Ontario Tech University's Sustainability Report

Reporting period: 2015 to 2020

Summary

Ontario Tech University addresses the pressing challenges of the climate emergency and biodiversity loss by integrating sustainability practices into the university's operations, academic programs and through community engagement. This report provides an overview of the university's sustainability achievements from 2015 through 2020.

In the university's Strategic Sustainability Plan 2015-2020, three goals were established:

Goal 1: Ensure environmental sustainability.

Goal 2: Apply best practices in infrastructure planning.

Goal 3: Create a culture of sustainability through leadership.

The plan outlined specific commitments and strategies for each goal to ensure success.

Throughout the reporting period, the university has demonstrated a strong commitment to environmental sustainability, actively working to reduce its ecological footprint and implement initiatives that has propelled the university towards a more environmentally conscious future.

This report provides a summary of Ontario Tech's sustainability efforts. For a more comprehensive overview, visit the Office of Campus Infrastructure and Sustainability (OCIS) website to access the university's Sustainability Tracking, Assessment and Rating System (STARS) reports.

Goal 1: Ensure environmental sustainability

1.1. Adopt effective strategies to reduce the volume of waste generated and sent to landfills.

Strategy 1: Evaluate the feasibility of implementing more effective waste-diversion programs, including on-site food waste-management options.

Strategy 2: Continue to enhance initiatives that promote campus awareness and educate the broader community about waste and recycling.

Progress

- The Faculty of Engineering and Applied Science collaborated with OCIS to run the electronic waste (e-waste) program on campus. This collaboration helps educate students about reusing and recycling end-of-life electronics. A portion of campus e-waste helps fund the Ontario Tech Engineers Without Borders (EWB) Junior

Fellowship Program. Any low or no-value waste goes to EWB, which hands it over to Ontario Electronic Stewardship (OES), a not-for-profit organization that facilitates e-waste recycling. OES pays EWB for the waste based on weight.

- Ontario Tech has consistently adhered to its **Green Procurement of Goods and Services** guidelines since its implementation in 2012. The guidelines outline waste-minimization strategies the institution must integrate into various aspects of purchasing. This includes opting for longer warranties to reduce waste, utilizing eco-friendly materials, minimizing packaging and employing other environmentally conscious practices.
- The university collaborated with an on-site food services provider to incentivize customers with a discount when they brought and used a reusable cup. Additionally, individuals received complimentary hot water when they brought their own mug and tea bag, promoting sustainable practices.

1.2. Develop programs and policies that minimize the resource and material demands of university activities.

Strategy 1: Actively evaluate institutional sustainability policy as programs are implemented and overarching goals evolve.

Strategy 2: Develop effective and accurate material and resource-consumption monitoring and reporting programs.

Strategy 3: Use monitoring reports to review and establish material and resource-consumption targets.

Progress

- Each building incorporates a dual-plumbing system designed to gather storm water from roofs, directing it to a 250,000-litre bioswale cistern. The collected water is used for irrigation and flushing purposes in the Business and Information Technology Building. This innovative approach reduces the university's reliance on treated water from municipal sources, contributing to more sustainable use of fresh water resources.
- Each building is equipped with a water meter, allowing for the collection and tracking of monthly water consumption.
- In 2018, the university enhanced its data tracking for commuting and business travel through a survey sent to employees. Specific data collected from departments and faculties outlined business- and research-related travel.
- The Aquatic Research Lab uses about 88,000 litres of fresh water daily from ground-source wells to ensure high-quality, low-metal water. Grey water is then directed to a 50,000-litre underground cistern, where it is reused.
- The university created an Energy Conservation and Demand Management Plan

(2014 to 2019). The plan outlines the university's goals, action plans and benchmarking (past performance, best practices, baseline data comparison, future projections and improvements).

- The university tests indoor air quality by measuring carbon dioxide, carbon monoxide, temperature and particulate matter in the air. Carbon dioxide sensors are strategically placed in or near large mechanical rooms.

1.3. Ensure that university procurement policies and procedures incorporate an assessment of the environmental impact of purchases throughout their life cycle and factor this consideration into the procurement assessment. Encourage the use of producers and suppliers who follow environmentally responsible practices.

Strategy 1: Assess current procurement guidelines and, where possible, include an evaluation of a product's environmental impact over its life cycle.

Strategy 2: Procure recycled and/or recyclable materials where possible.

Strategy 3: Establish a program for furniture reuse and responsible decommissioning.

Strategy 4: Work with department and faculty teams to develop recommendations on information technology hardware selection and e-waste management.

Strategy 5: Develop programs to encourage local food procurement and community involvement.

Progress

- All cleaning contracts and requests for proposals include a green/sustainability component. Companies must provide environmental certifications and demonstrate transparency in their commitment to sustainability in business practices. Vendors are required to:
  - Include details about their commitment to environmental preservation and sustainability (e.g. vehicles and products used in the execution of the agreement).
  - Provide information about their green product line and any green sustainability initiatives undertaken by their company.
- An on-campus food services provider continued to utilize local produce grown in the university's community garden and greenhouse and incorporated honey produced on-campus into featured dishes.

1.4. Identify opportunities to reduce energy consumption, implement energy conservation measures where possible, and establish programs that educate faculty, staff and students on the efficient use of energy.

Strategy 1: Improve energy-use tracking and data management to create an updated

baseline for the 2016 year.

Strategy 2: Optimize lighting controls and design lighting to be at or below the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2013 power density requirements.

Strategy 3: Work with utility companies to determine eligibility for incentives that can be applied to major projects that improve energy performance.

Progress

- The university has eliminated the use of incandescent lightbulbs and has replaced them with LED lighting.
- The Software and Informatics Research Centre (SIRC) was designed to include LED lighting throughout the building, along with occupancy sensors and daylight harvesting in the building.
- The lighting system at Vaso's Field underwent an update, transitioning to new energy-efficient LED stadium lighting.
- The university's renewable energy capacity includes 182 kilowatts of solar photovoltaic power on campus, complemented by Canada's largest geothermal system.
- The university installed 11 electric vehicle charging ports on campus with outdoor solar lighting.
- In 2018, the university switched from two gas vehicles to full-electric vehicles, and encourages departments to prioritize electric or hybrid options for new purchases or trade-in vehicles.

1.5. Identify opportunities to reduce water consumption, implement water conservation measures where possible, and establish programs that promote the efficient use of water.

Strategy 1: Improve water-use tracking and data management to create an updated baseline for the 2016 year.

Strategy 2: Reduce the sale of water bottles on campus by working with the campus community and contractors, installing additional hydration stations.

Strategy 3: Devise a new approach for the effective management of water collected by existing greywater and stormwater systems.

Progress

- The storm water and grey water collection and management systems on campus

contribute to annual water savings of 32 million litres.

- In 2016, the conversion of the Campus Fieldhouse into a multi-sport turf facility, followed by the replacement of the grass on Vaso's Field with artificial turf in 2018, significantly reduced water usage for field irrigation.

Reusable water bottle initiatives

- First-year students received complimentary reusable water bottles as part of the university's initiative to promote sustainability.
- OCIS collaborated with the university's Athletics department to encourage all athletes to use reusable water bottles.
- As of August 2018, water refilling stations prevented the disposal of more than 550,000 plastic water bottles in landfills and oceans.
- In 2015, the OCIS unveiled a prototype greenhouse constructed from single-use water bottles, showcasing the potential for upcycling materials. Once completed, OCIS donated the greenhouse to We Grow Food, a local community garden organization.

Featured stories for Goal 1:

- Artificial turf coming to Vaso's Field.
- It's easy to be green at Ontario Tech.

Goal 2: Apply best practices in infrastructure planning

2.1. Promote a healthy and productive learning and research environment by providing the campus community with safe, functional and sustainable facilities.

Strategy 1: Ensure existing buildings and those proposed for future campus expansion incorporate principles of sustainability and safety while meeting user needs.

Strategy 2: Encourage user feedback to improve the quality of work and study environments.

Strategy 3: Continually review space allocation and usage to maximize space utilization.

Progress

- SIRC opened in 2017. In addition to SIRC's sustainable features described in Strategy 2.3., the university ensured a safe, functional and sustainable building by incorporating:
    - Exterior features such as bicycle storage, adjacent green spaces and a green roof.

- Low-flow plumbing fixtures, ensuring proper ventilation and high-efficiency heating and cooling systems for energy savings and occupant comfort.
- Sustainable building materials, including recycled content and low-emitting materials (low in volatile organic compounds to protect the health of installers and building occupants).

2.2. Integrate sustainable features into new and existing building design and application.

Strategy 1: Identify areas on campus that are suitable for different types of green infrastructure applications, and implement feasible projects.

Progress

- Design and operational practices for buildings involve the selection of materials with minimal environmental impact The integration of the building's enclosure system with its mechanical system for comfortable indoor spaces, ensuring high-quality interior air, and minimizing the operating energy consumption of the building throughout its service life.

- Renovations completed at House 22 (located on Windfields Farm lands) included:
  - Conversion of lighting to LED.
  - Increase in roof insulation to R-value of 60.
  - Increase in wall insulation to R-value of 46.
  - Installation of PCM in walls and ceiling.

- Installation of a phase-change material (PCM):
  - Infinite R, a building product that behaves as a PCM, was installed above all acoustic ceiling tiles and in the walls of House 22. The installation was part of a greenhouse gas and retrofit program for the university aimed at reducing its carbon footprint.

2.3. Build and renovate facilities following energy efficiency and sustainability principles.

Strategy 1: Ensure campus master planning considers ecological issues in future building and land-use design.

Strategy 2: Investigate green building frameworks and where feasible, implement practical and measurable design, construction, operations, and maintenance solutions.

Strategy 3: Monitor building system performance and implement upgrades and retrofits when necessary.

Progress

- In 2017, the newly completed SIRC achieved superior building performance through energy and sustainability features such as:
    - A low window-to-wall ratio that is under 40 per cent.
    - An ambitious energy-reduction target of 25 per cent savings over the industry standard, surpassing Ontario's building code standards for building-associated carbon dioxide emissions.
    - Bioretention features for storm-water management.
    - Efficient delivery of ventilation air.
    - Heating system efficiency.
    - Lighting efficiency with LED lighting.

- The university has achieved almost a 50 per cent reduction in greenhouse gas emissions since 2012, accomplished through upgrades and optimizations of building automation systems, as well as energy-efficient retrofits of lighting and equipment.
- In 2019, the university expanded its renewable energy capacity to 182 kilowatts of solar photovoltaic power on campus, including panels at SIRC, the Clean Energy Research Laboratory (CERL), Charles Hall, Polonsky Commons West Promenade, and House 22.

2.4. Use ecological landscaping methods and ensure green space in future building planning.

Strategy 1: Incorporate natural landscaping-based standards and specifications into maintenance contract requests for proposals.

Strategy 2: Explore ecologically beneficial and visually aesthetic features to incorporate into campus design while maintaining the integrity of the Oshawa Creek watershed and surrounding ecology.

Progress

- In 2016, the university collaborated with the Central Lake Ontario Conservation Authority to assess environmentally sensitive areas, including wetlands and tributaries on and surrounding campus.
- The university followed sustainable landscape management practices and earned recognition as a Bee City Campus by Bee City Canada in 2019.
- In 2019 and 2020, the university secured the TD Friends of the Environment Foundation Grant, facilitating the expansion of on-campus wildflower gardens and the planting of native trees and fruit trees. This initiative enhances habitat and provides food for wildlife.

- The university developed two fruit orchards with total of 120 trees.

Featured stories for Goal 2:

- Campus buzz: Ontario Tech University receives 'Bee City Campus' designation.
- Ontario Tech University among North American leaders in energy efficiency; employee/student wellness programs.
- University celebrates newest building and Canada 150 Student Awards.

Goal 3: Create a culture through leadership

3.1 Share knowledge and engage with faculty, staff, students and community members to promote eco-literacy and ensure effective participation of the university community in green living practices.

Strategy 1: Promote sustainable practices and initiatives at internal events and strategically use social media, website communication and annual reporting.

Strategy 2: Use various outreach strategies such as the Blue Team and the Sustainability Committee to encourage campus community involvement in sustainability initiatives and events.

Strategy 3: Include elements and/or methods of green education about the university's sustainability initiatives to increase the visibility of the sustainability platform on campus and to encourage participation in programs.

Progress

To share knowledge and engage with the campus community, the university hosted several programs and initiatives, including:

Awareness campaigns

- OCIS educational events (social media campaigns, in-person events and information booths):
    - Earth Month
    - Fairtrade Week
    - Nutrition Month
    - Participation of the university's Blue Team in annual student-focused Involvement Fairs.
    - Social media campaigns to spread awareness and share greener-living tips and environmental facts.
    - Waste Management Month: Recycle-mania

Farmers' market

- The Blue Team hosted the Campus Market in collaboration with Durham College. Open to everyone, the on-campus farmers' market promoted sustainable, local eating.

Environmental action campaigns

- #MugLife campaign: A campaign that raised awareness about the number of disposable coffee cups thrown out on campus.
- OCIS conducted a Sustainability Literacy and Sustainability Cultural survey that focused on behaviours and awareness of campus sustainability programs and initiatives. The online survey was distributed to the campus community in November 2018 and a follow-up survey was distributed in April 2019.
- Shoreline cleanup: Members of the Blue Team and fellow student volunteers worked together to remove litter on Oshawa shorelines.
- The university continued to host Wellness Walks (previously called Mood Walks), a program that invites the campus community to participate in a weekly, one-hour walk to connect with nature and improve physical and mental health.
- We Grow Trees: In November 2015, 115 employees signed up to participate in a yearlong challenge to grow and care for seeds/acorns fallen from oak trees. The challenge concluded with a successful on-campus tree-planting event in May 2016.

Community groups and student-governed clubs and organizations

- Students can join **Enactus** (derived from '**En**trepreneurial, **Act**ion, **Us**'), an entrepreneurial club for students who use business as a catalyst for positive social and environmental impact.
- Cycle-on was a student-run club for bike enthusiasts. The group advocated for the use of bicycles to help reduce the university's carbon footprint and encourage healthy, outdoor activities.
- The student-run Environmental Club worked to build a more sustainable future through action, advocacy and fundraising.

Professional development opportunities

- In 2018, the Human Resources department introduced a Sustainability 101 Skill and Tell professional development session, where employees learned how to integrate sustainability knowledge and skills into their professional and personal life.
- Employees attended external conferences and workshops focused on sustainability, including workshops hosted by the Ontario College and University Sustainability Professionals, and the Canadian Association of University Business Officers.

- The Sustainability Committee, in collaboration with OCIS, continued to offer experiential learning opportunities for the campus community, including sustainability-related workshops and sessions covering topics such as gardening, mental health, smart commuting and waste management.

3.2 Develop a team program to build a network of sustainability-focused individuals across the university.

Strategy 1: Develop a Sustainability Committee made up of campus community members to act as a multi-stakeholder advisory body and strengthen the network of sustainability-focused individuals across the university.

Strategy 2: Develop a student-led team that creates enhanced opportunities for student involvement in sustainability operations on campus, and engagement in the community.

Progress

- OCIS employed up to four students each summer to maintain and enhance the grounds at the university's Windfields Farm lands. These students also planted and cared for more than 500 trees intended for future campus expansion.
- Students on the Blue Team actively worked toward making Ontario Tech more sustainable. The team organized programs and events for students, with support from OCIS, the Sustainability Committee, and the Ontario Tech-Durham College Joint Sustainability Committee.
- The Asset and Sustainability Assistant, a work-study position, represented students on the Blue Team and actively participated in the Sustainability Committee.
- Campus Community Gardens, a student union club, provided education and healthy-living opportunities to the university community through gardening.

3.3 Identify and pursue opportunities to incorporate the principles of sustainability and environmental literacy into course curriculum.

Strategy 1: Investigate the development of a seeding fund for student-designed, sustainability-focused projects that meet specific cost-saving criteria and have a positive environmental impact on campus life. Reinvest savings into subsequent projects.

Strategy 2: Perform a course audit to classify existing courses as 'sustainability-focused' and 'sustainability-related'. Provide an online list of these courses.

Strategy 3: Work with faculties to seek opportunities to incorporate sustainability components into new course design.

Progress

- In 2018, launched a Sustainability Studies minor as well as a Bachelor of Technology in Sustainable Energy Systems degree.

Course offerings

- A course audit in 2019 revealed that all academic departments offer sustainability-focused or related courses.
- As of 2019, nearly 30 per cent of employees are actively involved in sustainability research activities.
- The OCIS website provides a list of sustainability-focused and sustainability-related courses.

Experiential and continuous learning

- Continuous Learning courses that address sustainability issues:
  - Change in Agriculture and Next Steps (Agricultural Leadership Certificate Program).
  - Marketing and Advocacy for Agriculture (Agricultural Leadership Certificate Program).
  - Sustainability Strategies for the Public Sector (Master's Certificate in Public Sector Management).
- OCIS hosts workshops for various Ontario Tech classes. The workshops focus on gardening, the importance of pollinators and environmental protection.
- Provide immersive experience programs, including practicum placements where students engage in sustainable development work (e.g. Social Science and Humanities students' Horizons of Friendship trip to Central America in 2019).

CERL

- CERL's mission is to develop clean-energy technologies and move them from the laboratory to commercial and industrial application. As of 2019, research projects in CERL included hydrogen production, heat engines, chemical heat pumps, and nano- and micro-scale energy systems.

3.4 Ensure representation and active participation by the university on relevant steering committees and associations to promote awareness of sustainability issues and determine how they can be addressed.

Strategy 1: Continue active participation in Joint Sustainability Committee with Durham College and encourage joint initiatives for the benefit of our shared campus.

Strategy 2: Continue active participation in provincewide post-secondary sustainability professionals' board.

Progress

- Ontario Tech continued collaborating with Durham College in the Joint Sustainability Committee, organizing various educational initiatives.
- The university contributed to the Council of Ontario Universities' Going Greener report.
- The university maintains its active member on the Ontario College and University Sustainability Professionals Board.

3.5 Engage in partnerships with the local community and government organizations for the furtherance of environmental objectives.

Strategy 1: Continue active participation in Durham Region and City of Oshawa environmental committees and collaborate on initiatives aligned with institutional goals.

Strategy 2: Explore additional partnerships with local non-governmental organizations to develop initiatives and provide enriching experiences for students, staff and community members.

Progress

- Active participation continues on the Oshawa Environmental Advisory Committee, contributing to the protection, enhancement, restoration, management, and appreciation of the natural and built environments.
- Dr. Peter Stoett, Dean, Faculty of Social Science and Humanities, is a Co-ordinating Lead Author in the United Nations Environment Programme's (UNEP) Global Environment Outlook 6 (GEO-6) report. The comprehensive report includes a range of environmental topics, issues and potential solutions.
- In 2017, Ontario Tech joined the Global Universities Partnership on Environmental Sustainability (GUPES), a UNEP initiative. The university became the third in Canada to join GUPES, a group that also includes American universities such as Yale University, the State University of New York, the University of Massachusetts, and the University of Washington.
- Participation in Durham Region's Smart Commute program continued, earning the university recognition as a silver-designation Smart Commute Durham Workplace champion in 2017.

- Ontario Tech and Durham College partnered with the City of Oshawa and other organizations to launch City Idea Lab in 2018. This curriculum-based program engages creatively minded students and faculty to co-design potential solutions for city-identified projects, exploring critical social and community issues.
- The Ministry of Environment, Conservation and Parks maintains an air quality health index monitoring station on campus.
- The university continued to collaborate with local community agencies and government through the University-Community Link Unit (CLU). The CLU provides a platform for joint exploration of community dynamics, focusing on climate change impacts, watershed management, waste management, transportation, digital connectivity and more.
- The university hosted various events, forums and symposiums that brought together professors, researchers, students and leaders of private, public and not-for-profit organizations. Covering topics such as Advanced Manufacturing (2015), Smart Communities (2016), Community Mental Health and Wellness (2017), Energy and the Environment (2018), the annual **Futures Forum** advanced discussions on smart and sustainable futures.
- Maintains membership in the Durham Region Roundtable on Climate Change, providing advisory support to the Region of Durham on climate change matters.

3.6 Communicate with the outside community about the university's environmental performance and activities.

Strategy 1: Promote sustainable practices and initiatives at external events.

Strategy 2: Devise an annual sustainability report that is published online and in any other forms required by accessibility standards.

Strategy 3: Work with Communications and Marketing staff to keep the university's sustainability message front and centre with the campus community.

Strategy 4: Ensure the university's sustainability website is updated on a regular basis with sustainability initiatives and achievements, and promotes public feedback.

Progress

- Ontario Tech registered with the Association for the Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking, Assessment and Rating System.
- The university achieved a gold rating in 2016 and 2019 for sustainability achievements from the AASHE.

Website, newsletter and social media

- Ontario Tech's Sustainability website includes the university's sustainability policy and energy management plan, along with information about the Sustainability Committee, Blue Team, and programs and initiatives.
- The Blue Team is active on Facebook, X and Instagram, using these platforms to increase awareness about local and campus sustainability events, share green tips, and provide environmental facts.
- The campus map includes the location of on-campus bike racks.
- OCIS collaborated with the university's Communications and Marketing department to share sustainability information, events and initiatives through news stories, the Weekly Report newsletter for faculty and staff, and the university's social media channels.
- The sustainability website includes the Go Green blog with articles written by faculty, staff and students.

Featured stories for Goal 3:

- Can modern research address our human health and sustainability challenges?
- Ontario Tech supports provincial universities' Going Greener initiative.
- Ontario Tech University among North American leaders in energy efficiency; employee/student wellness programs.
- Ontario Tech's faculty and staff grow trees to support university's sustainability effort.
- Seeking a brighter future for energy and the environment.
- TeachingCity introduces innovative curriculum-based City Idea Lab.
- University joins United Nations Environment network.
- University promotes recycling awareness on campus in February.

Appendix 1: Definitions

Bioswale cistern: A bioswale cistern is a sustainable storm water management system that collects and controls rainwater runoff. It consists of a cistern, a storage tank for rainwater; and a bioswale, a landscaped channel designed to naturally filter and manage stormwater.

Daylight harvesting: Daylight harvesting systems use natural daylight to supplement or offset the use of electric lighting in indoor spaces. The goal is to reduce overall energy consumption by optimizing the balance between natural and artificial lighting based on available daylight.

Phase-change material (PCM): A phase-change material (PCM) stores and releases energy based on demand. PCMs are valuable for storing and managing thermal energy in various applications, such as energy storage systems and climate control.

Solar photovoltaic power: Solar photovoltaic power is generated by converting sunlight into electricity using solar panels.

Window-to-wall ratio: This ratio is crucial in architectural design as it influences factors such as natural light penetration, energy efficiency, and overall building aesthetics. A low window-to-wall ratio is important for sustainability because it reduces energy consumption. With fewer windows compared to solid walls, there's better insulation, improved thermal performance and minimized reliance on artificial heating or cooling.