

Annual Sustainability Progress Report for Campus Operations 2022-2023

Fall 2023



DALHOUSIE | OFFICE OF
UNIVERSITY | SUSTAINABILITY



Context

The University Office of Sustainability (OS) develops plans and policies, spearheads utility, renewable energy, sustainable transportation and natural environment projects, delivers education programs and events, involves students in on-campus projects, and provides advice on sustainability efforts to departments. The Office supports university-wide public sustainability reporting through sustainability data analytics for the submission of the Sustainability Tracking Assessment Rating System (STARS) and Times Higher Education (THE) Impact Ranking.

This annual report highlights progress made on key operational sustainability efforts as identified in the University Sustainability Operations Plan. It includes processes and outcome indicators that denote how we approach the work and what results we are pursuing. Broader sustainability reporting on academics, research, human resources, additional operations indicators and community and student initiatives is included in international reporting efforts through programs like STARS.



Photo: Solar PV on Ithe Design Building



Photo: EV Charger

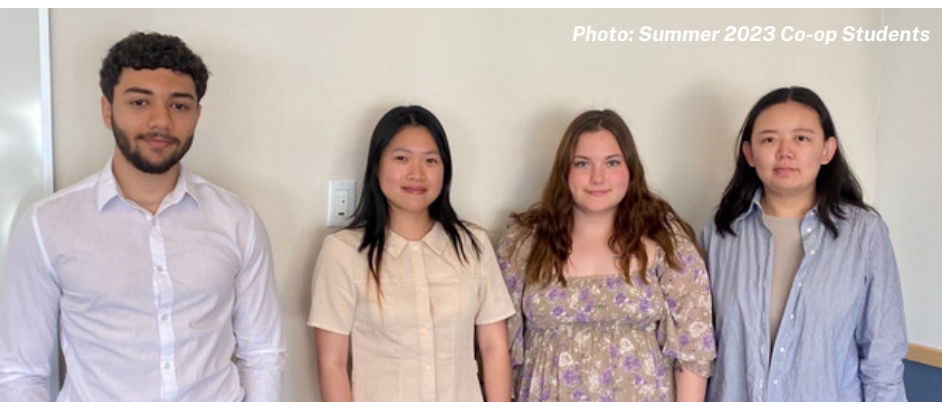


Photo: Summer 2023 Co-op Students

Key Performance Indicators: Process

Indicators	Description	Target
Engagement of students in campus sustainability operations activities	Work with academic and research efforts by supporting on campus sustainability class project, thesis, and related research efforts. Employ students all year round to work in OS.	<p>Number of students engaged (on average 30-80 students):</p> <ul style="list-style-type: none"> • Over 50 students engaged with OS through various means including independent research, coursework, volunteering, and staff positions. • Students actively participated in the President’s Advisory Council on Sustainability. • Summer interns explored: solar photovoltaic analysis, cycling infrastructure, sustainability planning, and behavioral programs. • Peer educators organized events and workshops throughout the school year: Fair Trade, sustainable transportation, and waste reduction. • Twenty master's students collaborated with OS on pollution prevention and climate project financing. • Planning students focused on accessibility and transportation projects. • Students from courses like energy pathways and campus as a living laboratory identified areas for increasing campus biodiversity and energy conservation. • OS supported students in creating a new biodiversity planting next to the LSC. • Students partnered with the Sustainability Manager to divert clothing and other items from residences to local charities. • OS staff includes three full-time staff, one part-time staff, and student employees.
Off campus partnerships and funding	Develop and support on-going networks, funding applications, and joint initiatives with community, government, and other external partners. This work supports our collective and University action.	<p>Number of networks and projects, funding raised, collaborations:</p> <ul style="list-style-type: none"> • OS continues to contribute to <u>Atlantic Universities and Colleges Sustainability Network (AUCSN)</u>, a subcommittee of ISI, and is a member of the <u>Association for the Advancement of Sustainability in Higher Education (AASHE)</u>. • The ED is the Atlantic Canadian representative of the <u>Northeast Campus Sustainability Consortium</u>. • OS hosted the annual NECSC with representatives from universities and colleges from: Northeastern US, Atlantic Canada, and Quebec. • Over 40 representatives attended tours and sessions: geothermal energy options, district energy business cases, and Mi’kmaq traditional knowledge and links to campus biodiversity.

Key Performance Indicators: Process (continued)

Indicator	Description	Targets
Off campus partnerships and funding (continued)	Develop and support on-going networks, funding applications, and joint initiatives with community, government, and other external partners. This work supports our collective and University action. (continued)	<ul style="list-style-type: none"> • OS was a leading member of an engagement team exploring a Building to Zero coalition in Nova Scotia. • Updated detailed funding matrix and a multi-million dollar grant on climate action project was successful under the Low Carbon Economy Challenge Fund. Ongoing negotiation and Board approval continued into the next fiscal year. • External funding (cash and in-kind) raised in the fiscal year: \$94,867 <ul style="list-style-type: none"> ◦ Student funding: \$13,014 ◦ Energy efficiency projects: \$53,649 ◦ Sustainable transportation events (including HRM in-kind contributions to Epass program): \$28,204 • Total external (cash and in-kind resources) with direct involvement from OS since 2008: \$8,600,612.
Programs, projects, resources, and reporting initiatives	Develop and support campus sustainability operations initiatives across all campuses.	<p>Number and type of initiatives:</p> <ul style="list-style-type: none"> • Ongoing social media promotion of programs, events and information using: Instagram, LinkedIn, emails and departmental website. • Ongoing management and promotion of the Employee Bus Pass program, which had 242 employee participants last year. • First Green Labs Program Cohort engaged seven labs in learning sessions, and certified four labs. Measures take included: timers, educational information, and small lab equipment upgrades (e.g. fume hoods). Cohort two is assessing seven labs. • Supported program development and coordination in residence through <u>Ecolympics</u> and end-of-year material reuse and recycling. • Engaged over 1423 campus and community members through 50 in-person and virtual presentations and seminars with international, national, local and campus audiences. Topics included: climate change infrastructure and adaptation, green labs, fair trade, food and waste management, campus sustainability, and energy efficiency.

Key Performance Indicators: Process (continued)

Indicator	Description	Targets
Support equity, diversity, inclusion and accessibility (EDIA) initiatives	Increase knowledge and experience of OS team, support programing, assess issues and opportunities.	<p>Number and type of initiatives:</p> <ul style="list-style-type: none"> • Co-lead a Strategic Initiative project with Facilities Management to update active transportation and landscape design guidelines to include accessibility parameters. • Hiring included representation from BIPOC communities. • EDIA training is included in orientation and summer work included a presentation by Eskasoni Fish and Wildlife on Mi'kmaw Indigenous Protected Areas and biodiversity. • Indigenous student centre knowledge was highlighted as part of Biodiversity week



Key Performance Indicators: Outcomes

Indicator	Description	2022-2023
Increased diversion of solid, liquid, and hazardous waste from disposal	<p>Ongoing waste avoidance, reuse, and recycling programs including surplus goods; residence move-out programs; organics, fiber, recyclables, metal, construction and demolition, electronics, appliances, bulb and battery recycling programs offered by facilities management.</p> <p>Updates to waste signage, education, and additional focus on waste in the laboratory environment. With populations growing, more labs spaces, and higher turn over every year in residences, additional human resources, product switching and reduction likely will be needed to address higher diversion targets and to minimize waste generation.</p> <ul style="list-style-type: none"> • <i>Baseline: 60% diversion from the landfill in 2012 and 65% diversion from the landfill in 2020</i> • <i>Target: 75% by 2030.</i> 	<p>61% (71% if wood ash is included. Wood ash from the AC is used for food fertilizer at a local farm)</p>

Key Performance Indicators: Outcomes (continued)

Indicator	Description	2022-2023
<p>Minimize waste generation</p> <p>(includes data from all streams including recyclables, paper and cardboard, organics including food waste, landfill, construction and demolition, universal waste including electronics, biomedical and hazardous)</p>	<p>Reduction programs impacting totals include online services and teaching reducing paper and driving roughly 10% increase in people working from home. Other initiatives include pre and post food waste initiatives, reduction of disposables in food services, some lab recycling, and waste handling system changes that has caused a reduction of illegal dumping, plastic bags used in waste containers and construction and demolition waste.</p> <ul style="list-style-type: none"> • <i>Baseline: 85 kgs/per person/per year (Halifax) in 2013; 79 kgs/per person/per year (Halifax) in 2020</i> • <i>*AC data are estimations from hauler and lacks accuracy. Compared to Halifax data which is mostly measured weights. There are research activities such as greenhouse organic waste driving up weights per person. AC (182 kgs/per person). Halifax Campuses represent 99% of the campus population.</i> • <i>2030 Target: Increasing reduction each year over baseline period.</i> 	<p>48 kgs/per person (Halifax)</p>
<p>Reduce electricity, fuel, water, and materials consumption</p>	<p>Projects are planned, implemented, or in the final stages of measurement and verification every year. Planning for this year includes assessing how waste heat can be used to warm Halifax campus buildings, expanding Sexton's geo-exchange system, recommissioning buildings, assessing solar photovoltaics (PV) buildings, and assessing Dalhousie's energy management practices with ISO 50001.</p> <p>Projects starting this year include the Killam Library deep retrofit, lighting for the Chemistry building, and Arts Centre solar.</p> <p>Projects in final stages or the measurement and verification stage include all campus backup power study, ventilation controls in Sheriff Hall, tube lighting replacement on all campuses, toothed fan belt implementation, district energy flow control, and ongoing commissioning. The energy management information system (EMIS) identifies ongoing opportunities and challenges.</p> <ul style="list-style-type: none"> • <i>Baseline Electricity: 80,265 MWh (4 MWh per person) in 2010; 77,771 MWh (4 MWh per person) in 2020; 2030 Target: hold growth and reduce consumption</i> • <i>Baseline Fuels (MWh): 190,000 MWh (10 MWh per person) in 2010; 155,208 MWh (7 MWh per person) in 2020; 2030 Target: hold growth and reduce consumption</i> • <i>Baseline Water (Potable): 1,200,800 m3 (62 m3 per person) in 2010; 461,868 m3 (22 m3 per person) in 2020; 2030 Target: 70% reduction</i> • <i>Baseline Material and Supplies 2010: Commodity assessment 2020: Strategies from a number of commodities being implemented</i> • <i>2030 Target: Quantitative assessment and reductions</i> 	<p>Electricity: 74,408MWh (7% absolute reduction; 3 MWh per person = 25% reduction per person)</p> <p>Fuels: 135,806 MWh (weather normalized; 29% reduction and 5.4 MWh per person = 44% reduction per person)</p> <p>Potable Water: 437,945 m3 (64% reduction) and 18 m3 per person (67% reduction per person)* additional 164,213 m3 used from wells for aquatic research</p>

Key Performance Indicators: Outcomes (continued)

Indicator	Description	2022-2023
<p>Reduce greenhouse gases (GHG)s and implement climate adaptation strategies</p>	<p>Climate action strategies are continually in planning and implementation stages, similar to energy and materials reductions. Energy consumption and types account for Scope 1 and 2 emissions of fleet, refrigerants, fuel and purchased energy sources (electricity) for heating and cooling. Scope 3 emissions of commuting, water use, and materials are also highlighted.</p> <p>Key strategies being worked on are power purchase options for renewable electricity, energy and water efficiency projects including steam to hot-water conversions, high performance buildings, and climate adaptation. An Annual greenhouse gas inventory report is published to show progress.</p> <ul style="list-style-type: none"> • <i>Baseline GHGs (Scope 1 & 2): 106,178 tCO2e and 6.52 tCO2e per person in 2010; 76,884 tCO2e and 4.16 tCO2e per person in 2020</i> • <i>2030 Target: 55% (scope 1 and 2)</i> 	<p>63,082 tCO2e (38% reduction) and 3 tCO2e per person (53% reduction per person)</p>
<p>Increase renewable energy supply on and off campus</p>	<p>The University currently has nine solar installations, a geo-exchange field, and uses sawmill waste for heat and electricity at the AC. A new solar installation is being commissioned for the Arts Centre. Dalhousie is preparing to participate in the province's Green Choice Program, which will allow customers like Dalhousie to buy renewable electricity. We are working on studies and financing for more solar, geo-exchange on Sexton, and installations.</p> <ul style="list-style-type: none"> • <i>Baseline renewables: 0% in 2010; 20% in 2020</i> • <i>2030 target: 90%-100 for electricity through off and onsite sources</i> 	<p>20% renewable energy</p>
<p>Increased travel (commuting and business) through sustainable modes</p>	<p>A number of annual programs and assessments are run by OS and partners including the employee bus program, safe cycling sessions, active transportation planning, annual commuter survey, efficient and low emission vehicle use education. In addition to these initiatives, designs and costs for fleet electric campus chargers was completed along with additional ideas around reducing, right sizing and procurement of fleet.</p> <ul style="list-style-type: none"> • <i>Baseline commuter mode: 66% of commuting trips made by walking, cycling, transit, carpooling, or remote work in 2010; 80% in 2020</i> • <i>2030 target: 85% sustainable transit</i> 	<p>Sustainable transportation: 80% Halifax campuses; 38% AC (commuter travel that is not Single Occupant Vehicle (SOV))</p> <p>15% off campus study/work (includes remote and hybrid; 10% increase from 5% estimated baseline)</p>

Key Performance Indicators: Outcomes (continued)

Indicator	Description	2022-2023
Increase campus biodiversity and maintain and increase natural spaces	Each year, OS, Facilities Management, Departments, and students work together to maintain and enhance campus biodiversity. A project led by students included an ecosystem triangle bed to mimic the general succession of the Wabanaki forest, including grasses and asters, and woody plants. Several activities were held during Biodiversity Week, including pollinator garden surveys, a garden walk with Facilities Management grounds staff, and biodiversity plantings.	New annual program and new gardens.
Buildings achieve high performance green building standards	New buildings strive for comprehensive green building certifications such as LEED Gold or higher, as well as specific energy and carbon certifications. Future buildings will meet and beat net-zero standards and regulations. Efforts are being made to upgrade existing buildings to high performance. LEED Platinum certification is projected for the IDEA and Design Building.	Art centre addition is under construction and striving for LEED Gold.
Reduce pollution – air, water, land	Reporting, auditing, and assessment are used to assess releases of air, water, and land contaminants. Reducing and switching energy sources reduce pollutants, as do preventative maintenance of pollution control devices, education, litter pick-up, and proper management of chemicals. Actions will be taken annually to reduce contaminants. In support of pollution prevention plans, two teams of students and an intern conducted pollution prevention planning and research.	New boilers installed with high efficiency systems reducing air pollution.
Transition to more plant-based food offerings	Catering, vending and dining halls provide ongoing plant-based food programs. The dining hall offers vegan and vegetarian options. Current reporting metrics use food dollars to track plant purchases. Plates, sales, weight, and volume are also being examined. Second Harvest helped start a more formal process of reducing food waste.	33% by sales; Reviews are conducted every three years. Next review in 2024 with 2023 data.
Increase sustainably and ethically sourced products	Increasing sustainable and ethically sourced products is done annually in the following categories: food, travel/fleet, IT/Telecom/AV, stationary, textiles, appliances, professional services, furniture, custodial, and energy/water. OS collaborates with procurement on new strategies. New staffing resources may be required for procurement issues with ecological, social, and life cycle costs.	Report and new action.