assess the potential vulnerability of the asset or system; check the basis of codes and standards)
- If a climate risk assessment has been completed, what critical vulnerabilities need to be addressed?
- Have I considered a variety of solutions to address the potential climate induced risks, including management, policy, nature-based and technical solutions? Am I transparent about what risks and uncertainties remain?
- Is a concrete plan in place to incorporate climate adaptation and resiliency into all decisions surrounding my projects or initiatives?
- Is there a plan in place for the asset/system owner/ operator to regularly review and revisit infrastructure performance and make appropriate investments throughout its effective life?
- Is there transparent regular reporting in place to provide updates on climate adaptation and resiliency initiatives progress, with clear goals, targets and timelines?
- Have I stayed up to date on current training and resources related to climate resiliency and adaptation for my sector or infrastructure area?

Conclusion

Although interest in climate resilient infrastructure is growing in Ontario, challenges like the lack of clear and consistent guidelines and regulations are preventing the province from adequately addressing public concerns in our ever-changing world.

As engineers, we have a professional responsibility to ensure that our infrastructure is able to withstand and rebound from the challenges of tomorrow while meeting the constraints of today.

Consider joining us as we continue the conversation about what the engineering profession needs to do to develop climate adaptation competencies at the Engineering Conference on November 3-4, 2025.

Kadra Branker, P.Eng., Senior Advisor, Sustainability at the Independent Electricity System Operator (IESO), Climate Crisis Task Force Member

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Bridging Research and Practice: Collaborative Efforts in Advancing Stormwater Management in Ontario

Crozier Consulting Engineers

As Ontario's communities continue to grow, and climate-related pressures mount, the role of stormwater infrastructure is more important than ever, both for ensuring healthy watersheds for future generations and for the protection of life and property.

Two-thirds of the approximately 15,000 **Stormwater Management (SWM)** facilities in Canada were constructed within the last 35 years, under regulations based on limited research and data. The majority of these facilities were designed to meet the minimum regulatory requirements, but in the face of a changing climate, stormwater management solutions must adapt to address these evolving pressures. A group of researchers are undertaking various interdisciplinary studies on the function of existing stormwater management systems as they are presently operating, and asking:

> *How does the failure, or partial failure of stormwater management systems affect urban resilience, safety, and our ability to protect the environment and property?*
>
> *How can stormwater management best practices be tailored to meet the distinct and shifting environmental and climatic conditions of local communities?*

These questions are driving collaborative research projects as post-secondary researchers partner

This stormwater management wet pond near the Greater Toronto Area was one of many sample sites for stormwater management research.

with industry to better understand how stormwater management systems function over time, under real-world conditions, and how best to build resilience for future adaptations.

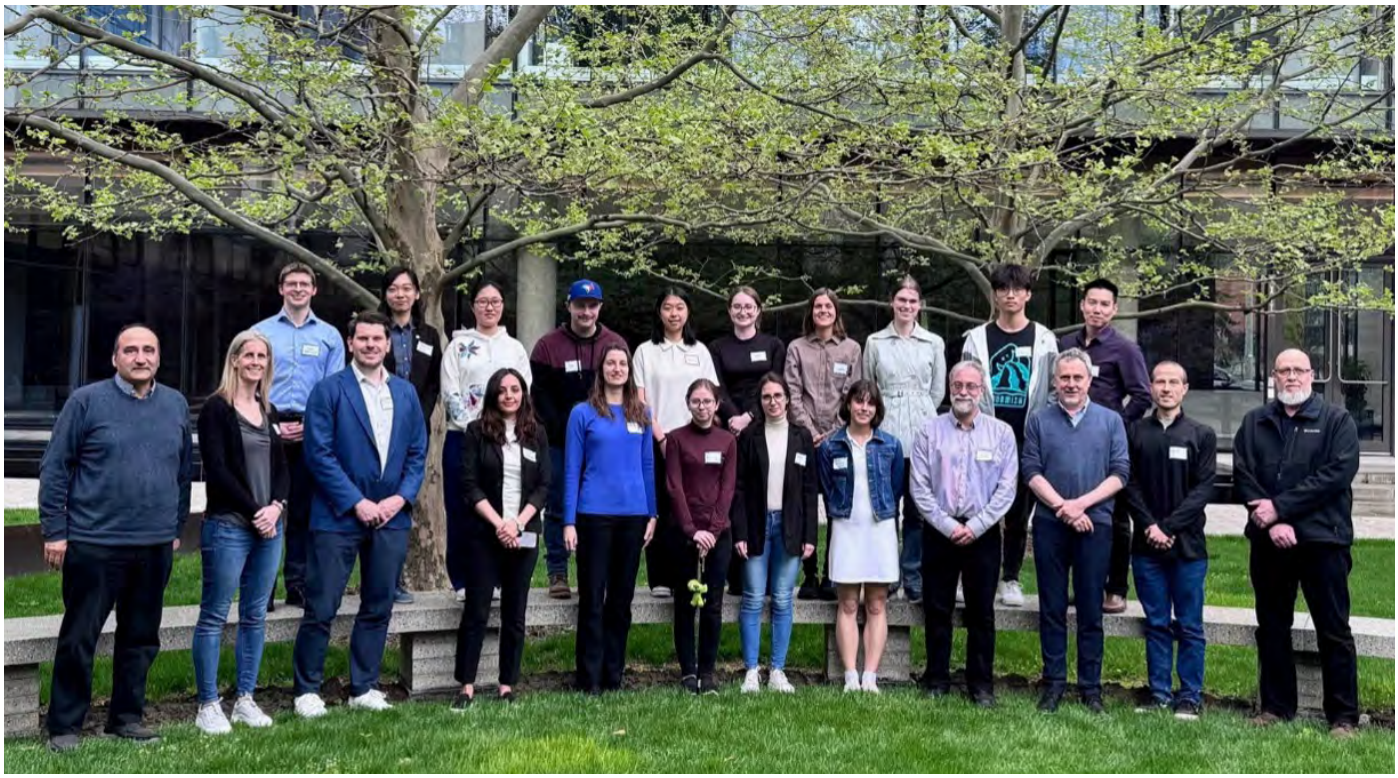
The study and practice of stormwater management is inherently interdisciplinary. While engineers typically lead the fundamental design and implementation of these systems, the underlying science, from nutrient cycling to greenhouse gas emissions, falls in the realm of biochemistry and environmental science.

Crozier Consulting Engineers continues a decade-long tradition of advancing the future of stormwater management through several research initiatives with leading faculty at the **University of Waterloo**, **University of Guelph**, **Western University**, and **Wilfrid Laurier University**. As an industry partner with a keen interest in future-proofing stormwater management implementations for our land development clients, our practising engineers actively advise the faculty research teams on many practical elements for consideration, including:

- Instrumentation and monitoring innovations
- Lab to field-scale research practices on Crozier-designed constructed facilities
- Site layout optimizations for quality and quantity
- Addressing the practical realities of stormwater management in Ontario

In this article, we'll be giving a a brief overview of some of the ongoing and recently completed research initiatives that are advancing the future of stormwater management in Ontario.

A research partner from Crozier collects water samples from a stormwater management facility outlet.



Partners from the University of Waterloo's Ecohydrology Research Group Greenhouse Gas Missions project, including Brendan Hummelen, P.Eng., of Crozier, gather for a team photo.

Adaptive Management of Green Stormwater Infrastructure to Reduce Greenhouse Gas Emissions from Urban Watersheds

In an ongoing climate resilience project led by the University of Waterloo's Ecohydrology Research Group, researchers are investigating the role that stormwater facilities and bioretention systems play in Greenhouse Gas (GHG) emissions. These stormwater facilities are common in new commercial, industrial and residential developments and have been proven to sequester carbon and reduce runoff nutrients such as phosphorus. However, the facilities are also significant emitters of carbon dioxide, methane, and nitrous oxide. To determine if stormwater management facilities and bioretention areas exacerbate or mitigate GHG emissions, the project evaluates their net effects at the watershed scale.

Led by **Dr. Philippe Van Cappellen**, the **Ecohydrology Research Group** is working with researchers and collaborators from the University of Waterloo, Wilfrid Laurier University, University of Guelph, University of Toronto, Crozier, **Toronto and Region Conservation Authority**, **Environment and Climate Change Canada**, **City of Kitchener**, **Muslim Families (Blue Dot Stewards)**, and the **Ontario Clean Water Agency**.

Crozier's ongoing role in this project involves active support with the design and selection of study sites - providing insight into how stormwater facilities and green infrastructure are typically constructed, maintained, monitored, and integrated into broader drainage networks. While the focus of the research is biochemical, understanding hydrology and the context of infrastructure design is essential to interpreting the results and translating them into future design guidance.

Research partners from Western University and Crozier share tips on sample collection from an operating bioretention facility.

Enhancing Year-Round Function in Stormwater Management Facilities Through Targeted Plantings

Vegetation is an often-overlooked component of stormwater management wet ponds; there is little information available on targeting vegetation plantings to optimize treatment function. Led by **Dr. Kevin Stevens** from the **Laurier Institute for Water Science** at Wilfrid Laurier University, Crozier collaborated directly to complete a comprehensive survey of stormwater management pond vegetation and its relation to water quality to better inform stormwater management wet pond design and optimize the functionality of these systems year-round. A key focus of the research was understanding how vegetation influences contaminant removal, particularly chloride, which tends to spike in winter and early spring due to road salt runoff. Vegetation characteristics (species richness, diversity, percent cover, density) were quantified, and water quality samples were obtained from the reservoirs, inlets and outlets. Water samples were tested for biochemical oxygen demand, chemical oxygen demand, total suspended solids, and pH.

The assessment involved four-season monitoring at several stormwater wet ponds for several years, with Crozier contributing background on pond function, inflow and outflow dynamics, and support with sample collection and data interpretation. One of the key findings was that water quality and contaminant concentrations vary significantly throughout the year. This points to the need for more adaptive design and maintenance strategies that account for these fluctuations, especially in handling stormwater during the winter months and more frequent freeze-thaw cycles.

Behaviour of Soluble Reactive Phosphorus Through Aging Bioretention Systems

Another research partnership with Western University focused on **Low Impact Development (LID)** strategies, specifically evaluating different bioswale soil media for their ability to remove contaminants.

Dr. Clare Robinson, P.Eng., led the initiative that included laboratory testing from active stormwater management sites and explored the performance of engineered soil blends, including sand, compost, and mineral additives. Experimental results were compared to field data collected from active low impact development installations and recommendations were made for future installations.

Crozier's involvement included providing access to Crozier-designed facilities, sharing real-world

A researcher uses specifically designed devices to extract stormwater samples from varying depths of soil media in bioretention systems.

specifications, reviewing testing procedures and guidelines, and helping researchers align their studies with typical municipal design criteria. These contributions helped ensure the research was applied meaningfully to inform future stormwater management practices where low impact development techniques will be considered.

The study identified key factors for engineers, landscape architects, geotechnical engineers and contractors to consider when developing a plan to implement low impact development techniques and the need to improve the field performance of bioretention systems year-round.

The Power of Interdisciplinary Collaboration

Academic-industry partnerships are actively contributing to the collection of extensive Ontario-specific data that engineers, municipalities, conservation authorities and other regulators need to improve design decisions and inform future guidance. The outcome of these research initiatives will be instrumental in rewriting the provincially regulated stormwater management policies and best practice guidelines, for the benefit of the environment, communities and long-term sustainability. They also underscore a deeper truth: stormwater management can no longer be approached by engineers alone. Input from soil scientists, ecologists, chemists, modellers, and policymakers are equally necessary, and forms strong feedback loops between research, practice and policy.

For firms like Crozier, participation in academic research is about staying connected to emerging science, helping shape realistic applications, and contributing to the collective knowledge that will define the next generation of infrastructure for our society and environment. Stormwater systems are complex, influenced not just by their design, but by the landscapes, pollutants, and climates they operate within. As the province navigates changing climactic conditions and evolving demands, collaboration between practitioners and researchers will remain essential for future success.

Whether advising on pond geometry optimization, evaluating bioretention design, or interpreting field data, engineering professionals and consulting firms have a critical role to play in supporting academic research. After all, building smarter stormwater management systems starts with understanding how they work in the world we live in, not just the one we plan for.

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Crozier's Amanda Pinto, P.Eng., MEL, collects water samples from an outlet of a stormwater management facility.

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Fitting in: The Case for Gender-Inclusive Personal Protective Equipment

CSA Group

Personal Protective Equipment (PPE) is the last line of defence from hazards in the workplace. Unfortunately, in many instances, the PPE available is failing to provide appropriate protection, comfort, and confidence to a significant portion of the workforce: women. While PPE is critical for safety across a broad range of sectors from construction and the skilled trades, to engineering and manufacturing, many products are designed with the male body in mind. As female participation in these sectors continues to grow, the limitations in PPE size and fit are increasingly problematic.

In the research report *Canadian Women's Experiences with Personal Protective Equipment in the Workplace*, only **6% of women** said their PPE was actually designed for them (CSA Group, 2022). This is more than a matter of inconvenience; it's a serious occupational health and safety issue that spans industries and impacts daily job performance, dignity, and physical safety.

Real-World Consequences of Ill-fitting PPE

There are **9.3 million working-age women** in Canada, many of whom are employed in roles requiring PPE. Yet, **CSA Group**'s comprehensive survey of nearly 3,000 women reveals a stark reality: half of them reported that their PPE does not fit properly. An additional **43% said it's uncomfortable**, and **35% said that they lacked access to women-specific PPE** options (CSA Group, 2022).

The consequences of this mismatch are multifold. Poorly fitting or ill-designed PPE can create physical discomfort, reduce mobility and dexterity, and even lead to an injury. It can also reduce confidence in workplace safety and

contribute to avoidance or misuse of protective gear, increasing exposure to hazards.

CSA Group's report includes candid, personal experiences that speak to these impacts. One respondent, a steamfitter and welder, shared how an oversized glove became entangled in her work tools, leaving her permanently scarred. Another recounted using duct tape and rubber bands to modify her fall-arrest harness, potentially compromising her PPE in other ways.

These aren't isolated stories; nearly **40% of survey respondents** reported a workplace injury or near-miss they attributed to improperly fitting PPE.

What became clear in this report is that improperly fitting PPE makes women more vulnerable to injury, less able to perform their jobs effectively, and more likely to feel excluded or undervalued in their workplaces.

Better Anthropometric Data Needed for Inclusive Design

For decades, the most common approach to adapting PPE for women has been to modify existing men's designs, often by reducing the size and changing the color. This approach – sometimes referred to as "shrink it and pink it" – does not address the core design challenges and can fall short in providing effective protection.

Women have distinct body proportions that require thoughtful, data-informed design. Differences in measurements such as waist-to-hip ratio, shoulder width, and chest shape mean that simply resizing male gear can result in PPE that fits poorly (too tight in some areas, too loose in others) and may fail to integrate properly with other PPE, creating issues of incompatibility.

A Policy and Legislative Shift in Progress

The urgency of this issue is beginning to resonate with policymakers. Governments and regulatory bodies across Canada are starting to acknowledge the PPE gap as a systemic issue.

For example, Ontario plans to introduce new policies and funding to encourage women to enter and thrive in the skilled trades (Government of Ontario, 2024). Targeted recruitment and retention efforts, including mentorship programs and investments in training facilities designed with women's needs in mind, illustrate the recognition that workplace safety, dignity, and comfort play key roles in long-term career success.

News and industry reports also highlight that policymakers are rethinking safety regulations and procurement processes in light of the broader challenges faced by women in traditionally male-dominated fields (CBC News, 2023; Shop Metalworking Technology, 2024, CKXS FM, 2024). However, Canadian regulations still lack consistency across jurisdictions and there is no national requirement that PPE fit the user properly. This regulatory patchwork leaves many women unprotected and places the burden of finding suitable PPE on individual workers rather than employers or manufacturers.

Equitable PPE - A Shared Responsibility

Prioritizing equitable PPE is not the responsibility of any one group; rather it requires a collective effort. Engineers, designers, manufacturers, procurement officers, standards development organizations and policymakers must work collaboratively. To truly foster a culture of inclusive PPE, CSA Group's report recommends that:

- Manufacturers use anthropometric design methods to address issues of fit, comfort, and special needs, and seek input from workforce representatives

- Provincial/Territorial harmonization of requirements and a national requirement that PPE fit the user
- Improved procurement processes to support the needs of a diverse workforce
- Improved standards to address comfort and sizing by standardizing functional and fit requirements, adjustability, and special needs

For engineers, this represents an opportunity and a responsibility. Whether designing new gear, specifying equipment for a job site, or conducting risk assessments, attention to **person-centred function and fit** will help to close the safety gap and foster more equitable and productive work environments.

Organizations like the **Ontario Society of Professional Engineers (OSPE)**, along with its members and partners, can contribute meaningfully to this effort by fostering dialogue, supporting research, and working alongside standards organizations to support more inclusive, responsive PPE solutions. Progress will take continued collaboration across disciplines, but the goal is to help ensure all workers have access to the protection they deserve.

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A Roadmap to a Canadian Engineering License

Sasha Harpe, P.Eng.

Every year, over 4,000 engineers apply for interprovincial reciprocity, a means to hold an engineering license in another province without repeating the standard application process.

Having lived and worked across the country and being licensed in six jurisdictions, I'm all too familiar with juggling five different Continuing professional development logs, maintaining multiple professional management plans for a corporation, and paying fees to each regulator. Further, engaging meaningfully with five or six regulators, at a local level or impacting their governance, becomes an impossible task.

As a result, I have long advocated for a simpler system of regulating and licensing engineers across Canada. Maintaining separate registrations forces engineers and engineering companies to replicate their registration, professional development logs, and professional management plans tenfold.

Virtually none of that replication provides added value to the public or public safety, which is the consistent mandate of engineering regulators across Canada. Instead, this process adds burden to engineers and engineering companies, particularly small and mid-sized ones. These smaller firms often struggle to grow interprovincially as the regulatory burden is simply too much without dedicated staff to manage it.

A Potential Solution

To progress the conversation, I would propose a single premium national license, not as a requirement, but

available to those whose work spans multiple regions across Canada.

The license can be administered by **Engineers Canada**, an organization that already accredits engineering programs at universities across the country. Licensure would be open to any Canadian resident who has already held a valid engineering license, with one of the regulators in Canada, for at least a year.

Nationally registered engineers would then be able to pay a single premium fee and record a single record of their professional development hours rather than the repetition embedded in the current system. Companies could maintain a single professional management plan, engage with a single regulatory body, and pay a single fee. Doing the task once reduces the resources required for it, increases the effort that can be put into that plan, and reduces the opportunity for errors when trying to make a plan applicable to 10 separate regulators.

How it Would Work

Fees collected from this national license would pay for program costs and fund provincial regulators on a per capita basis to ensure they can maintain their regulatory function. The regulation of an engineer's work would be based on where that work was completed.

A model like the above meets two important benchmarks.

1. Registration does not need to become more expensive for engineers who continue to practice in a single jurisdiction; instead, this provides an optional alternative for those who practice across the country.
2. Regulators would not lose funding or the capacity to regulate work within their jurisdiction; indeed, this would provide a consistent funding stream, particularly for smaller jurisdictions (ex., Prince Edward Island).

Opening the Door for Conversation

This model is not the only path forward, but it is intended as a starting point for a conversation. As a profession, we need to move forward to make our communities stronger and safer. Mobility barriers between provinces are unnecessary and hold us back in a modern world. There are the kinds of solutions we need to move forward and develop the best licensing system that benefits Canadian engineers and Canada.

If you are interested in this topic, OSPE is convening a constructive, solutions-focused discussion on national engineering licensing and mobility. We're seeking members with practical insights to help inform OSPE's policy position and advocacy.

To learn how to register for this roundtable, click here.

Sasha Harpe, P.Eng., Civil and Rail Engineering Department Head at Tri Innovations

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From the Archives: Celebrating 25 Years of OSPE

As OSPE marks 25 years of championing Ontario's engineering community, we're reflecting on the milestones that have shaped both our organization and the profession. From the groundbreaking leadership that continues to make OSPE a standout organization to one of OSPE's biggest advocacy impacts, we're celebrating the moments that have defined our journey.

2002

OSPE Testifies in the Walkerton Inquiry

OSPE played a pivotal role in the **2002 Walkerton Inquiry**, ensuring the engineering profession's voice was heard in shaping Ontario's drinking water safety framework.

OSPE testified that waterworks is engineering and therefore, requires the oversight of licensed engineers to protect public health.

Justice O'Connor and the **Provincial Parliamentary Committee** recognized OSPE's recommendations as valuable, helping to inform the 121 measures that now underpin Ontario's robust source-to-tap drinking water protection system.

2014

Sandro Perruzza Becomes the CEO of OSPE

OSPE CEO Sandro Perruzza celebrates 11 years of leadership this year. Over the past decade, Sandro has become nearly synonymous with OSPE, dedicating himself to amplifying the voice of Ontario's engineering community.

Under his leadership, OSPE has grown into a dynamic and impactful organization, representing more than 10,000 members across the province. With a clear mission to engage, educate, and enable the engineering community to lead, through his work, Sandro continues to help shape a stronger future for engineers, the profession and society at large.

2022

OSPE Establishes an Indoor Air Quality Working Group and Publishes Initial IAQ Reports

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 produced four essential reports, identifying how COVID spreads and how Ontarians can combat its spread.

These reports have been used to advocate for better indoor air quality in Ontario schools, a Clean Indoor Air Act in Ontario, and improved standards in senior living and long-term care facilities.

OSPE's Upcoming Events

OCT 8

Engineering Employment Event (E3)

Join us at one of OSPE's engineering job fairs. They bring together dozens of major employers and skilled engineering candidates across Ontario to network face-to-face.

Mississauga Convention Centre, Mississauga, ON

OCT 16-17

Land Drainage Conference 2025

Stay up to date on the latest practices, policies, and innovations shaping land drainage engineering in Ontario.

Delta Hotels Guelph Conference Centre, Guelph, ON

NOV 3-4

The 2025 Engineering Conference

Join us for Canada's largest engineering event. In 2025, the Engineering Conference will bring engineers together with industry, government and academic partners to discuss the latest opportunities, challenges and innovations in engineering.

Blue Mountain Resort - Village Conference Centre

NOV 14

Ontario Professional Engineers Awards (OPEA) Gala

OSPE proudly celebrates Ontario's top engineering talent at its annual -awards gala, bringing together innovators, leaders, and policymakers to honour excellence in engineering.

Paramount Event Space, Vaughan, ON

ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

LAST CHANCE TO REGISTER

Land Drainage Conference 2025

Oct 16 - Oct 17, 2025

Delta Hotels Guelph Conference Centre

This annual event brings together Ontario's leading drainage engineers, municipal professionals and industry experts for two days of networking and collaboration.

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The Engineering Conference 2025

Nov 3 - 4
The Blue Mountains, ON

Economic Forecast for the Engineering Community

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Engineering State of the Union

Unmatched Networking

Industry Trade Show

engineeringconference.ca

Day 1 | Nov 3

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Making Sure Your Projects Meet CSA Structural Design and Welding Requirements

Speaker: Mark Fernandes, CET *(CWB)*

Infrastructure & Asset Management

How to Conduct Better Risk Assessments Featuring Live Monte Carlo Simulation Demonstrations

Speaker: Dr. Asim Khan *(Analyze and Improve Inc)*

Technology, Innovation & Risk

Artificial Intelligence and Machine Learning in the Water Sector

Speaker: Chris Gerrits, P.Eng. *(Crozier Consulting Engineers)*

Technology, Innovation & Risk

Fireside Chat - The Opportunities and Challenges of Train Automation

Speakers: Ron Mitchell, P.Eng. *(A to B Road & Rail Engineering)* and Yousef Kimiagar, P.Eng. *(Hatch)*

Transportation & Mobility

Mastering Interdisciplinary Collaboration for Smarter Land Development

Speaker: Travis Gibson, P.Eng. *(Crozier Consulting Engineers)*

Professional Practice & Consulting

Day 1 | Nov 3

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How to Safely Work Alongside Collaborative Robots (COBOTS)

Speaker: Renee Frigault, P.Eng. *(Lucid Engineering Ltd.)*

Technology, Innovation & Risk

How Concrete Roundabouts are Transforming Road Safety in Essex County

Speaker: Daniel Baggio, P.Eng. *(County of Essex)*

Infrastructure & Asset Management

Net-Zero: A Glimpse Into a Post-Fossil Fuel World

Speaker: Ruth Cooper, P.Eng. *(EcoDomus Consulting)*

Energy, Climate, and Sustainability

The Evolution of Self-Unloading Vessel Technology

Speaker: Chad Starr, P.Eng. *(EMS-TECH)*

Transportation & Mobility

The Critical Relationship Between Consulting Engineering and Urban Planning for Land Development

Speaker: Trevor Fraser, P.Eng. *(Crozier Consulting Engineers)*

Professional Practice & Consulting

Day 1 | Nov 3

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Liability in Engineering Practice

Speakers: Harp Khukh *(Corestone Law.)* and Zach Lynch, CRM *(BMS)*

Professional Practice & Consulting

The State of Asset Management in Canada: Trends, Challenges, and Success Stories

Speaker: Nigel D'Souza, P.Eng. *(Asset Management Association of Canada)*

Infrastructure & Asset Management

Positive Building - A Carbon-Negative and Nature-Positive Buildings Design Solution

Speaker: Phil Fung, P.Eng. *(SRS Consulting Engineers)*

Energy, Climate, and Sustainability

Building Decarbonization and Its Impact on the Electricity Grid

Speakers: Martin Green, PhD *(Boltzmann Institute)* and Paul N. Acchione, P.Eng. *(MIDAC)*

Energy, Climate, and Sustainability

Innovating Bridge Foundations with Ultra-High-Performance Concrete Piles

Speaker: Philip Loh, P.Eng. *(Facca Incorporated)*

Infrastructure & Asset Management

Day 1 | Nov 3

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Navigating Risk in Engineering: Strategies for Mitigation, Resilience & Future Preparedness

Speaker: Kirsten Andersen, JD, CRM, CIP *(Crozier Consulting Engineers)*

Technology, Innovation & Risk

Inclusive Design in Ontario's Transportation Sector

Speaker: Yoland El-hajj, EIT

Transportation & Mobility

Day 2 | Nov 4

Visit trade show booths with leading industry, government and academic partners. The tradeshow is open all day from 8:00 am - 5:00 pm.

Day 2 | Nov 4

engineeringconference.ca

Preparing Engineers and Organizations for AI Integration

Plenary Session 1

Speakesr: Peter Carr, PhD, P.L.Eng *(University of Waterloo)* and Sumeet Bhatia *(Sun Life)*

Technology, Innovation & Risk

Economic Forecast for Engineering in 2025-2026

Plenary Session 2

Speakers: Amir Abd El Halim *(WSP Canada)*, Daniel Tisch *(Ontario Chamber of Commerce)* and Omar Alghabra, MP, P.Eng.*(Bechtel Canada)*

Professional Practice & Consulting

Building Healthy Corporate Culture in Engineering Through Sustainable Recruitment Practices

Plenary Session 3

Speakers: Nick Mocan, P.Eng. *(Crozier Consulting Engineers)*

Professional Practice & Consulting

Integrating Climate Action into Practice by Advancing Engineering Competencies

Plenary Session 4

Speakers: Joanna Eyquem, P.Geo. *(Climate Risk Institute)*, Kadra Branker, P.Eng. *(IESO),* Paul Cobb, B.Eng. *(Climate Risk Institute),* Robert Lepage, PhD., P.Eng. *(Climes Group)* and Sarah Gonder, B.Eng. *(LG)*

Energy, Climate, and Sustainability

Benchmark Report – A State of the Union for Engineering in Ontario

Plenary Session 5

Speaker: Sandro Perruzza, B.Sc., ICD.D. *(Ontario Society of Professional Engineers)*

Professional Practice & Consulting

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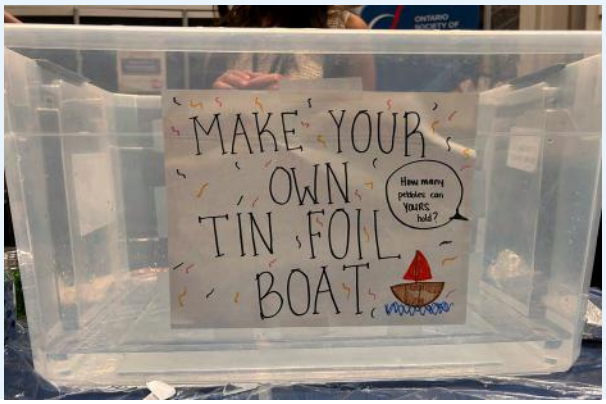
Recap: OSPE at the CNE 2025

On **August 22, 2025**, OSPE staff and volunteers proudly represented the engineering community at the **Canadian National Exhibition (CNE)** in Toronto, ON. At the OSPE booth, families joined in hands-on activities like button-making, crafting, and prize draws, all designed to spark creativity and curiosity.

One of the biggest hits of the day was the *Make Your Own Tin Foil Boat* challenge. Participants of all ages tested their engineering skills by building boats and loading them with pebbles to see how many they could hold before sinking. The record of the day was 115 pebbles!



The Results Are In: OPEA 2025 Awardees

OSPE is thrilled to announce the winners of the **2025 Ontario Professional Engineers Awards**. This group of engineers showcases the diverse ways that engineering professionals contribute to society. Whether it be shaping large infrastructure projects or giving young girls opportunities to pursue STEM, these engineers have made waves in their industries and in the engineering community. OSPE is proud to honour the following list of awardees.

Professional Engineers Gold Medal

Dr. Jing Jiang, P.Eng., M.Esc.

Citizenship Award

Mark Salsberg, P.Eng., MBA

Engineering Medal – Engineering Excellence in Industry

Michael Branch, P.Eng., MMAI

Engineering Medal – Management

Dr. Emily Moore, P.Eng., FCAE

Engineering Medal – Entrepreneurship

Nancy Hill, P.Eng., LL.B., FCAE, FEC, Corp. Dir.

Engineering Medal – Entrepreneurship

Dr. Parsin Haji Reza, P.Eng.

Engineering Medal – Research and Development

Dr. Farrokh Janabi-Sharifi, P.Eng.

Engineering Medal – Research and Development

Dr. Joshua A. Marshall, P.Eng., M.Sc., SMIEEE

Engineering Medal – Research and Development

Dr. Heidi-Lynn Ploeg, P.Eng.

Engineering Achievement of the Year

Cassondra Fonseca, P.Eng. | Camp Engies

Distinguished Lifetime Achievement Award

Michael Monette, P.Eng.

This group represents the very best of the Ontario engineering community and we are thrilled to bring Ontario's engineers together on November 14 at Paramount EventSpace in Woodbridge, ON to celebrate their accomplishments.

For more information on each awardee and to purchase tickets please visit opeaawards.ca.

2026

Ontario Professional Engineers Awards

Recognize a great engineer in your community!

Since 1947, the **Ontario Professional Engineers Awards (OPEA)** have recognized professional engineers in Ontario who have made outstanding contributions to their profession and their community. The Ontario Society of Professional Engineers is proud to honour the very best of the Ontario engineering community at an annual awards gala in November. This annual gala brings industry innovators, business leaders and policy makers

Recognize an engineer in the areas of:

- **Innovation**
- **Community Service**
- **Entrepreneurship**
- **Research**
- **Leadership**
- **And more!**

Please see back for more information. Learn more: opeaawards.ca

What is OSPE?

The **Ontario Society of Professional Engineers (OSPE)** is the voice of the engineering profession in Ontario. We represent the entire engineering community, including professional engineers, engineering graduates and students who work or will work in several of the most strategic sectors of Ontario's economy.

Who is eligible to be nominated?

All P.Eng. licence holders of Professional Engineers Ontario (PEO) in good standing, who have demonstrated achievements significantly above the standards of the profession.

Who can Nominate?

Nominations may be made by any P.Eng. licence holder of Professional Engineers Ontario (PEO). The nominee must not be aware of the nomination and self-nomination is not allowed.

Benefits to the Awardee

- Recognition on social media
- Physical award
- Tickets to gala dinner
- Video vignette
- Marketing of accomplishment to the engineering community

2026 Nominations Open July 1

For more information visit opeaawards.ca.

ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

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Award Types

The Gold Medal

This is the OPEA highest honour, recognizing conscientious commitment to public service, as well as technical excellence, and outstanding professional leadership.

Citizenship Award

This award recognizes a professional engineer's contributions to public service. Those who earn this award have given freely of their time, professional experience, and engineering expertise to the benefit of humanity.

The Engineering Medal - Entrepreneurship

The award recognizes professional engineers for applying new technologies or innovative approaches that have enabled new companies to get started, and/or assisted established companies to grow in new directions. The engineer should have demonstrated the initiative, energy, and spirit it takes to seek out new ideas and to take a leading role in fostering and promoting them.

The Engineering Medal - Management

The award recognizes professional engineers who are managing and directing engineering projects or enterprises where innovative management practice has contributed excellence in engineering achievement.

The Engineering Medal -Engineering Excellence in Industry

This award recognizes excellence in the practice of engineering in industry, where the innovative application of engineering knowledge and principles has solved a unique problem, led to advanced products, or produced above-average results based on work-related contributions and achievements from the last four (4) years.

The Engineering Medal -Research and Development

The award recognizes professional engineers using new knowledge in developing useful, novel applications, or advancing engineering knowledge or applied science, or discovering or extending any of the engineering or natural sciences.

The Engineering Medal - Young Engineer

The award recognizes outstanding young Ontario engineers in industry, who have made exceptional achievements in their chosen fields and are active in communities both personally and professionally.

*NOTE: The Nominee must be 35 years of age or younger by the submission deadline date.

Engineering Achievement of the Year

The award recognizes a professional engineer, or group of professional engineers, who have given freely of their time, professional experience, and engineering expertise - to improve the engineering profession in Ontario.

THE ENGINEERING ACADEMY | EngLearn By OSPE

CERTIFICATE PROGRAMS

Project Management Essentials for Engineers

16 CPD HOURS

Date:
October 21 - October 29

Price:
Member Price: $695
Non-Member Price: $860

ONLINE

Managing projects effectively is a crucial skill for engineers, whether they are leading simple tasks or complex projects. The Project Management Essentials for Engineers workshop is a hands-on, virtual course designed specifically for engineering professionals. This course walks participants through key project management principles and techniques, helping them plan, execute, and oversee successful projects of all sizes.

Emerging Leaders Certificate Program for Engineers

40 CPD HOURS

Date:
October 1 - December 17

Price:
Member Price: $1,950
Non-Member Price: $2,200

ONLINE

Developing the next generation of leaders is critical for driving business growth and sustainability. The Emerging Leaders Certificate Program for Engineers, offered by The Engineering Academy, is designed specifically for engineering professionals. This program equips emerging leaders with the skills, confidence, and tools they need to lead teams and drive strategic initiatives.

Lean Six Sigma White Belt Certificate Program October

8 CPD HOURS

Date:
October 20

Price:
Member Price: $80
Non-Member Price: $119

ONLINE

Designed for individuals seeking to understand the core concepts of process improvement and operational efficiency, this introductory program covers the essentials of Lean and Six Sigma, illustrating how these powerful methodologies work together to enhance processes and eliminate waste. Our Lean Six Sigma White Belt Certificate Program is the perfect place to start!

Health and Safety HS100 - HS400

10-30 CPD HOURS

Date:
On Demand

Price:
Member Price: $350
Non-Member Price: $475

ONLINE

These courses provide an overview of health and safety in the workplace, focusing on specific hazards engineers may encounter in their workplaces and ways to manage these hazards.

Journey to P.Eng.

PE300: Journey to P.Eng.

Dates:
November 5 (12 pm - 1 pm)
December 3 (12 pm - 1 pm)

Price:
FREE

ONLINE

Are you pursuing licensure as a Professional Engineer (P.Eng.) in Ontario? The PE300 – Journey to P.Eng. is a free, 1-hour webinar designed to guide new graduates, engineering interns, and internationally educated engineers through the Professional Engineers Ontario (PEO) licensing process. Hosted by experts from the Ontario Society of Professional Engineers (OSPE), this session offers an in-depth look at what's needed to successfully apply for and obtain licensure in Ontario.

CBA Workshop B: Polishing Your CBA Submission

Dates:
October 24 (1 pm - 5 pm)
December 4 (1 pm - 5 pm)

Price:
Member Price: $350
Non-Member Price: $475

ONLINE

Are you preparing for the P.Eng. Competency-Based Assessment (CBA)? Our Competency-Based Assessment (CBA) Workshops for P.Eng. will guide you through the process and help you gain confidence to successfully complete your submission. P.Eng. applicants are required to complete a minimum of 48 months of verifiable engineering experience through the CBA model, which was introduced by Professional Engineers Ontario (PEO) in 2023 and is used by other provincial regulators in BC, SK, MB, ON, NB, PEI, and NL.

Journey to P.Eng.

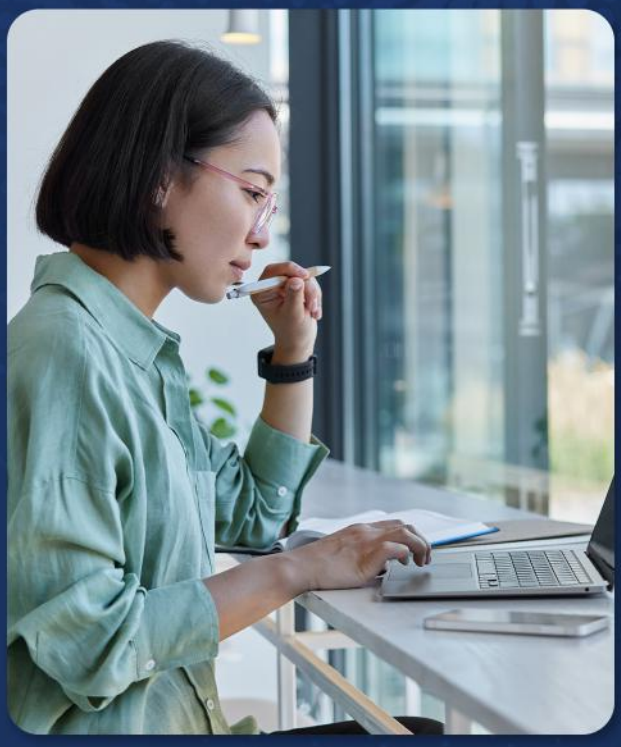
Prep Course for the National Professional Practice Exam

Dates:
July 23 – August 20
October 1 – October 29

Price:
Member Price: $350
Non-Member Price: $450

ONLINE

Ready to take the next step in your engineering journey and secure your P.Eng license? Our workshop, Prep Course for the National Professional Practice Exam – (October), provides the essential tools, knowledge, and guidance to help you excel in the National Professional Practice Exam (NPPE). Designed for both members and non-members, these sessions ensure you're fully prepared to meet the licensure requirements.



Check the OSPE Events Calendar for more information:
go.ospe.on.ca/learn

THE ENGINEERING ACADEMY | EngTalks By OSPE

1 CPD HOUR

THOUGHT LEADERSHIP THURSDAYS

OSPE's Engineering Academy hosts Thursday webinars with leading experts on a diverse range of technical and non-technical topics.

Era AI: Exquisitely Human Personal Professional Branding—for Engineers

Date:
October 2 (12 pm - 1 pm)

Price:
Member Price: $0
Non-Member Price: $59

ONLINE

This session shows engineers across all disciplines how to leverage AI to build, refine, and elevate their personal professional brands—while staying true to the integrity of their engineering voice.

Global Solutions & Outreach Programs: Humanity's Best Chance to Resolve Global Warming

Date:
October 9 (12 pm - 1 pm)

Price:
Member Price: $0
Non-Member Price: $59

ONLINE

Join Thomas Rehm, Ph.D., ChE., and Eric Townsend, BS ChE, from GSOP Climate Collaboration for this session on resolving global warming.

Tens of thousands are now working to resolve global warming. Even so, the global temperature anomaly is accelerating. Understandable human biases and inadequate global collaboration are the main reasons for this dire situation. Using the Wicked-Problem Approach, GSOP will mitigate the former and dramatically improve the latter.

Breathing Easy: Advancing Indoor Air Quality Through Sustainable Design

Date:
October 23 (12 pm - 1 pm)

Price:
Member Price: $0
Non-Member Price: $59

ONLINE

This session will dive into the critical intersection of sustainability and indoor air quality (IAQ), offering insights into industry innovations, and practical strategies for creating healthier, more energy efficient indoor environments. Participants will gain an understanding of IAQ fundamentals, including key air contaminants and the various technologies used to manage them.

Commercialized Renewable Energy Systems – 101

Date:
November 6 (12 pm - 1 pm)

Price:
Member Price: $0
Non-Member Price: $59

ONLINE

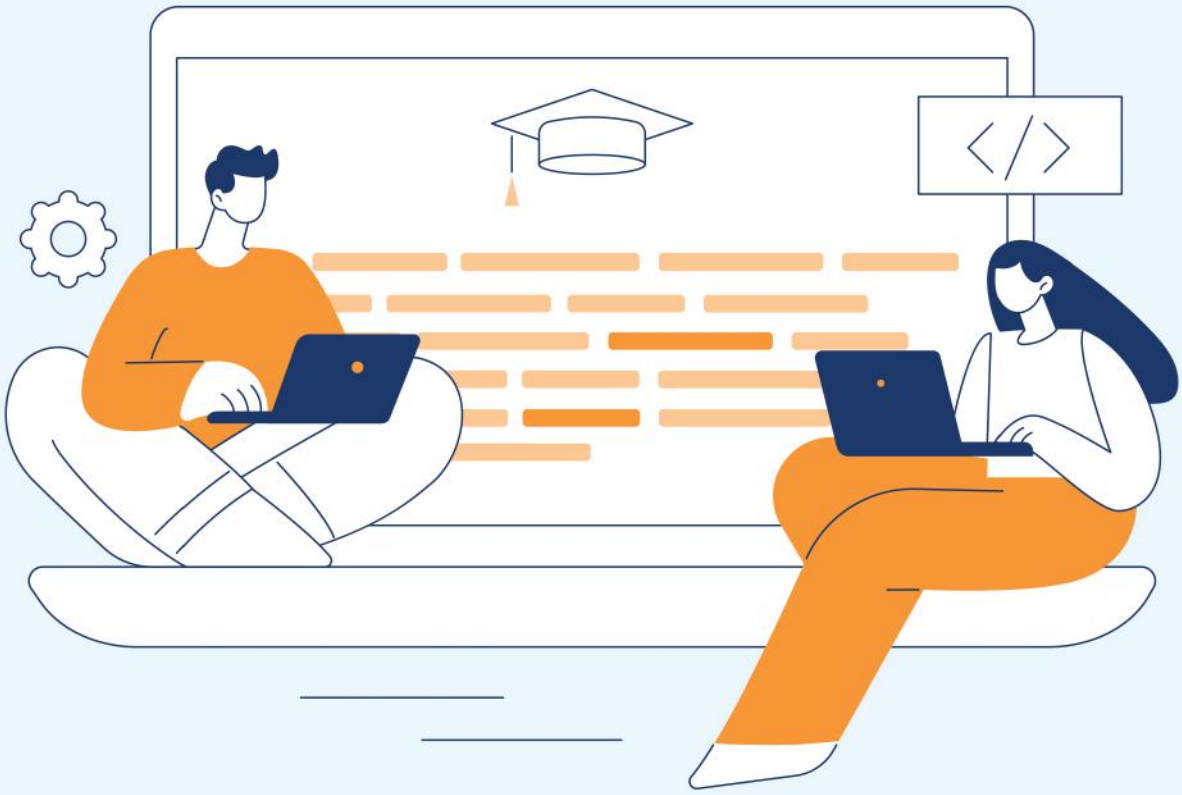
An introduction to the thermal renewables that are being successfully deployed across Ontario in both public and private projects. We will cover technologies such as air-source heat pumps, geo-exchange systems, wastewater energy exchange systems, district energy, biomass, and a few others. We will also cover some human elements that impact the deployment of these technologies and provide a refresher on the fundamentals of thermodynamics.

Check the OSPE Events Calendar for more information:
go.ospe.on.ca/learn

EngLearn By OSPE

learn.ospe.on.ca

All of OSPE's educational content on one convenient platform.



UNLIMITED ONLINE ACCESS FOR ALL MEMBERS

Find engineering content that interests you and track your **Continued Professional Development** hours all in one place.

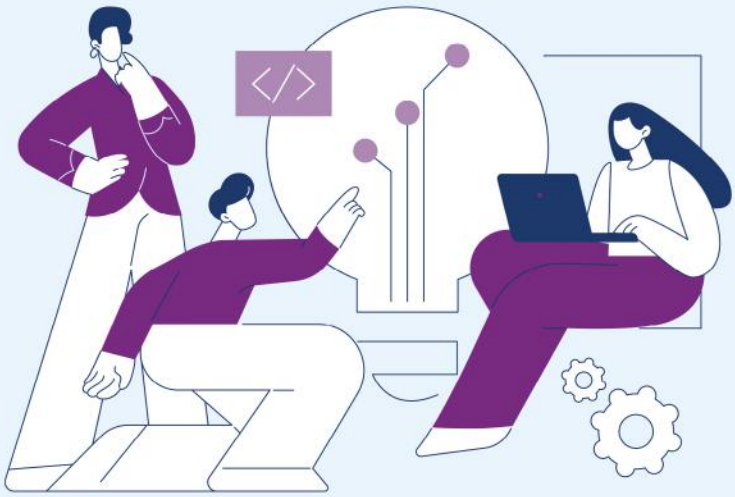
- Certificate Programs
- EngTalks
- Thought Leadership Thursdays
- Webinars
- Health and Safety
- Workshops
- Project Management
- And More!

ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

go.ospe.on.ca/ELRP

OSPE's Engineering Licensure Readiness Program

Fully Virtual



CBA & NPPE Preparation for International Engineering Graduates (IEGs)

The Ontario Society of Professional Engineers (OSPE) is pleased to introduce our newest bridging program, the Engineering Licensure Readiness Program, designed to support IEGs with CBA preparation, NPPE preparation and employment supports.

Component 1: CBA Preparation

Present your international experience confidently

- 3 live virtual workshops
- 2 one-on-one coaching sessions
- Supplemental tools to support writing success

Component 2: NPPE Preparation

Ace the National Professional Practice Exam

- Access to public NPPE course
- 4 group support sessions
- On-demand videos to support learning and more

Component 3: Employment Supports

Advance your engineering career

- 3 one-on-one job search and career coaching sessions
- Access to OSPE employment events
- 1.5 year OSPE membership

Program Eligibility

- Canadian Language Benchmark 7+ | Non-Canadian B.Eng.
- Permanent Resident, Citizen, Nominee, Asylum Claimant, or approved work permit
- 4+ years of verifiable work experience
- Completed/near completion of technical exams and/or eligible for NPPE

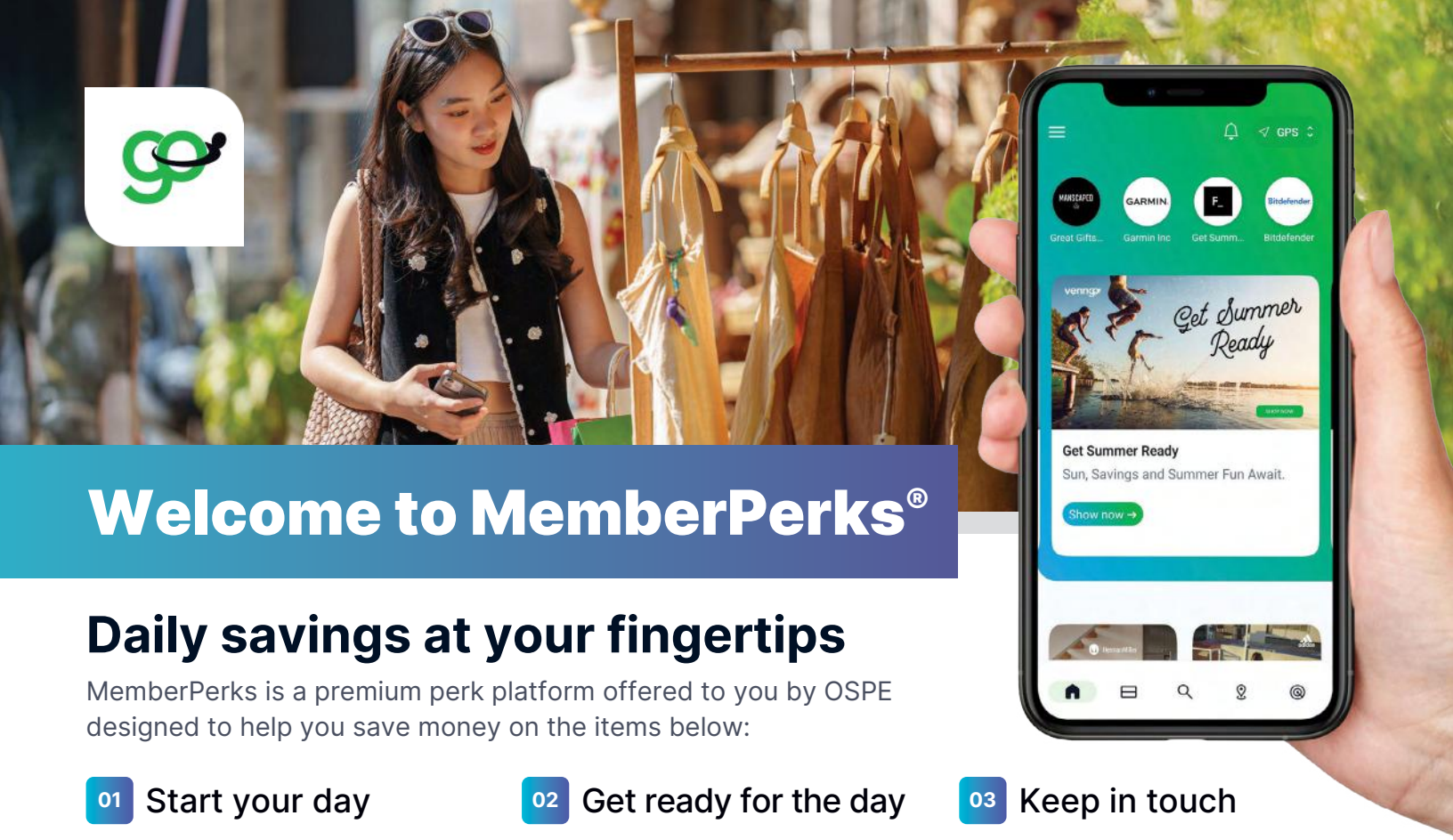
Program Dates

- Cohort 2 Schedule: October 2025 – January 2026
- Cohort 3 Schedule: December 2025 – March 2026
- Cohort 4 Schedule: February – June 2026

For more information and program details, visit our program website go.ospe.on.ca/ELRP

OSPE - 5000 Yonge St, Suite 701, Toronto, ON
1.866.763.1654 | info@ospe.on.ca

Ontario



Welcome to MemberPerks®

Daily savings at your fingertips

MemberPerks is a premium perk platform offered to you by OSPE designed to help you save money on the items below:

01 Start your day

Balzac's Coffee, Stanley, Art of Tea, Venya Teas, Vega Protein, My Protein

02 Get ready for the day

Tymo, HelloJoyous, Dear Lucy, Penningtons, Oakley , Reebok, Callaway

03 Keep in touch

Telus, Bell, Rogers, Airalo, Lenovo, Samsung, Apple

04 Get active

GoodLife, iFit, NordicTrack, New Balance, Gymshark, Decathlon, LesMils, Garmin, Oura

05 Dinner & dessert

TruLocal, OddBunch, Lufa Farms, Lone Star, Pickle Barrel, Coco's, Fresh Prep, Factor, Four All Ice Cream, Baketivity, Shark Ninja

06 Time to unwind

Yes Boutique, Mosa, Book Outlet, Dr. Ho, Emma Sleep, Poly Sleep, Saje Wellness

And so much more on the platform

Need help signing up? Follow the instructions below:

01 Step one:

Scan the QR code or visit **ospe.venngo.com** to sign into your account.

02 Step two:

Use your **OSPE membership ID** & **your email address** to create your MemberPerks account.

03 Step three:

Download the Venngo app and sign in. Your organization's Site ID is: **ospe**

Don't miss out on this fantastic opportunity to enjoy your perks & rewards with MemberPerks.

memberperks for ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

Need help? Visit: **https://helpcentre.venngo.com/en**

ospe.venngo.com

MemberPerks is available as "Venngo" in the App Store or Playstore

CSA Codes, Standards, and Learning

OSPE is all about making it easy to access valuable resources, and we are excited to announce a new partnership with CSA Group, an internationally recognized provider of codes, standards and education.

Through this partnership members of the engineering community can easily and affordably access:

Codes and Standards

Prior to any project, you need to ensure you know the requirements. The CSA library is a great resource for engineers, to make sure they are up to date.

- Construction & Infrastructure
- Electrical
- Environment & Natural Resources
- Fuels & Transportation
- Health Care and Well-being
- Management Systems
- Mechanical & Industrial Equipment
- Nuclear
- Occupational Health & Safety
- Petroleum and Natural Gas
- Public Safety

Education

Get ahead and meet professional development requirements by learning about the practical topics governing work in Ontario and across the country.

- Electrical
- Gas
- Petroleum & Natural Gas
- Health and Safety
- Construction & Infrastructure
- Environment and Business Excellence

To access savings contact pd@ospe.on.ca to receive a special member access code. Learn more by visiting ospe.on.ca/academy/standards-and-acts/

Nuclear Career Accelerator

Empowering Canada's Nuclear Workforce

OntarioTech Continuous Learning

Program Overview

Ontario Tech University's Nuclear Career Accelerator (NCA) is a 12-week hybrid program designed to upskill mid-career engineers and technical professionals, preparing them for high-demand roles in the nuclear sector. Made possible through funding by Upskill Canada, powered by Palette Skills and the Government of Canada, the program offers:

- Technical training in nuclear systems, safety, and regulatory compliance and more.
- Career coaching and job search support.

Benefits for Employers

- **Recruitment Tool:** Access a pool of professionals trained in nuclear-specific competencies, ready to contribute from day one.
- **Onboarding Solution:** Ideal for integrating new hires lacking nuclear experience, ensuring they meet industry standards efficiently.
- **Cost-effective Training:** At a subsidized rate of $500, invest in workforce development without significant financial strain.
- **Industry-aligned Curriculum:** Developed in collaboration with leading nuclear organizations to meet current and future sector needs.

Target Participants

- Professionals with 3+ years in engineering or technical fields, seeking to transition into the nuclear industry.
- Backgrounds in: Oil & Gas, Automotive, Advanced Manufacturing, Infrastructure, and related sectors.

Get Involved

Partner with Ontario Tech University to:

- **Sponsor Employees:** Enhance your team's capabilities by enrolling them in the NCA program.
- **Recruit Graduates:** Tap into a talent pool equipped with industry-relevant skills and knowledge.
- **Collaborate:** Contribute to curriculum development and ensure training aligns with evolving industry demands.

Program Modules

- Nuclear Fundamentals
- Operations Overview
- Nuclear Energy in Society
- Regulation and Safety
- Nuclear Supply Chain
- Materials, Fuels, and Enrichment
- Nuclear Project Management
- Lifecycle Assessment
- Waste Management
- The Nuclear Business: New Builds, SMRs, and Strategy

For partnership opportunities and more information visit our website: www.ontariotechu.ca/NCA

MEMBER PROFILE

Geoff Sheffrin P.Eng., C.Eng.

Engineering Against the Climate Clock

Ask Geoff Sheffrin, P.Eng., about the climate crisis, and you'll get a blunt answer: humanity isn't taking it seriously enough. Despite decades of warnings, rising CO_2 levels, and a planet that's visibly shifting under our feet, he knows most people won't act until catastrophe lands squarely on their doorstep.

It's a pattern he's seen again and again. We scramble to mitigate the effects, whether it's flood recovery in Texas or wildfire suppression in California, but do little to address the root cause. "We're jumping up and down fixing the effects," said **Geoff Sheffrin, P.Eng., Chair of the OSPE Climate Crisis Task Force**. "But we're not fixing the cause of global warming. That's my big frustration."

The Numbers Don't Lie

For Geoff, the data speaks volumes. He advises checking resources like Our World in Data and NASA regularly.

The updates are sobering. "When I started out, CO_2 levels were just over 400 parts per million. My last check this past week, we're now at 437 parts per million, and still going up," said Geoff in July 2025.

The oceans tell an equally alarming story. Covering 71% of the planet, they act as Earth's largest heat sink. But they've already warmed more than one degree Celsius. "That may sound trivial," he explains, "but it forces ocean life deeper, drives more evaporation, and loads the atmosphere with moisture. That's why Texas had those floods. That's why we're seeing devastating rainfalls."

He also points to climate tipping points—about a dozen in total—that could push the crisis into irreversible territory. He believes we're already at the threshold of four or five. "If we exceed those, it will only get worse. And we're not doing enough to stop it."

The Human Factor

The deeper issue, he argues, is human behavior. "If it doesn't affect us personally, we just move on. But if my house floods, suddenly I wake up."

That tendency toward short-term thinking makes climate change a uniquely difficult challenge. Rising seas, shifting weather patterns, and ecosystem collapse unfold over decades, but human decision-making runs on election cycles, quarterly profits, and day-to-day convenience.

Profit-driven choices only deepen the problem. Coal, one of the heaviest carbon polluters, continues to be mined and sold around the world. "It's all driven by profit, which is all driven by greed. And that means we don't react to the things that are essential, because they don't make money," said Geoff.

For him, this isn't just frustrating, it's tragic. He recalls opening a 30-year-old book, **Our Angry Earth** by **Frederik Pohl**, only to realize the problems described then are the same ones we face today.

Finding a Voice through OSPE

For Geoff, joining OSPE was a natural step. He's

been a member for well over a decade, drawn to the organization's role in giving engineers a collective voice.

That advocacy voice took on new meaning when he began producing content on the climate crisis. He created a series of a dozen podcasts, called **Mother Nature Doesn't Give a Crap**, interviewing voices from across the energy sector, from nuclear experts like Matthew Noringer to innovators leading small modular reactor projects at Darlington. He also contributed articles to **The Voice Magazine**, using every platform available to spark dialogue about the climate emergency.

It was this body of work that led OSPE to approach him with a bigger challenge: chairing the Climate Crisis Task Force. What began as a one-year assignment has stretched into three, and counting. "If I can make a contribution, that's what we're here for," he says. "Can we change the world? Theoretically, yes."

A Call to Engineers

Despite his frustrations, Geoff sees hope and a call to responsibility in the engineering profession. As chair of OSPE's Climate Crisis Task Force, he advocates that every engineer, no matter their field, factor climate impact into their work.

"Engineers are in all sorts of categories and careers, but whenever you do engineering, you should also be asking: what's the impact on the climate?"

The stakes, he warns, are existential. "If we don't put climate at the top of the agenda, we won't survive as a species. Thousands of other species are already at the edge of extinction because of what we're doing. Humans are no less vulnerable—it's going to come back and bite us."

For Geoff, the bottom line is simple. We have the data, we know the risks, and the solutions are within reach; we just have to act.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