Environmental Sustainability Report

UNIVERSITY OF WATERLOO

2023

RELEASED NOVEMBER 2023

UNIVERSITY OF WATERLOO

TABLE OF CONTENTS

Prepared by the President's Advisory Committee on Environmental Sustainability

INTRODUCTION

About the Report

TERRITORIAL ACKNOWLEDGMENT:

The University of Waterloo acknowledges that much of our work takes place on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. Our main campus is situated on the Haldimand Tract, the land granted to the Six Nations that includes six miles on each side of the Grand River. Our active work toward reconciliation takes place across our campuses through research, learning, teaching, and community building, and is co-ordinated within our Office of Indigenous Relations.

Overview: This report highlights examples of action towards each of the 27 objectives that were established in 2017 through Waterloo's Environmental Sustainability Strategy. The report has sections on Academics, Operations, and Engagement, and describes relevant projects and initiatives that have occurred at the University of Waterloo throughout 2022, up to and including June 2023.

For each objective, a summary of progress and details on specific indicators are provided.

For full data and details on each objective and indicator, consult the interactive data dashboards and methodologies, available at ***uwaterloo.ca/sustainability/report*****.**

Definitions: Sustainability refers to maintaining the integrated health of the environment, society, and economy for today and into the future. While this report focuses primarily on environmental indicators, it recognizes that there are mutually reinforcing connections with financial and social sustainability. For brevity, the term "sustainability" refers to environmental sustainability throughout this report.

Framework: To provide a consistent benchmark for reporting progress, the University of Waterloo aligns action areas and indicators within this report and within its Environmental Sustainability Strategy to those of the Sustainability Tracking, Assessment, and Rating System (STARS) developed by the Association for the Advancement of Sustainability in Higher Education (AASHE).[1]

Sustainable Development Goals: Within the report, the University of Waterloo also maps its actions towards advancement of the global United Nations Sustainable Development Goals (UN SDGs). Additional detail on pan-University efforts related to the SDGs can be found at ***uwaterloo.ca/sustainable-development-goals***.

Reporting Boundary: This report covers all University of Waterloo campuses, unless otherwise noted. The report data and indicators do not include information from Affiliated and Federated Institutions of Waterloo (AFIWs), although information from the AFIWs is included as separate disclosures in the interactive data tables.

Contact: Please address any questions about this report to the Sustainability Office (*sustainability@uwaterloo.ca*).

[1] For full details on STARS, see Association for the Advancement of Sustainability in Higher Education. stars.aashe.org

INTRODUCTION

Message From the President

At the University of Waterloo, we have an established track-record of being innovators and change-makers. Our world-renowned educators and researchers are advancing technologies and policies that are leading to positive outcomes across sectors. These outcomes are also being felt throughout our institution as we collectively continue to embrace our sustainability goals.

Together, we are strengthening sustainability initiatives on our campuses. We have a deep history of integrating sustainability into our world-class teaching and research, and our ongoing efforts in these areas are leading to exciting advancements. We've launched a Sustainable Futures Research Cluster, scaled up investment in new energy efficiency and carbon reduction projects, and developed a long-term decarbonization plan.

While this year's Sustainability Report provides an overview of our successes, it also highlights areas where we know we must improve. Sustainability has emerged as a crucial part of Waterloo at 100, our long-term strategic vision for our institution, with initiatives woven across academics, partnerships and campus practices. They are an important guide and driver pushing us towards positive change.

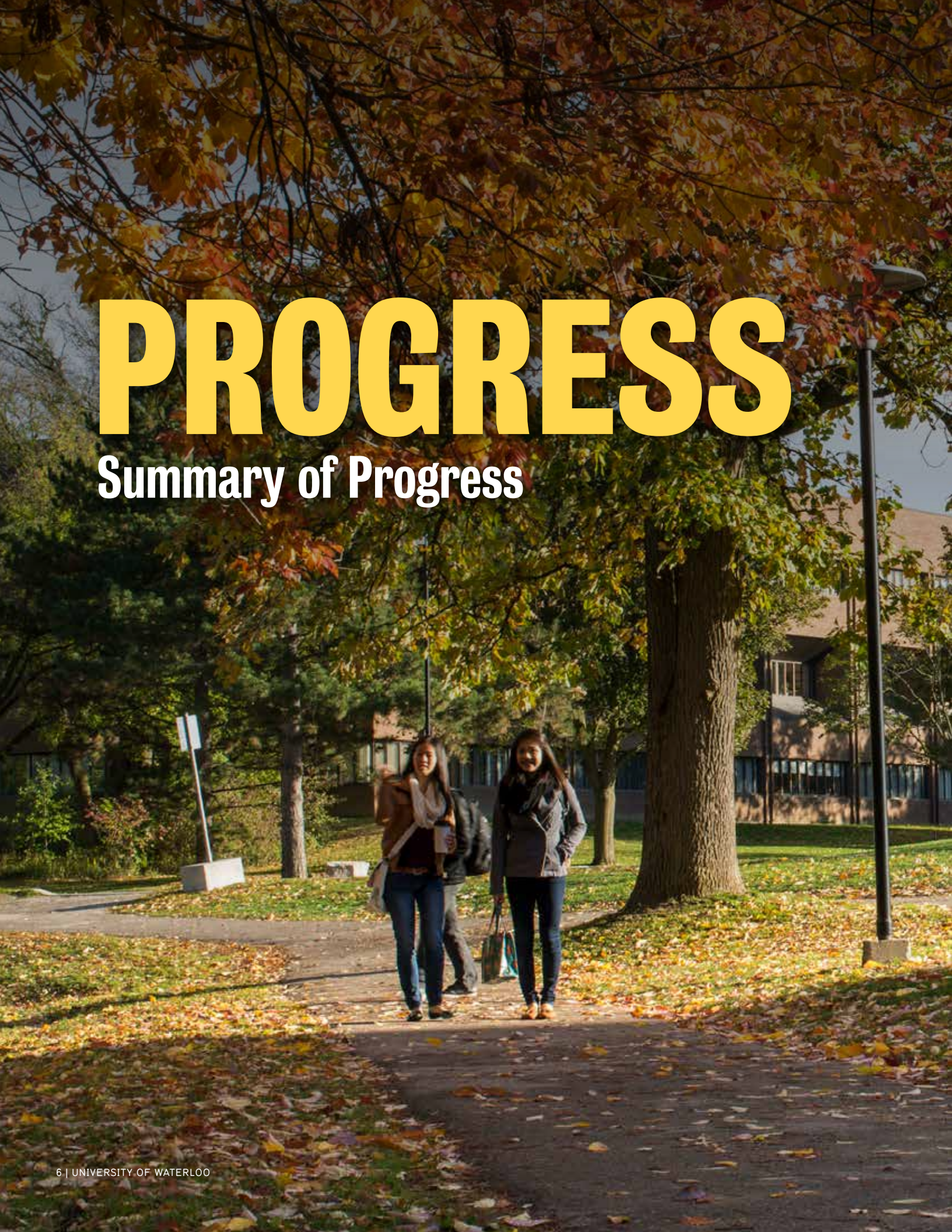
The University of Waterloo is committed to leading change locally and globally. I am inspired by the countless members of our community who are doing their part in taking tangible steps towards a more sustainable institution. I look forward to seeing the momentum of these initiatives continue into the future.

I am pleased to present Waterloo's 2023 Environmental Sustainability Report, which tracks our actions and progress over the past year.

Sincerely,

VIVEK GOEL

PRESIDENT AND VICE-CHANCELLOR
UNIVERSITY OF WATERLOO



PROGRESS

Summary of Progress

At a Glance

OVERALL

20/27
Sustainability strategy objectives complete or mostly complete

SILVER
Rating through the Sustainability Tracking, Assessment, and Rating System
AASHE 2021

55th
THE Impact Ranking on the UN SDGs, Globally
THE 2023

BE A LEADER IN SUSTAINABILITY EDUCATION AND RESEARCH

>360
Researchers exploring the UN SDGs

HOST
Canada-wide SDG Network

>680
Academic courses related to the UN SDGs

6
University research centres/ institutes with sustainability focus

OPERATE THE CAMPUS SUSTAINABLY

5%
Decrease in water intensity since 2015

88%
Of commuting trips to campus made using a sustainable mode of travel

FAIR TRADE
Designated campus since 2019

4.4%
Scope 1+2* emissions reductions since 2015

28.2%
Waste diverted from landfill

34%
Of food sustainably sourced or certified

EMBED SUSTAINABILITY IN CAMPUS CULTURE

65
Student ambassadors and leaders engaged in sustainability leadership training

22%
Departments Green Office Certified Bronze or higher

6%
Employees completed the Sustainability Certificate Training

4
Local community sustainability awards since 2016

*refers to direct and energy-related emissions, respectively

KEY SHIFTS

› **Return to campus** – Resuming most pre-pandemic levels of activity across campus has also increased energy, waste, travel, water, and commuting impacts, though some portion of the reductions realized through 2020 and 2021 remain.

› **Growing importance** – Regulatory and policy changes across North America, increasing social pressure for positive sustainability and climate action, and technological developments continue to increase the importance of sustainability efforts.

KEY SUCCESSES

› **Waterloo at 100** – Sustainability has emerged as a highly important part of Waterloo's long-term strategic visioning exercise, across academics, partnerships, and campus practices.

› **Energy and climate project**s – Investments continued to scale to support energy conservation and greenhouse gas emission reduction projects.

› **Living Labs** – A record number of students and courses were engaged in real-world learning opportunities connected to on-campus sustainability topics.

› **Academic innovation** – Tens of millions of dollars in new sustainability research investments, as well as continuing curricular innovation, is leveraging Waterloo's scholarship and education strengths toward sustainability solutions.

KEY CHALLENGES

› **Electricity emissions** – Projected increases in natural gas use in Ontario's electricity grid will make Waterloo's decarbonization efforts much more difficult.

› **Logistical hurdles** – Supply chain challenges continue to impact project costs and lengthen schedules.

› **Change capacity** – The breadth of social and economic challenges facing the higher education sector often leave limited additional capacity to manage complex sustainability challenges.

KEY PRIORITIES

› **Transportation planning** – Waterloo has expanded efforts to address sustainable commuting and transportation impacts from business travel.

› **Energy planning** – Expanding the technical and financial details of Waterloo's carbon reduction roadmap will improve resource mobilization efforts for carbon neutrality.

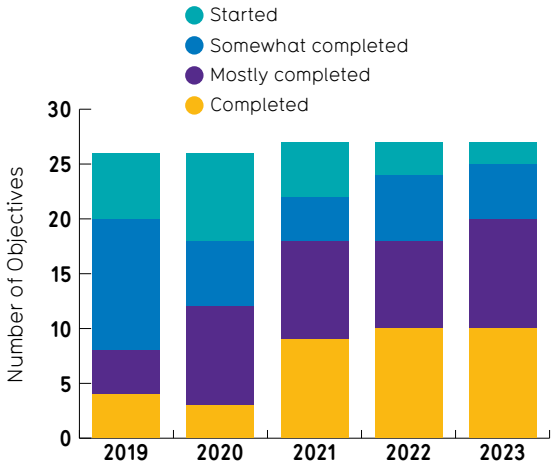
› **Curriculum integration** – Waterloo launched a new project through the Beta Teaching Innovation Incubator to support academic departments in more deeply weaving sustainability throughout undergraduate programs.

› **Agency and responsibility** – Waterloo continues to develop innovative programs to engage students and employees in campus climate action, and is developing a Sustainability Playbook to strengthen shared responsibility.

PROGRESS TOWARD OBJECTIVES

These figures summarize the number of Environmental Sustainability Strategy objectives by various stages of completion, including those with tentative/temporary fluctuations, as of June 2023.

Figure 1: Overall Objective Status over Time



INTRODUCTION: SUMMARY OF PROGRESS

A - ACADEMICS

O - OPERATIONS

E - ENGAGEMENT

G - GOVERNANCE

SUSTAINABILITY OBJECTIVE	STATUS
TEACHING & LEARNING	
A1: By 2019, ensure undergraduate students from any program of study will have the opportunity to learn about sustainability in their courses.	Complete
A2: By 2025, identify and implement flexible strategies for five programs of study to more deeply integrate sustainability within the curriculum.	Somewhat complete
A3: By 2025, every startup emerging from supporting programs at Waterloo will have access to tools and training to embed sustainability into their emerging business plans and models.	Started
RESEARCH	
A4: By 2020, celebrate sustainability research as a core thematic strength of Waterloo's reputation and identity.	Complete
A5: By 2025, become a world leader for research excellence in five sustainability related themes.	Somewhat complete
A6: By 2025, establish Waterloo as a "go-to" hub for knowledge and expertise on sustainability challenges.	Mostly complete
A7: By 2018, implement three new sustainability-related projects annually on campus using faculty and student expertise; by 2025, implement at least eight new projects annually.	Complete ('18) Mostly complete ('25)
CLIMATE CHANGE AND ENERGY	
O1: By 2019, develop a long-term Climate and Energy Action Plan to achieve carbon neutrality by 2050, with interim milestones for 2025 and 2035; achieve a 17.5 per cent reduction in GHG emissions by 2025 from a 2015 baseline.	Complete ('19) Somewhat complete ('25)
O2: Implement cost-effective and practical strategies to reduce or minimize growth in energy use on campus.	Somewhat complete

SUSTAINABILITY OBJECTIVE	STATUS
WASTE	
O3: By 2025, achieve a 60 per cent diversion rate; by 2035, become a zero-waste (90 per cent diversion rate) campus.	Started
WATER	
O4: By 2025, reduce water intensity by five per cent per square metre from a 2015 baseline.	Complete
O5: By 2025, expand the deployment of stormwater management technologies to targeted areas.	Mostly complete
TRANSPORTATION	
O6: By 2025, increase to 90 per cent the proportion of sustainable commuting trips from a 2016 baseline of 85 per cent.	Complete
O7: By 2020, increase electric and alternative-fuel vehicle use on campus.	Complete
O8: By 2025, reduce fossil fuel consumption across the campus fleet by 25 per cent from a 2015 baseline.	Mostly complete
GROUNDS	
O9: By 2025, all University grounds will be maintained according to sustainable landscaping standards, and plans developed for remediation and preservation of specific natural areas of concern.	Mostly complete
FOOD SYSTEMS	
O10: By 2025, 40 per cent of all Food Services food and beverage purchases are produced on-site, locally, or are third-party certified for sustainability.	Mostly complete
O11: By 2018, achieve and maintain a Fair Trade Campus designation.	Complete
O12: By 2020, deliver multifaceted programming to grow student and employee awareness about healthy and sustainable food choices.	Complete

SUSTAINABILITY OBJECTIVE	STATUS
PROCUREMENT	
O13: By 2020, evaluate life cycle cost and require sustainability disclosure from suppliers for all purchasing decisions over $100,000.	Complete
O14: By 2018, establish baseline data and targets to improve the percent of campus-wide purchases that meet third-party standards for paper, electronic equipment, and cleaning supplies.	Mostly complete
COMMUNICATIONS	
E1: By 2020, Waterloo broadly distributes timely and audience-relevant information about sustainability initiatives and opportunities within the campus community.	Mostly complete
STUDENT ENGAGEMENT	
E2: By 2020, additional programming is developed for incoming students during orientation and in residences to encourage sustainable living on campus.	Mostly complete
E3: By 2018, establish a sustainability leaders' program in partnership with students from residences, clubs and societies, student government, and for students in off-campus housing.	Complete
EMPLOYEE ENGAGEMENT	
E4: By 2025, increase from five per cent to 25 per cent the proportion of university departments that are Green Office certified.	Mostly complete
COMMUNITY ENGAGEMENT	
E5: By 2020, Waterloo is recognized as a sustainability leader in Waterloo Region.	Complete
GOVERNANCE AND BENCH-MARKING	
G1: By 2025, achieve and maintain a STARS Gold designation through the Association for the Advancement of Sustainability in Higher Education.	Somewhat complete

CLIMATE EMERGENCY DECLARATION

In May 2021, the University of Waterloo declared a climate emergency, recognizing the urgency and importance of acting upon the climate crisis. The declaration included 10 commitments, including to report annually on progress. Action on climate change is woven throughout this longer report. For clarity, the section below also provides a non-exhaustive summary of actions and progress to date against the climate emergency declaration.

10 commitments from the climate emergency declaration

1. Mobilizing and enabling climate research

- Launch of Waterloo Institute for Sustainable Aeronautics
- Success in Climate Action and Awareness funding
- Six Waterloo Climate Institute/Waterloo researchers contributed to the Intergovernmental Panel on Climate Change's Sixth Assessment Report

2. Engaging in meaningful partnerships around sustainability and climate

- Founding member of University Global Coalition, with 2021 work on global climate network mapping
- Host of Sustainable Development Solutions Network Canada
- Signatory to the UN Framework Convention on Climate Change Race to Zero

3. Integrating sustainability and climate in the curriculum

- Launch of Climate and Environmental Change program
- Launch of Sustainability and Financial Management program
- Initiation of Integrating Sustainability Across the Curriculum project
- Launch of the Sustainability Living Labs program

4. Working toward carbon neutrality in operations through the *Shift:* Neutral climate action plan

- Over $8.8m in preliminary investments directly in energy and climate action projects, plus integration in other capital projects
- Decrease of 4.4 per cent in emissions from 2015 base year

5. Aligning investments with climate risks and opportunities

- Signatory to UN Principles of Responsible Investment
- Development of ESG Policy for investment portfolios
- Commitment in 2021 to measure and reduce carbon intensity of investment portfolios, reaching carbon neutral by 2040

6. Engaging employees and students as agents of change

- Launch of Green Labs program
- Continued support and growth of Green Residence and Green Office programs
- Hosting of campaigns and events to provide opportunities for involvement
- Redeveloping the Sustainability Certificate training program for employees
- Supporting the Living Planet @ Campus program in partnership with WWF Canada

7. Demonstrating leadership and spur change within the local community

- Pledging partner for waste and greenhouse gas (GHG) emissions through the Impact Network of Sustainable Waterloo Region
- Founding member of the Region of Waterloo's TravelWise program
- Steward of Energize community decarbonisation simulation and board game resources
- Membership on local advisory boards and committees

8. Making sustainability and climate action a strategic lens for all University decisions

- Publication of new building design guidelines and lifecycle costing guidelines, and stronger integration within the President's Advisory Committee on Design
- Integration of climate into Strategic Plan reporting framework
- Initial development of the Sustainability Playbook

9. Approaching climate action efforts alongside considerations of equity, diversity, inclusion and Indigenization

- Preliminary discussions and collaborations have occurred between the EDI-R, Indigenous Relations, Campus Wellness, Accessibility, and Sustainability teams
- Joint panel discussion as part of SDG Week 2023 include EDI-R, Indigenous Relations, Campus Wellness, and the Sustainability Office

10. Reporting annually on progress, and provide opportunities for community input

- Inclusion in this annual report
- Integration of climate-related metrics in Strategic Plan KPIs

ACADEMICS

Teaching and Learning

PROGRESS SNAPSHOT

OBJECTIVE A1: By 2019, ensure undergraduate students from any program of study will have the opportunity to learn about sustainability in their courses

Complete

INDICATORS:

496 Total courses focused on or related to sustainability (2021)

688 Total courses with likely connections to UN Sustainable Development Goals

14% Estimated percentage of students graduating from a program with a required sustainability course (2021)

OBJECTIVE A2: By 2025, identify and implement flexible strategies for five programs of study to more deeply integrate sustainability within the curriculum

Somewhat complete

INDICATORS:

6 New programs of study considering or integrating sustainability topics

OBJECTIVE A3: By 2025, every startup emerging from supporting programs at Waterloo will have access to tools and training to embed sustainability into their emerging business plans and models

Started

INDICATORS:

4 Resources and/or programs supporting integration of sustainability in entrepreneurship

Waterloo's educational mission is central to the sustainability impact it can have across society. Thousands of students each year graduate and enter industry, government, and civil society as leaders and decision-makers, all of whom will be impacted by sustainability challenges and will have influence over sustainability transformations.

Waterloo has a deep history of sustainability education, with leadership through the Faculty of Environment and a growing range of disciplines. Over the past five years, there has been increasing reflection of sustainability across new specialized programs of study – such as the Sustainability and Financial Management and the Architectural Engineering programs.

Increasing student advocacy, interest from instructors and faculty, and awareness of its relevance for long-term graduate success has also prompted further discussion on how sustainability can be integrated across many more programs of study, not just those most historically connected to environmental topics. Recent work in Nanotechnology Engineering and Electrical and Computer Engineering are just two examples. This has built momentum around a new Integrating Sustainability Across the Curriculum project through the Beta Teaching Innovation Incubator, which is exploring the resources and frameworks that can make this possible.

CASE STUDIES

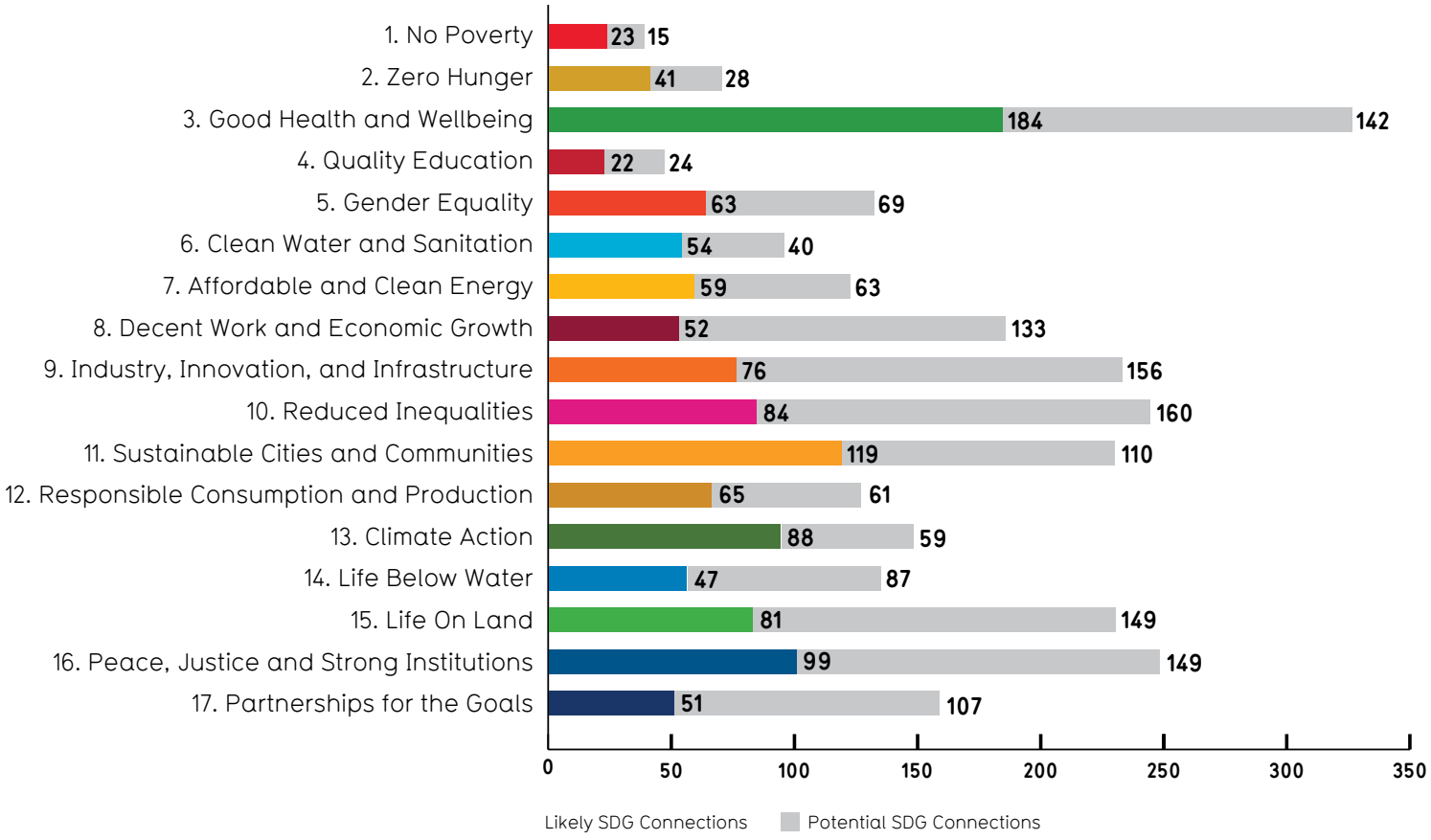
INTEGRATING SUSTAINABILITY ACROSS CURRICULUM

In Spring 2023, the Sustainability Office began work on the Curriculum Integration Project. Headed by the new Sustainability Curriculum Specialist, the project aims to identify ways in which sustainability competencies can be integrated across undergraduate curricula. Specific knowledge of climate change and sustainability will become increasingly important in the workforce, as graduates will need to navigate an era of rapid social and environmental change.

Supported by the Beta Teaching Innovation Incubator, the project is spearheaded by an interdisciplinary working group composed of staff, students, and faculty. The group will work to develop a flexible competencies framework and identify processes and tools to support stakeholders.

READ MORE

Figure 2: Number of Courses Connected to the UN SDGs



CASE STUDIES

BUILDING MOMENTUM FOR SUSTAINABILITY LITERACY

The Sustainability Literacy Initiative is a student group that promotes the integration of sustainability across curriculum. They have engaged students, faculty, and staff across and outside campus to think critically about the importance of sustainability education for a future-ready work force. Some of their initiatives have included hosting the Sustainability Education Summit in fall 2022 with the support of the Sustainability Action Fund, engaging in speaking engagements across campus, and hosting webinars with external stakeholders, such as Environment and Climate Change Canada.

QUICK FACTS

- Waterloo has Canada's oldest, largest, and most programmatically diverse dedicated Faculty of Environment, with a wide range of courses designed for a broad audience
- Interdisciplinary sustainability curricula include the Sustainability Diploma, which can be added to **any** undergraduate degree program, and the Collaborative Water Graduate Program, which is a suite of 22 interdisciplinary graduate programs
- In a campus-wide survey on development of the Environmental Sustainability Strategy, more than 80 per cent of students indicated they wanted to learn more about sustainability while at Waterloo, with a majority from all faculties

CASE STUDIES

INTEGRATING THE SDGS INTO THE CLASSROOM

In May 2022, the Sustainable Development Solutions Network (SDSN) Canada launched the 'Teaching the SDGs' Community of Practice for faculty members, educators, course instructors, and curriculum developers. With over 100 members, the initiative regularly hosts webinars and networking sessions to encourage members to share pedagogical ideas, teaching innovations, approaches, and resources on the SDGs. This initiative aims to create a sense of belonging with like-minded individuals across teaching disciplines and explore creative ways to explore SDGs in the classroom. Members have access to a shared repository of SDG teaching resources and exciting opportunities to promote collaboration and partnerships.

READ MORE

LINKING THE SDGS TO CO-OP PLACEMENTS

In May 2023, Co-operative and Experiential Education (CEE) launched their award-winning 'SDGs at Work' activity. This voluntary activity takes place over a student's work term and includes an introductory webinar, a workbook to provide a framework for discussions and resources, and a closing webinar to share learnings and insights. 'SDGs at Work' is a way for students to deepen professional engagement with their supervisors and learn more about the organization's sustainability commitments. Survey results showed that participating in the activity significantly increased students' interest in and engagement with the SDGs.

READ MORE

SUPPORTING SUSTAINABILITY IN ENGINEERING CAPSTONES

In 2023, Nanotechnology Engineering launched a new award for sustainability as part of the final year Capstone Design project, with support from the Sustainability Action Fund. The project encouraged students to apply their design solutions to sustainability challenges or utilize sustainability lenses, with the top student group receiving a $500 award. The project generated such interest that it was complemented with a faculty-wide finals competition that did the same across most Engineering disciplines, with support from the Dean of Engineering Office.

Research

PROGRESS SNAPSHOT

OBJECTIVE A4: By 2020, celebrate sustainability research as a core thematic strength of Waterloo's reputation and identity

Complete

INDICATORS:

30% Percent of central news releases and research-focused Waterloo stories highlighting scholarship related to environmental sustainability

OBJECTIVE A5: By 2025, become a world leader for research excellence in five sustainability related themes

Somewhat complete

INDICATORS:

361 Faculty members conducting research advancing the UN Sustainable Development Goals (2022)

40 Canada Research Chairs conducting research connected to the UN Sustainable Development Goals (out of 65)

OBJECTIVE A6: By 2025, establish Waterloo as a "go-to" hub for knowledge and expertise on sustainability challenges

Mostly complete

INDICATORS:

55th Overall ranking in THE Impact Ranking globally

11th Overall ranking in THE Global Impact Ranking within Canada

81 Number of countries from which research collaborators jointly published with UW researchers on topics related to the UN SDGs

OBJECTIVE A7: By 2018, implement three new sustainability-related projects annually on campus using faculty and student expertise; by 2025, implement at least eight new projects annually

Complete '18

Mostly complete '25

INDICATORS:

10 Sustainability Living Lab project topics explored through class projects and capstones in 2022–23

Supporting UN SDGs:

Waterloo has numerous research strengths related to sustainability, with over 360 faculty members across the campus conducting research related to at least one of the UN Sustainable Development Goals. Much of this research clusters around existing research institutes for energy, water, climate, and materials science.

These strengths, alongside the imminent need for global expertise, led to sustainability being listed as one of five Global Futures that are a part of the Waterloo at 100 strategic vision. These futures are meant to inspire collaborative and interdisciplinary efforts in research and scholarship toward the world's most pressing challenges. Even more important, the Global Futures reinforce the interconnectivity and intersectionality between Sustainable Futures and Societal, Health, Social, and Economic Futures.

Waterloo's research explores sustainability through many lenses, including technology, social innovation, intra and entrepreneurship, policy development, natural sciences, and modelling approaches to understanding and solving sustainability challenges. In 2022, just some highlights of this dynamic work included:

› Receiving $15.8M in new funding through Canada's Climate Action and Awareness Fund to support six new climate action projects

› Receiving almost $10M in funding toward sustainable aeronautics research

› Receiving almost $15M from Global Affairs Canada to support the Flood Impacts, Carbon Pricing, and Ecosystem Sustainability project in collaboration with Indonesian partners

› Leading a new project to detect and treat "forever chemicals" in the water of over 2.5 million Canadians

› Partnering with the Department of National Defense to utilize cutting-edge imaging technology to better detect and model methane emissions from fossil fuel extraction

› Launching a new Trust in Science and Technology Research Network to combat disinformation hindering progress on many global issues

QUICK FACTS

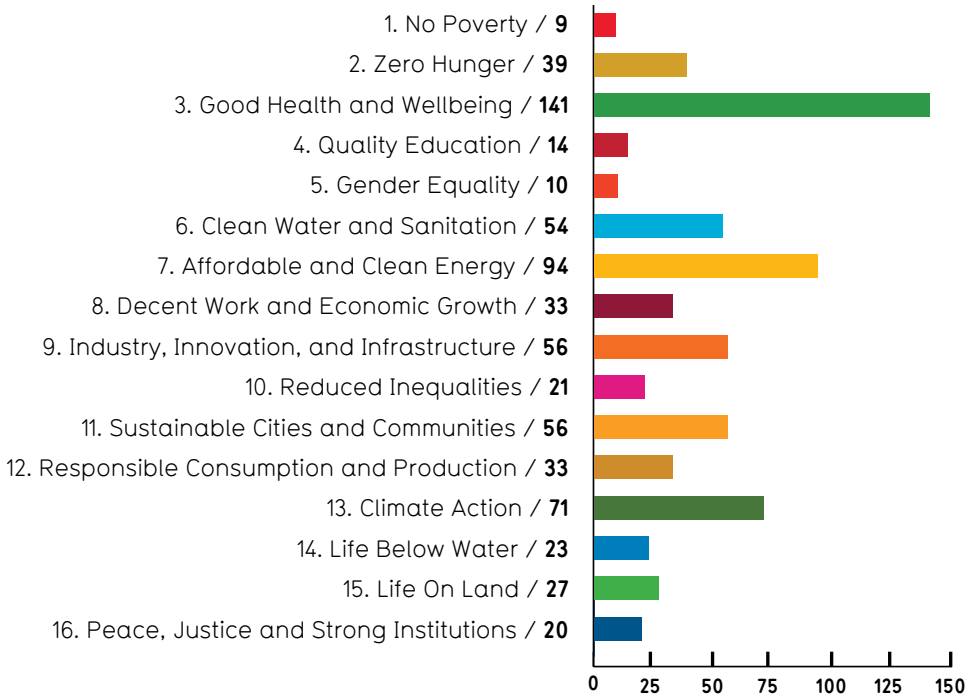
› Waterloo has six University research institutes with significant sustainability focuses or research streams:

1. Waterloo Climate Institute
2. Waterloo Institute for Sustainable Energy
3. Water Institute
4. Waterloo Institute for Sustainable Aeronautics
5. Waterloo Institute for Nanotechnology
6. Waterloo Centre for Automotive Research

› Waterloo has a database of scholarly experts that can be searched by keyword and topics, helping to mobilize sustainability knowledge

› Four researchers from the Waterloo Climate Institute were lead or contributing authors on the Intergovernmental Panel on Climate Change's Sixth Assessment work, the most of any Canadian university

Figure 3: Number of Researchers with SDG Publications (2016-20)



CASE STUDIES

LAUNCHING THE SUSTAINABLE FUTURES INITIATIVE

The Sustainable Futures Initiative, launched in the fall of 2022, brings together the Waterloo Climate Institute, the Water Institute, and the Waterloo Institute for Sustainable Energy. It aims to accelerate holistic approaches to advance the SDGs focusing on the interconnections between energy, climate, and water.

The initiative highlights interdisciplinary and transdisciplinary research across the institutes and Waterloo's strong reputation for leadership in sustainability. One of this year's initiatives was the three-week, virtual summer school "Water and Energy Security in a Changing Climate", which offered students and professionals insight and strategies from multiple disciplines to address the urgent challenges related to water and energy security amidst climate change.

ATTENDING UN 2023 WATER CONFERENCE

A delegation from the Water Institute, headed by Executive Director Roy Brouwer, attended the UN 2023 Water Conference at the UN Headquarters in New York. It was the first United Nations Water Conference of its kind in 46 years. The Water Institute delegation of faculty and graduate students, which was granted special accreditation by the General Assembly, participated in this generational conference by sharing their expert knowledge to accelerate progress towards achieving SDG 6 – ensuring availability and sustainable management of water and sanitation for all.

LIVING LAB SNAPSHOT

The Sustainability Living Lab (SLL) was launched in late 2021 to link academic expertise and capacity with sustainability needs and opportunities directly on the campus. Building on a long history of using the campus as a living lab back to the early 1990s, the new iteration will more tightly link operational sustainability initiatives to the University's academic mission.

Early projects facilitated through the SLL in late 2022/early 2023 include:

- **ENBUS 402** – Over 20 final year capstone student teams explored seven different campus sustainability focus areas, including food, waste, reporting, engagement, and procurement.
- **PLAN 405** – Two capstone course projects focused on analysing opportunities for naturalization across key areas of the South Campus, and developing preliminary site plans that would improve campus biodiversity.
- **PLAN 211** – Students combined artificial intelligence, Planning theory, and design skills to re-imagine what different parts of the campus could look like if the University achieved its sustainability goals by 2050.
- **INTEG 121** – Knowledge Integration students also utilized interdisciplinary thinking to reimagine a mix of indoor and outdoor spaces to help visualize a sustainable campus.
- **MSCI 100** – Students from Management Sciences explored the potential of solar generation across the University on campus grounds, rooftops, and parking lots.
- **NE 100** – Nanotechnology Engineering students used campus sustainability topics to run through a problem analysis exercise, encouraging deep problem reflections rather than jumping straight into solutions.

CASE STUDIES

FISHING FOR CLIMATE IMPACTS IN THE LAB

The new Waterloo Aquatic Threats in Environmental Research (WATER) facility brought together a mix of technologies and systems to simulate and understand the impacts that climate change can have on fish stress. The multi-million dollar research facility, based in the Faculty of Science, has the ability to study a range of aquatic organisms in a controlled setting, over short and long timespans, all while having significant savings on water consumption!

READ MORE

USING RADAR ALTIMETRY TO CONNECT NORTHERN COMMUNITIES

Researchers in the Faculty of Environment have been studying radar altimetry as a tool to assess river ice thickness in arctic regions. Shorter ice seasons and thinner ice due to climate change pose increased risks for northern communities, who rely on ice road and bridge networks to transport goods and food. The research team has found this new algorithm method to be effective, creating a better understanding of safe construction and travel conditions on ice roads and bridges.

READ MORE

OPERATIONS

Climate Change and Energy

PROGRESS SNAPSHOT

OBJECTIVE 01: By 2019, develop a long-term Climate and Energy Action Plan to achieve carbon neutrality by 2050, with interim milestones for 2025 and 2035; achieve a 17.5 per cent reduction in GHG emissions by 2025 from a 2015 baseline

Complete '19

Somewhat complete '25

INDICATORS:

COMPLETE Development of *Shift*:Neutral Climate Action Plan

-4.4% Change in emissions from 2015

37,694 Tonnes of GHG emissions (Scope 1 and 2)

50,337 Tonnes of GHG emissions (Scope 1, 2, and select Scope 3)

OBJECTIVE 02: Implement cost-effective and practical strategies to reduce or minimize growth in energy use on campus

Somewhat complete

INDICATORS:

389 (NekWh/m^2) Weather-normalized energy intensity*

-6.0% Change in energy intensity from 2015

*Energy intensities are presented in raw/unadjusted terms through 2010–14, and since then normalized to 2015 heating degree days

Supporting UN SDGs:

Energy use across campus increased four per cent year-over-year in 2022, with a three per cent increase in gas use and seven per cent increase in electricity use. The increase in electricity is consistent with activity resuming on campus, as overall consumption is now comparable to 2019. The increase in gas is also consistent with increased occupancy but more directly related to an increase in heating demand from a slightly colder than average winter. When normalizing for weather, 2022 energy intensity was statistically identical to 2021, and below the 2015 base year. Gas consumption remains approximately eight per cent below 2018 and 2019 levels, although both years were slightly colder than 2022. The impact of energy conservation projects initiated in 2022 will only show up fully in the 2023 data, which should support continued gas reductions, all other things being equal.

The increase in energy use has led to an increase in energy-related greenhouse gas emissions, also of roughly four per cent year-over-year, though emissions remain 4.4 per cent below 2015 levels. This means Waterloo is approximately 25 per cent of the way to the 2025 target. New projects that have been committed to in 2023/24 will support additional reductions toward this target. These projects include:

› Accelerated steam trap repairs

› Re/retro-commissioning projects

› Door/window-sealing projects

› Solar photovoltaic installation

› Heat recovery project in MC and QNC

› Demand-controlled ventilation project

› Major retrofit of the ESC third floor

Emissions from other indirect sources increased sharply throughout 2022, particularly transportation-related emissions. Increased activity has largely rebounded to pre-pandemic emissions levels for student and employee commuting, with a large resumption in emissions-intensive air travel activity as well, even though these emissions are still being fully quantified. These points are discussed in greater detail in the Transportation section.

QUICK FACTS

› 4.4 per cent decrease in emissions compared to 2015 base year

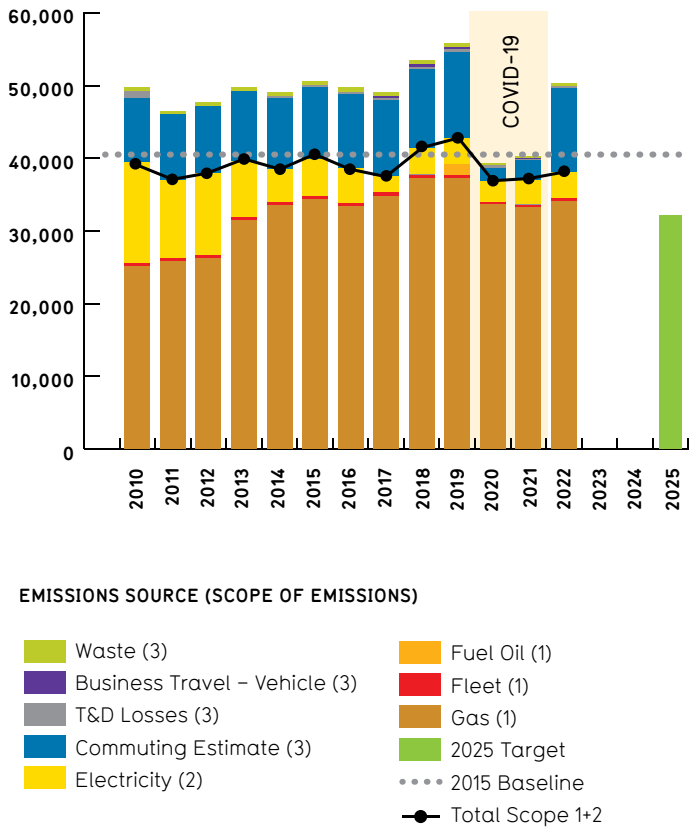
› 90 per cent of Scope 1+2 emissions are from gas for space and water heating

› Four energy conservation projects implemented during 2022

› New buildings are required to meet strict energy efficiency and low-carbon performance targets

› $7.6M in energy projects and foundational support were committed for 2023/24

Figure 4: Total Emissions (t CO_2-e)



To ensure accountability, transparency, and holism, the University of Waterloo follows the Greenhouse Gas Protocol guidance for accounting of greenhouse gas emissions. The Protocol defines emissions as follows:

Scope 1 – Emissions directly from combustion at the University

Scope 2 – Indirect emissions from energy

Scope 3 – Other indirect emissions from upstream or downstream supply chain or services

Scope 3 can include many sources of emissions. Other material sources which are not included above, but for which ongoing quantification is in progress, include emissions from:

› Air travel for University activities

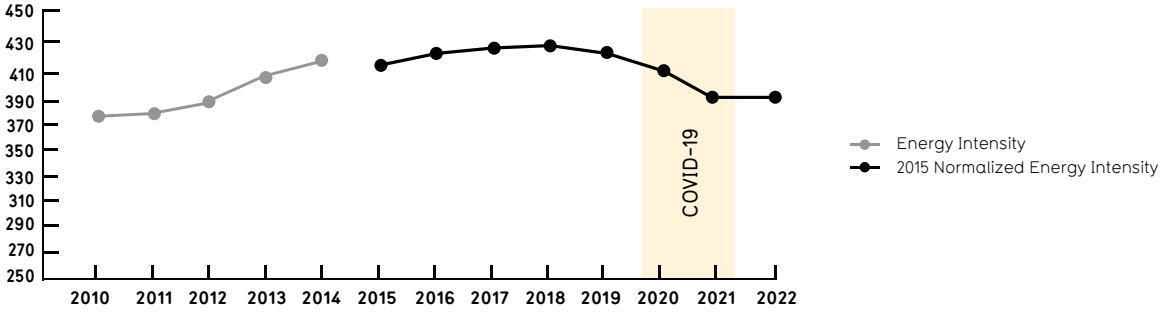
› The supply chain for food purchased and sold on campus

› The supply chain for other products and commodities used on campus

› Embodied carbon in construction materials

› Transportation of goods and services to the campus

Figure 5: Energy Intensity (Normalized ekWh/m²)*



*Energy intensities are presented in raw/unadjusted terms through 2010–14, and since then normalized to 2015 heating degree days

CASE STUDIES

MAKING STEPS ON ENERGY CONSERVATION

Over the course of 2022, Plant Operations supported several energy conservation projects that also led to emission reductions. These included:

- An LED lighting retrofit in PAS that will reduce electricity use
- Heating system optimization projects across E6, CMH, OPT, and ECH that make tune-ups to building controls to avoid significant wasted energy
- Water conservation projects for taps and showerheads that also reduce energy for water heating
- Preliminary steam trap repairs that improve the operating efficiency of the Central Plant

INTEGRATING BUILDING METERING TO COLLECT ENERGY DATA

Waterloo initiated a pilot project to gain better information about energy consumption at a more granular building level through submetering. This started with E5, E7, and MC, and included metering all major utility streams, including water, electricity, gas, steam, and chilled water. The project will expand to cover most buildings across campus in the coming years, enabling more rigorous analysis of energy use to support education and behaviour change, help identify areas of energy waste, and improve development of energy conservation efforts.

PLANNING FOR DISTRICT ENERGY DECARBONIZATION

Following the building-level energy audits that were completed in 2020–21, Waterloo completed preliminary analysis of the technical pathways and opportunities to decarbonize the district energy system, which supplies about 75 per cent of the energy used across campus. With support from Doherty Engineering consultants, the project concluded with a technical report that outlined key directions, technologies, and phasing. Over 2023, these are being refined and integrated with the building-level audits, but key emergent directions included the following:

- Transitioning the district energy system from steam to hot water for heating, in three major phases
- Developing three nodes within the district energy system to support phasing, each with a separate energy plant
- Electrifying most heating using a combination of ground and air-source heat pumps, electric boilers, and other heat sources
- Phasing out non-space heating uses of district steam
- Undertaking building-level retrofits to improve efficiency and enable effective connection to a lower-temperature system

CREATING SYSTEMIC MOMENTUM THROUGH THE REVOLVING FUND

As part of the 2023/24 budget, Waterloo has launched a Sustainability Revolving Fund. With an initial $1,000,000 seed from the Provost, Plant Operations and the Sustainability Office will mutually support deployment of the fund, which is intended to catalyze small to medium-sized initiatives that create utility and emission reductions while generating material cost savings. A process will be established for project intake, which could include building-related projects, as well as upgrades to lab equipment or other systems that create savings. Financial savings are intended to be reinvested into the fund, creating a positive feedback loop that will catalyze further projects.

Waste

Supporting UN SDGs:

PROGRESS SNAPSHOT

OBJECTIVE 03: By 2025, achieve a 60 per cent diversion rate; by 2035, become a zero-waste campus (90 per cent diversion rate)

Started

INDICATORS:

28.2%
Waste diverted from landfill

2,485
Tonnes of waste sent to landfill

Waterloo's waste diversion dropped in 2022. Overall weights of recycling and organics remained consistent with previous years, but the amount of waste sent to landfill increased significantly. This was partially due to one-time disposal of old materials that had been in storage and were not salvageable, but the majority was related to ongoing on-campus activity.

Waterloo has developed strong programming for many categories of waste, with diversion programs that cover most major waste sources. However, contamination of the waste stream, particularly in public spaces and residences, remains a major challenge to improving the diversion rate. A combination of education, programming, and stricter approaches to upstream policy on waste generation will increasingly be needed to prevent waste generation and encourage proper sorting of waste that is created.

QUICK FACTS

- -7.6 per cent change to the diversion rate in 2022
- 25 formal waste diversion streams or programs are active across campus
- 70–80 per cent of what is discarded in garbage could be recycled, according to waste audits

Figure 6: Diversion Rate (%) and Landfill Weight (t)

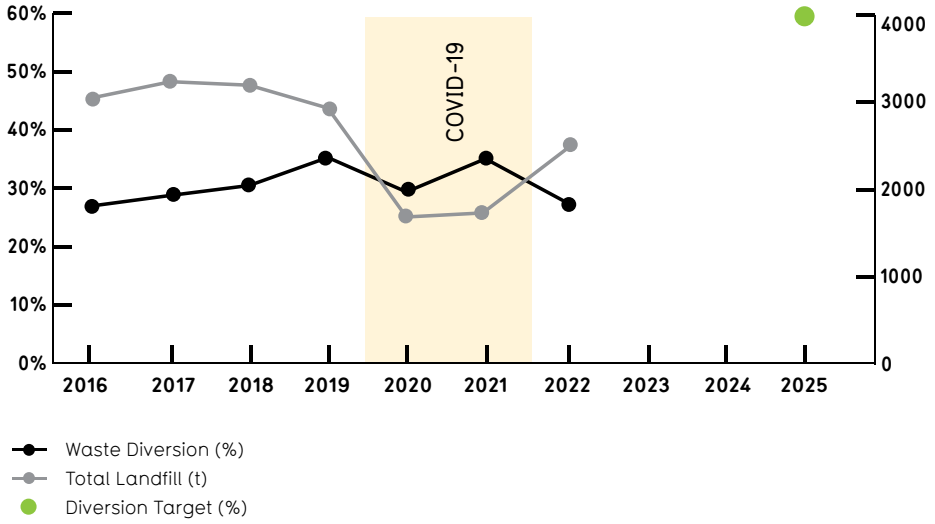
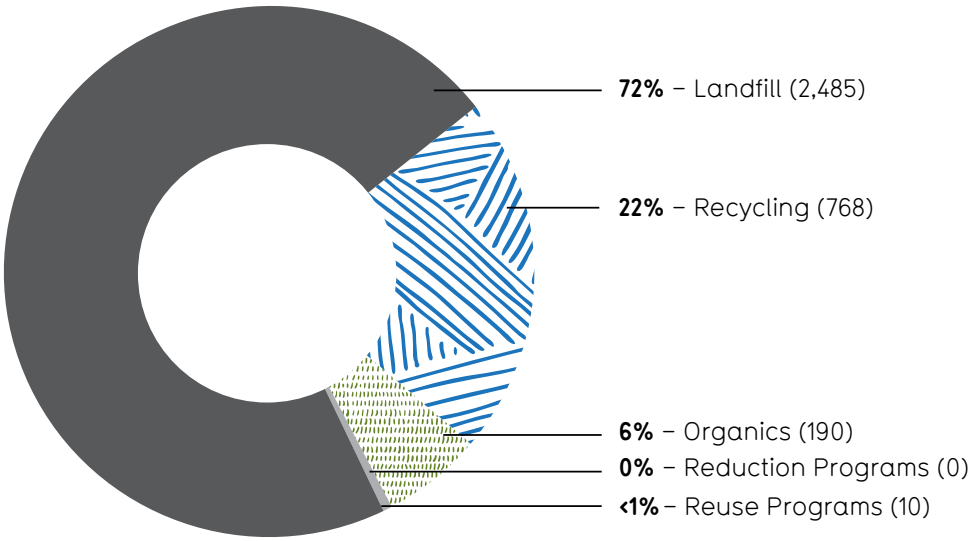


Figure 7: 2021 Waste Composition (tonnes in brackets)



CASE STUDIES

UPCYCLING AT 'FREE STORE' IN CAMPUS HOUSING

In September 2022, Campus Housing hosted a two-day pop-up event at UWP to give away nearly 13,500 lbs of donated items. Items left behind or donated, such as plates, kettles, and water bottles, were collected at the end of the winter 2022 move-out period, diverting a significant amount of waste from landfill. These were then sorted and weighed by the Campus Housing Residence Hospitality Experience team to be given away for free to incoming students in residence. Due to the immense interest in the Upcycle Pop-Up, the event was repeated in September 2023. The event works to divert waste and promote circularity on campus.

REDUCING WASTE AT INAUGURAL ZERO WASTE FAIR

During October 2022, the Sustainability Office and Plant Operations hosted Zero Waste Month, an annual campaign to showcase and celebrate low- and zero-waste programs and resources for the campus community. Events during the month featured a wide variety of ways people could reduce how much waste they produced, including waste reduction, reuse, repair, and more. More than 200 people attended the inaugural Zero Waste Fair to engage with campus partners on waste reduction initiatives. Additionally, more than 160 people played the online *Shift*:Zero sorting game to practice waste sorting on campus, and many items were fixed at the repair workshop hosted by 4RepairKW.

INTRODUCING THE UW REPAIR HUB

In fall 2022, 4RepairKW launched the Repair Hub to continue building a culture of repair on campus. Located in E7-1401, it offers free tools, workspace, and support to fix a wide variety of items such as clothing and appliances, while helping to teach new skills and bring new life to broken items. All campus community members are welcome to use the Repair Hub and gain access to tools and supplies they otherwise would not have on hand, such as adhesives, soldering, and needles and thread. 4RepairKW also hosts monthly repair events where volunteer repairers are available to fix more specialized items.

DIVERTING FOOD WASTE THROUGH UWP ORGANICS COLLECTION PROGRAM

In fall 2022 and winter 2023, Green Residence volunteers built on the success of the organics collection pilot at UWP. This program, first started in 2021, helps divert organic waste from the landfill by collecting compost from student rooms. Collection has since expanded to six different Campus Housing residence buildings and has diverted hundreds of bags of organic waste from the landfill. This is part of a larger push to reduce waste and expand composting across campus, in pursuit of Waterloo's goal to become a zero-waste campus by 2035.

Water

Supporting UN SDGs:

PROGRESS SNAPSHOT

OBJECTIVE 04: By 2025, reduce water intensity by 5 per cent per square metre from a 2015 baseline

Complete

INDICATORS:

5% Reduction in water use intensity since 2015

0.72 Metres cubed water use per square metre

OBJECTIVE 05: By 2025, expand the deployment of stormwater management technologies to targeted areas

Mostly complete

INDICATORS:

4 New stormwater management features on campus

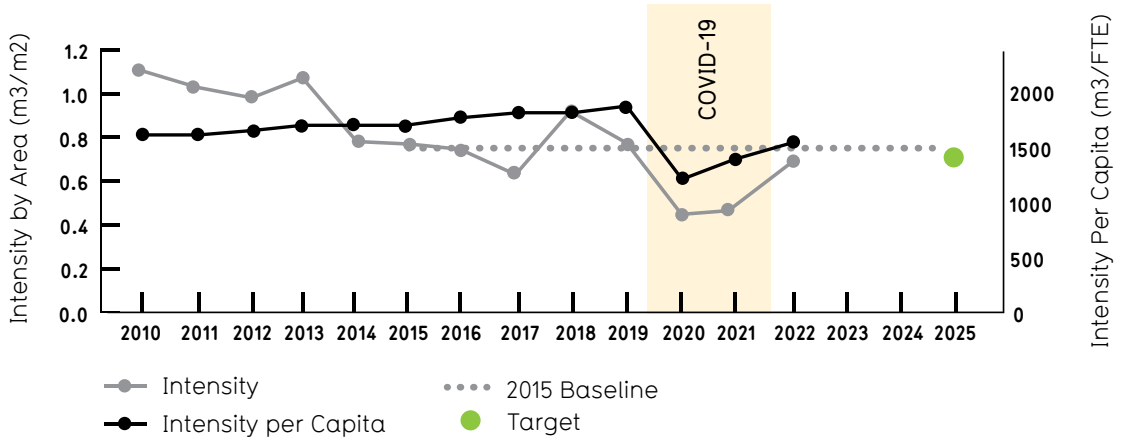
15 Stormwater features implemented on campus

The University's water footprint rose in 2022 as activity on campus resumed to pre-pandemic levels. Investments in water-saving technologies in late 2022 helped keep consumption lower than the 2018/19 peak years, and will likely support Waterloo maintaining its five per cent reduction target. Additional educational measures to encourage water-saving behaviours can complement these investments to minimize consumption.

QUICK FACTS

- 30 per cent increase in water intensity in 2022 as on-campus activity resumed
- Five green roofs and/or rooftop gardens
- Three permeable pavement installation sites
- Five stormwater ponds and one rainwater cistern
- 1,500 showerheads and >3,500 faucets replaced with low-flow fixtures

Figure 8: Water Intensity by Area and Per Capita



CASE STUDIES

STAYING HYDRATED WITH WATER REFILL STATIONS

Waterloo has more than 85 water bottle refill stations across campus, in addition to other fountains. These ensure that students and employees have access to clean drinking water, while also reducing single-use plastic. From the stations that have built-in tracking, the fountains have prevented the use of over four million plastic bottles.

Transportation

Supporting UN SDGs:

PROGRESS SNAPSHOT

OBJECTIVE 06: By 2025, increase to 90 per cent the proportion of sustainable commuting trips from a 2016 baseline of 85 per cent

Complete

INDICATORS:

88% Combined student and employee trips* to campus using a sustainable mode

90% Student trips* by walking, cycling, carpooling, transit, or online learning

62% Employee commuting trips* by walking, cycling, carpooling, transit, or telework

OBJECTIVE 07: By 2020, increase electric and alternative-fuel vehicle use on campus

Complete

INDICATORS:

3.3% Of vehicles used to commute to campus are electric or plug-in hybrid electric

OBJECTIVE 08: By 2025, reduce fossil fuel consumption across the campus fleet by 25 per cent from a 2015 baseline

Mostly Complete

INDICATORS:

24% Reduction in fleet fuel use since 2015

167,713 Litres fuel consumption

Transportation is an important sustainability aspect for the University to manage, as it creates greenhouse gas emissions, is land and resource-intensive, influences health and wellbeing, and impacts the communities around the campus. At Waterloo, transportation sustainability has three distinct components:

1. *Commuting: students and employees travel to and from the campus on a regular basis*
2. *Travel: campus community members travel for research, conferences, exchanges, co-op, fundraising, recruitment, and student arrivals*
3. *Fleet: operation of a fleet of over 130 vehicles directly owned by the University*

Transportation activity increased in 2022 in each of these areas as the campus resumed most normal operations. Commuting trips and emissions increased substantially as employees and students returned to in-person classes and work, although there remains a pronounced increase in employee remote working from before the pandemic, which is a positive residual effect of the experience learned over the past three years. Similarly, self-reported trips by students have also seen a higher rate of remote learning than before the pandemic. However, this seemed to come from a decline in transit usage rather than from driving.

Off-campus travel has also increased as most travel restrictions were dropped. Trips abroad for research, professional development, exchanges, and partnership development all increased in 2022, with a resultant increase in emissions. Waterloo launched a project over the year to explore ways to quantify emissions from air travel and leverage innovations learned in the pandemic to rethink the need for flying.

Finally, the University's fleet also resumed most activity, but investments in some fleet renewal and efficiency have maintained a large reduction in total fuel consumption, with new hybrid and electric vehicles helping to further reduce fuel consumption.

QUICK FACTS

- Waterloo has 18 EV charging stations, with 15 added in 2021/22
- Discounted transit passes are available for all students and employees
- Emergency-Ride Home program is available for employees using sustainable transportation
- Carpool/bikepool software is available through the TravelWise program
- Six new electric vehicles and light-duty vehicles were added to Waterloo's fleet since 2021, with significant growth potential

Figure 9: Sustainable Trips to Campus (% of Total)*

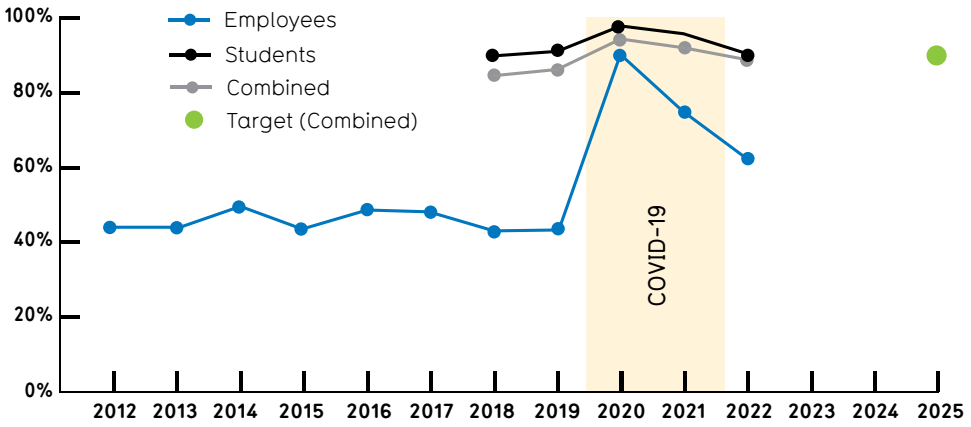
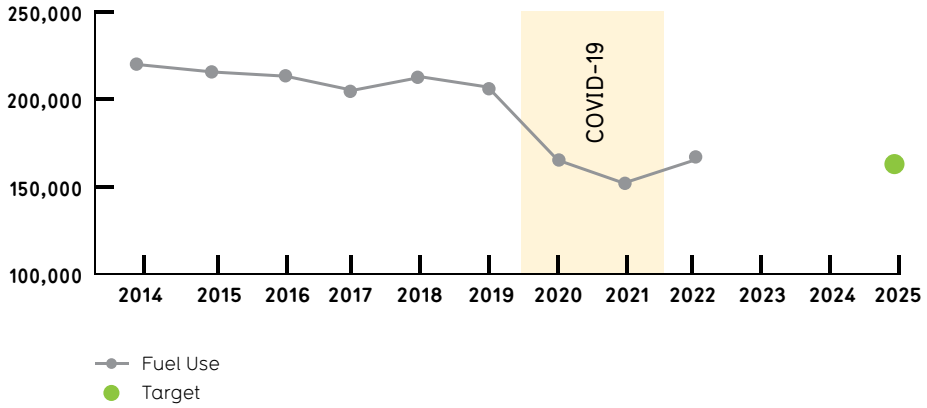


Figure 10: Fleet Fuel Use (L)



*"Trips" is used generically to refer to how students and employees move to a place of work or study from their place of residence. This includes, for example, trips from students living in residences as they travel to academic buildings, as well as "avoided trips" from remote learning or work-from-home activity. Sustainable trips include those by walking, cycling, transit, carpooling, or remote working/learning.

CASE STUDIES

CELEBRATING ACTIVE TRANSPORTATION AT BIKE FAIR

In June 2023, the Sustainability Office hosted their annual Bike Fair to showcase and celebrate programs and resources to support active and sustainable transportation to and from campus. Over 300 attendees brought their bikes in for free tune-ups from King Street Cycles and Red Raccoon Bike Rescue, enjoyed free ice cream from Four All, and connected with many other campus and community partners on cycling infrastructure, local trails, and more.

SHARING MICROMOBILITY WITH NEURON

In June 2023, Waterloo joined the region-wide Neuron e-bike and e-scooter share pilot, supporting sustainable transportation options between the campus and broader community. Pick-up and drop-off hubs were launched around Ring Road, UWP, and CLV and expanded to Kitchener and Cambridge campuses throughout the term. The program is anticipated to run until the end of October 2023.

CHARGING FORWARD WITH NEW ELECTRIC FLEET VEHICLES

With support from the Provost's vehicle electrification incentive, Waterloo continues to green its vehicle fleet. In 2022, this included a new Chevy Bolt for use by Print and Retail Solutions to support their operations, as well as two new Ford eTransit delivery vans used by Central Stores to deliver mail, shipping, and other materials around the University community. These EVs will directly help reduce emissions from the fleet, while also making the campus a little quieter, cutting down on air pollution, and saving Waterloo money on operating costs for fuel and maintenance. The vehicle electrification incentive will provide any campus department with up to $10,000 to replace an internal combustion engine vehicle with an electric model.

REDUCING THE IMPACT OF AIR TRAVEL

Throughout 2022, a collaboration between the Sustainability Office, Waterloo Climate Institute, Waterloo Institute for Sustainable Aeronautics, Waterloo International, and Finance met to explore ways for groups on campus to reduce the environmental impact of air travel. An initial report from the working group established methods for better quantification of air travel, and a list of opportunities to reduce travel where possible. Throughout 2023/24, these opportunities will be explored further for implementation.

LIVING LAB SPOTLIGHT: ADDRESSING BARRIERS TO SUSTAINABLE TRANSPORTATION (INTEG 499)

In fall 2022, an INTEG 499 capstone group tackled the issue of active transportation on campus. They surveyed 93 students to understand how they got to and from school, specifically looking to answer questions around challenges with choosing more sustainable forms of transportation. After studying possible solutions and presenting their findings to the Sustainability Office, they recommended that a micro mobility bikeshare program be implemented on campus. The program would be integrated with the UPass program and address barriers to cycling for students.

Grounds

Supporting UN SDGs:

PROGRESS SNAPSHOT

OBJECTIVE 09: By 2025, all University grounds will be maintained according to sustainable landscaping standards, and plans developed for remediation and preservation of specific natural areas of concern

Mostly complete

INDICATORS:

TBC Per cent compliance with sustainable landscaping standard forthcoming

100% Grounds managed to integrated pest management principles

In 2022, Waterloo completed a draft of its Sustainable Land Care Standard – a set of directions and operating practices that add clarity and continuous improvement to the management of green spaces on University property. Three open houses were held in fall 2022 to allow input from the campus community, as well as consultation with subject matter experts. Sustainability Living Labs projects and other hands-on work in early 2023 are already putting many of the directions of the standard into action!

QUICK FACTS

- Waterloo has >1,200 acres of managed grounds and a 270 acre Environmental Reserve
- Integrated pest management principles for reduced pesticides/fertilizers have been applied since the 1990s
- Campus EcoMaps highlights major natural, semi-natural, and managed areas, as well as species concentrations across the University
- Over 1,600 identified species of plants, fungi, insects, molluscs, reptiles, birds, mammals, and other living creatures occupy campus grounds

CASE STUDIES

KEEPING CAMPUS CLEAN FOR EARTH DAY

In honour of Earth Day, the Sustainability Office hosted their annual campus clean-up event in April 2023. More than 100 volunteers helped to clean litter "hotspots" around main campus, collecting more than 80 bags of trash. Several groups also hosted smaller clean-ups throughout the month, including parts of the Health Sciences Campus in downtown Kitchener. The campus clean-up was an important reminder of our shared responsibility to be good environmental stewards and the collective impact we can achieve working together. Special thanks to many Green Office departments for their participation!

BUDDING GREEN THUMBS AT SEEDLING SWAP

In May 2023, the Sustainability Office hosted their first Seedling Swap to engage and educate the campus community on gardening and local food systems. Ahead of the spring growing season, employees and students were invited to bring non-perishable food donations or extra seedlings to swap for new ones. Around 150 seedlings were swapped, including a wide variety of vegetables and wildflowers. In addition, 80 food items were donated to the WUSA Food Support program to address food insecurity on campus.

GROWING TREE CANOPY ACROSS CAMPUS

In May 2023, the Sustainability Office and Plant Operations - Grounds organized two tree planting events to engage employees and students in campus naturalization efforts, with support from the Sustainability Action Fund and TD Friends of the Environment Foundation. The group planted a variety of native and ecologically appropriate species, including 200 trees/shrubs and 200 wildflowers, which will create important habitat and food sources for local wildlife and pollinators.

Students also planted over 150 native trees and shrubs as part of ENVS 200: Field Ecology with the Ecology Lab, including sites on North Campus along Columbia Lake and on South Campus downstream of the Health Services pond.

ELECTRIFYING LANDSCAPING EQUIPMENT

With support from the Sustainability Action Fund, the Plant Operations – Grounds team took a step to cut down on noise, weight, and emissions with the purchase of new electric line trimmers and hedge trimmers. The team has so far had strong success with the pilot, valuing the lighter equipment and not having to breathe in fumes next to a loud motor, all while having a positive climate impact.

LIVING LAB SPOTLIGHT: REIMAGINING CAMPUS IN 2050 (PLAN 211 AND 405)

In winter 2022, PLAN 211 and PLAN 405 engaged in Living Labs projects to reimagine open spaces on main campus. Students in both courses used AI software to redesign campus using both urban design and ecological landscaping best practices. Design recommendations prioritized naturalization, biophilic thinking, accessibility, and community building. They included bioswales, permeable pavement, terraced landscaping, water features, and enhanced paths for walking and cycling. These projects allowed students to use their creativity and technological tools to design a Waterloo campus for a more vibrant and sustainable future.

Food

Supporting UN SDGs:

PROGRESS SNAPSHOT

OBJECTIVE 010: By 2025, 40 per cent of all Food Services food and beverage purchases are produced on-site, locally, or are third-party certified for sustainability

Mostly complete

INDICATORS:

34% Of all food and beverage purchases are local, produced on-site, or third-party certified for sustainability

OBJECTIVE 011: By 2018, achieve and maintain a Fair Trade Campus designation

Complete

INDICATORS:

COMPLETE Fair Trade Campus designation received May 2019

OBJECTIVE 012: By 2020, deliver multifaceted programming to grow student and employee awareness about healthy and sustainable food choices

Complete

INDICATORS:

19 Projects or initiatives to increase awareness of healthy and sustainable food

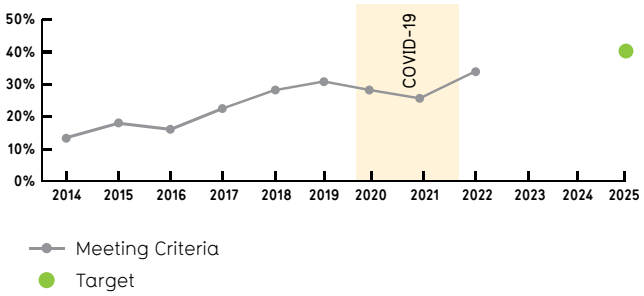
Waterloo has a diverse food system to meet the needs of students and employees who live, work, and learn on campus. With 26 locations across campus run by Food Services, plus student-run coffee and donut shops and other food enterprises, food procurement and disposal have important environmental impacts to consider.

Resuming activity in 2022, particularly in campus residence buildings, led to an increase in overall food purchased, as well as a strong rebound in local and sustainably-certified food options. This effort from the Food Services team has put Waterloo on track for its 2025 target of 40 per cent of food sourced locally and/or sustainably.

QUICK FACTS

- Waterloo is a Fair Trade Certified campus, ensuring that all University and student-run food outlets provide fair trade coffee, tea, and chocolate
- Food Services hosts Farm Markets during harvest season, to connect students and employees with fresh local produce
- The Farm to Campus Fresh program highlights locally sourced options across campus menus
- Vegan and vegetarian options are available across all residence dining halls

Figure 11: Food Purchases Meeting Target Criteria (% of Total)



CASE STUDIES

EXPANDING PLANT-FORWARD MENU CHOICES

Food Services continued working towards the inclusion of plant-forward choices across residence stations and food outlets, like the Ev3rgreen Café in EV3. Their chefs continually work to revamp menus with inclusive choices such as Smart Snacks—allergen friendly, gluten-free and vegan snacks—and alternatives that cross multiple diets where possible.

Food Services also runs several free, student-focused events. In winter 2023, they hosted a plant-focused chef cook off for the annual Fired Up at REV competition. Chefs were challenged with incorporating banana, cassava, ginger, and kale into their final entrées. Their Green Garden Fest event at CMH also featured a 100 per cent plant-based menu created by Chef Sean Locke.

BRINGING LOCAL FOODS TO CAMPUS AT UW FARM MARKET

As part of their "farm to campus" campaign, Food Services was thrilled to bring back the UW Farm Market in fall 2022. This annual event brings fresh and local produce, baked goods, and preserves to the campus community. The market was held over four consecutive Thursdays in September, including a Farm Market/Toonie Picnic outdoor event with plant-based chana masala as the feature.

BUILDING AWARENESS THROUGH ALTERNATIVE PROTEIN PROJECT

The Waterloo Alt. Protein Project is a student group that advocates for more sustainable food systems, with a focus on plant-based proteins. With support from the Sustainability Action Fund and GreenHouse, the group helps to promote open-access research, empower student entrepreneurs, and generate awareness and excitement around alternative proteins. Follow @altprouw on Instagram for workshops, resources, and more.

LIVING LAB SPOTLIGHT: CLIMATE FOOD LABELING (ENBUS 402)

Food comprises a significant portion of an individual's carbon footprint. In winter 2023, an ENBUS 402 capstone group explored climate food labelling. In order to better inform people of the environmental impacts of different food choices, the group researched different labels that could nudge people into making more ecologically conscious food decisions.

After conducting a literature review and small survey, the group proposed a traffic light climate impact food label that would visually show the carbon footprint of different products. They recommended that the labels be piloted in the EV3 café and expanded campus-wide.

Procurement

Supporting UN SDGs:

PROGRESS SNAPSHOT

OBJECTIVE 013: By 2020, evaluate life cycle cost and require sustainability disclosure from suppliers for all purchasing decisions over $100,000

Complete

INDICATORS:

COMPLETE
Development of lifecycle costing guideline and calculator

16 Major suppliers participated in pilot sustainability disclosure process

OBJECTIVE 014: By 2018, establish baseline data and targets to improve the percent of campus-wide purchases that meet third-party standards for paper, electronic equipment, and cleaning supplies

Mostly complete

INDICATORS:

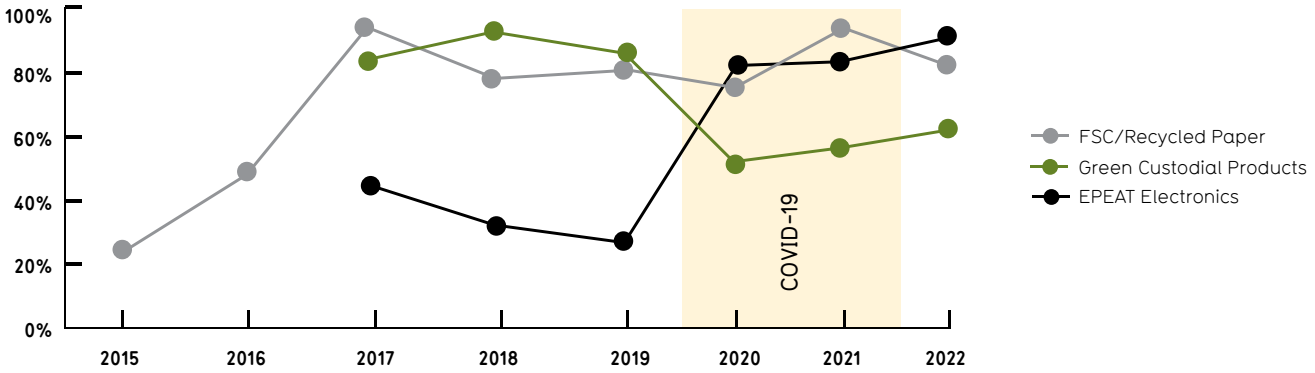
82% Of all paper purchases have FSC certification and/or recycled content

91% Of all major electronics purchased are certified to EPEAT Bronze or higher

61% Of all janitorial cleaning and paper products have an environmental certification

Waterloo continues to identify opportunities for integrating sustainability within procurement processes. It has utilized the Lifecycle Costing Guideline for decision-making on fleet, building, and energy system investment decisions, considering the long-term costs and impacts of these investments. Over the past year, purchases of sustainably-certified electronic equipment and cleaning supplies increased slightly, while there was a slight decrease in sustainably-certified paper.

Figure 12: Purchases Meeting Sustainability Criteria (% of Total)



QUICK FACTS

- The Sustainability Office hosts a sustainable procurement guide to help campus users make better purchasing decisions across key categories
- Waterloo's Lifecycle Costing Guideline ensures long-term cost and impact considerations are part of the procurement process
- The University's Staples Professional/eway purchasing program has a dedicated section for sustainable solutions, that can help employees purchase office supplies with sustainable certifications, recycled content, improved packaging, and other environmental benefits

CASE STUDIES

BUYING GREEN TECHNOLOGY

Recognizing the very large supply-chain impact of computing and technology products, the University's Green IT committee launched a project in early 2023 to develop a guideline that would support integration of sustainability requirements into major IT purchasing decisions. The draft guideline covers products such as computers, phones, printers, and networking equipment, as well as software. The guideline aims to support best practices for sustainable IT procurement, to enable Waterloo's substantial technology buying power to support sustainability outcomes. The guideline has been going through consultation and approval processes throughout fall 2023.

ENGAGEMENT

Communications

Supporting UN SDGs:

PROGRESS SNAPSHOT

OBJECTIVE E1: By 2020, Waterloo broadly distributes timely and audience-relevant information about sustainability initiatives and opportunities within the campus community

Mostly complete

INDICATORS:

23,000	Visitors on the sustainability website
5,000	Sustainability report views and downloads
18,500	Engagements on social media channels
4,800	Total followers on social media channels
4	Campus-wide engagement campaigns

We all have a role to play in building a more sustainable campus, whether living, working, or studying at Waterloo. There are many opportunities for students and employees to connect with campus sustainability initiatives, including Sustainability Office programs like Green Residence, Green Office, Green Labs, and Green Volunteers, clubs and societies, leadership positions on planning and advisory committees, and more.

Much in-person activity resumed in 2022, bringing with it opportunities to reconnect and rebuild momentum for sustainability progress on campus. Alongside key campus partners, the Sustainability Office has been strengthening efforts to engage with more of the campus community to mobilize support, build connections, and foster a culture of sustainability.

QUICK FACTS

- Waterloo hosts Earth Month, Bike Month, Waste Month, and Eco Summit campaigns to create opportunities for engagement, education, and advocacy
- Central communications are available through the Sustainability Office Instagram, Twitter, and LinkedIn channels, and through a monthly Newsletter
- The Sustainability website hosts centralized information on campus sustainability resources, services, and commitments/progress

CASE STUDIES

SHOWCASING SUSTAINABILITY CHAMPIONS AT ECO SUMMIT

The Sustainability Office was thrilled to host their ninth-annual Eco Summit at Fed Hall in November 2022. The annual event brings together the campus community to showcase sustainability achievements, celebrate progress, and build connections for the year ahead. The event included panel discussions with student and employee sustainability leaders, awards for Green Office, Green Labs, and Living Planet Leaders, an interactive visioning activity and networking opportunities, as well as closing remarks from President and Vice-chancellor Vivek Goel. More than 100 people joined the event and engaged in meaningful dialogue on the unique roles we can play in achieving our shared sustainability commitments.

APPRECIATING GREEN VOLUNTEERS

Waterloo's Green Volunteer program provides an opportunity for students and employees to support on-campus sustainability initiatives. Throughout the year, volunteers supported a range of activities, including set up, tear down, and photography at Bike Fair and Eco Summit, hosting waste sorting booths for Plastic Free July and Waste Month, and supporting sustainability booths during orientation.

LIVING LAB SPOTLIGHT: ASSESSING SUSTAINABILITY LITERACY (ENBUS 402)

In winter 2022, a capstone group in ENBUS 402 surveyed over 100 students on their sustainability literacy level. They wanted to measure students' knowledge of sustainability, to what extent they saw value in it, and to find ways to instill sustainability as a value. The survey found that the vast majority of students had at least a basic understanding of sustainability and believed that it was relevant to them. However, most did not actively engage in it and some were unaware of any campus sustainability initiatives. In general, they found that students were unable to connect sustainability to their lives. To address this gap, the capstone group recommended that sustainability be more deeply integrated into their education and in events such as orientation.

Students

PROGRESS SNAPSHOT

OBJECTIVE E2: By 2020, additional programming is developed for incoming students during orientation and in residences to encourage sustainable living on campus

Mostly complete

INDICATORS:

65 Ambassadors and student leaders engaged in sustainability leadership training

TBC Percent of first year students reached by sustainability programs

OBJECTIVE E3: By 2018, establish a sustainability leaders program in partnership with students from residences, clubs and societies, student government, and for students in off-campus housings

Complete

INDICATORS:

8 Distinct pathways for student leadership, including through Green Residence program, Living Planet @ Campus, Student Groups, O-Week coordinators, SDG Student Hub, Sustainability Office volunteers, the WUSA Sustainability Commissioner, and formal advisory committees

QUICK FACTS

- Waterloo has over 14 student clubs connected to sustainability
- The Green Residence Program creates tangible opportunities for peer leadership in Campus Housing
- The Living Planet @ Campus program provides an opportunity for student learning
- Students have dedicated positions on the President's Advisory Committee on Environmental Sustainability

CASE STUDIES

STRENGTHENING THE GREEN RESIDENCE PROGRAM

In fall 2022, the Sustainability Office welcomed a new cohort of Green Residence Ambassadors. The Green Residence program aims to create a culture of sustainability in residence through professional development, leadership opportunities, and community engagement. The ambassadors participated in webinars and hosted booths to educate their peers on different sustainability topics. In the coming year, the program will be strengthened by new opportunities for student leadership and infrastructure improvements to support sustainable habits. The Sustainability Office is excited to continue exploring ways to foster student leadership on sustainability in residence!

CELEBRATING NEW LIVING PLANET LEADERS

In 2023, four new students were certified as WWF Canada Living Planet Leaders, bringing Waterloo's total to 10 leaders! Part of the Living Planet @ Campus program, the Living Planet Leader is a self-guided designation that recognizes student contributions to a more sustainable campus and community. Students applying for the designation must demonstrate exceptional volunteerism, personal sustainability, application of sustainability, and leadership and teamwork. Our new leaders are Janine Graham (Sexuality, Marriage, and Family Studies), Jahanvi Desai (Environment & Business), Kinjal Patel (Environment & Business), and Bethany Helaine Poltl (Environment & Business).

SPARKING CONNECTIONS AT INAUGURAL CLIMATE STUDENTS CONFERENCE

Climate Students, the Waterloo Climate Institute's student-led group, hosted their inaugural Climate Conference which was a one-day, free, in-person student-focused conference at the University of Waterloo during the winter 2023 semester. The purpose of this conference was to provide a communal space to facilitate learning, important discussion, and networking surrounding the climate crisis amongst all six faculties. This was achieved through keynote speakers, posters, and oral presentations of students' research. This conference offered a 'green' knowledge-exchange hub that sparked connections between students beyond the borders of the conference or classrooms. Although this was the first conference, it was a huge success, and Climate Students is hoping to host it as an annual event. This event would not have been possible without funding from the Sustainability Action Fund.

INTEGRATING SUSTAINABILITY INTO ORIENTATION PLANNING

The Sustainability Office was thrilled to host a series of training sessions with student orientation leaders in 2022 and 2023. The sessions provided foundational knowledge on sustainability challenges and directions on campus, as well as specific considerations for integrating sustainability into planning decisions and programming for events, activities, swag, and more. As of 2023, four planning committees have a dedicated sustainability coordinator position on their team, and three have a sustainability lens included in another position.

Employees

PROGRESS SNAPSHOT

OBJECTIVE E4: By 2025, increase from five per cent to 25 per cent the proportion of university departments that are Green Office certified

Mostly complete

INDICATORS:

22% University departments achieving at least Green Office Bronze

2 Certified Green Labs

~6% Participation in employee Sustainability Certificate

QUICK FACTS

- 38 departments have received a certification for the Green Office or Green Labs programs
- Waterloo offers the Sustainability Certificate for departments and individuals to build a foundation of sustainability competence and knowledge across employees

CASE STUDIES

GREEN OFFICE SNAPSHOT

Waterloo's Green Office program continued to engage employees in more than 50 offices across campus. By providing a common scorecard to brainstorm and track action, a network of ambassadors to build and share best practices, and resources to support action, the program is building a bottom-up culture of sustainability.

GREEN LABS SNAPSHOT

Waterloo's Green Labs program is working to foster lab sustainability best practices with teaching and research labs across campus, including an ambassador network, resource toolkit, and common scorecard to track progress. In 2022, participation in the program remained small. With additional capacity and resources anticipated in the coming year, the program is set to expand more widely across campus.

Congratulations to the following two labs for achieving Level 3 in the Green Labs framework:

› Ecology Lab

› Quantum-Nano Fabrication and Characterization Facility (QNFCF)

RESTRUCTURING THE SUSTAINABILITY CERTIFICATE

In spring 2022, the Sustainability Office restructured their Sustainability Certificate program to a condensed two-part series. The new offering continues to provide foundational knowledge on global and local sustainability challenges, directions, and progress, with an increased emphasis on how departments and individuals on campus can support Waterloo's sustainability efforts. Since its relaunch, the Sustainability Office has facilitated workshops with employees from the Centre for Career Action, Centre for Extended Learning, Centre for Teaching Excellence, Dean of Engineering Office, IST, Safety Office, and St. Jerome's. The new Sustainability Certificate is also available for independent learning on LEARN.

Certified departments include, as of June 2023 (brackets for # of points):

Green Office Platinum
Centre for Teaching Excellence (133)
Dean of Environment Office (139)
Centre for Work-Integrated Learning (WIL) (131)

Green Office Gold
Centre for Extended Learning (123)
Library (104)
Plant Operations, Campus Services (135)
School of Environment, Resources and Sustainability (107)

Green Office Silver
Centre for Career Action (90)
Civil & Environmental Engineering (83)
Dean of Engineering Office (80)
Dean of Health Office (97)
English Language Institute, Renison (82)
Geography and Environmental Management (95)
Knowledge Integration (78)
Plant Operations, Grounds (90)
Political Science (80)
Recreation and Leisure Studies (79)
Registrar's Office (96)
Safety Office (98)
School of Pharmacy (82)
Student Success Office (83)
Water Institute (79)

Green Office Bronze
Economics (76)
Finance (70)
Food Services (72)
Information Systems & Technology (72)
Institutional Analysis and Planning (56)
Legal and Immigration Studies (69)
Office of Research (69)
Office of the President (73)
Office of the Provost (56)
Parking Services (71)
Social Development Studies, Renison (68)
St. Jerome's University College (78)
Vehicle Shop (71)

Community

PROGRESS SNAPSHOT

OBJECTIVE E4: By 2020, Waterloo is recognized as a sustainability leader in Waterloo Region

Complete

INDICATORS:

4 Local sustainability awards since 2016

18 Local non-academic community partnerships, memberships, board roles, or advisory involvement related to sustainability since 2016

CASE STUDIES

CELEBRATING SUSTAINABILITY AT INAUGURAL SDG WEEK

In March 2023, Sustainable Development Solutions Network (SDSN) Canada, hosted at Waterloo, co-led the inaugural SDG Week Canada campaign. This national collaboration included over 60 university and college campuses to increase engagement with sustainable development. This first campaign of its kind was successful in supporting over 100 events across the country. Some events catered to over 300 people, while others formed dialogue with more intimate groups, including a mix of in-person, online, or hybrid models to engage with broader communities in Canada and internationally.

SDSN Canada's communities of practice on teaching the SDGs and SDG localization inspired two of the events they helped organized that week. Additionally, their youth branch hosted a networking and keynote event featuring the Global Director of SDSN Youth, as well as an event on sustainability education with the Canadian Government. SDSN Canada's leadership of the SDG Week Canada campaign reflects Waterloo's strength in bringing Canada's post-secondary communities together for sustainable development.

SUPPORTING THE GRAND RIVER ENVIROTHON

In April 2023, the Sustainability Office, along with the Ecology Lab and the School of Environment, Resources, and Sustainability supported the Grand River Regional Envirothon competition. Envirothon is an environmental academic competition that immerses middle and high students in hands-on learning and discovery. On campus, 28 students in six teams tested their knowledge on aquatics, forestry, soil, and wildlife. Students were also required to give a 10-minute presentation on a current environmental issue.

ENVIGORATE 2023

The Faculty of Environment hosted their annual ENVigorate festival in March 2023, a multi-day event to share environmental ideas, values, and knowledge within Environment. The festival is composed of workshops, research presentations, and other events run by students, staff, and faculty. This year, workshops covered a range of topics such as climate justice advocacy, wooden spoon carving, and queer ecology. The festival also hosted their popular Swap Shop and student research showcase.

GOVERNANCE AND BENCHMARKING

PROGRESS SNAPSHOT

OBJECTIVE G1: By 2025, achieve and maintain a STARS Gold designation through the Association for the Advancement of Sustainability in Higher Education

Somewhat complete

INDICATORS:

SILVER STARS Silver Designation earned in November 2018 and renewed in 2021

FORMAL POLICIES, MEMBERSHIPS, PRACTICES, AND COMMITMENTS

The following are a list of key internal and external guidelines and commitments made by the University of Waterloo to support its sustainability efforts.

Internal:

› Adoption of Responsible Investment Advisory Group recommendations for carbon reduction measures and climate change considerations in investment activity (2021)
› Lifecycle Costing Guideline (2021)
› Net Neutral New Building Guideline (2021)
› Adoption of Responsible Investment Working Group recommendations for integration of ESG considerations in investment decisions (2018)
› Policy 53: Environmental Sustainability (2017)
› Environmental Sustainability Strategy (2017)
› Waste and recycling standard (2017)
› Centralized office printers defaulted to double-sided printing
› Campus Master Plan includes sustainability aspects as defining features of campus development (2009)
› High efficiency lighting retrofits mandated during renovations
› Eliminated use of chemical pesticides (1998)

External:

› Signatory to UN Race to Zero (2021)
› Member of the Impact Network, managed by Sustainable Waterloo Region, and Bronze Pledging Partner for Waste (2017) and climate change (2021)
› Founding Member of University Global Coalition (2020)
› Signatory to Investing in Climate Change Charter (2020)
› Signatory to UN PRI (2020)
› Member and host institution in collaboration for Sustainable Development Solutions Network Canada (2018)
› Signatory to 2017 Council of Ontario Universities commitment to design a roadmap to a low-carbon campus (2017)
› Member of the Association for the Advancement of Sustainability in Higher Education (2015)
› Member of TravelWise, managed by the Region of Waterloo and Sustainable Waterloo Region (2012)
› Signatory to Council of Ontario Universities Pledge, Ontario Universities, Committed to a Greener World (2009)

UNIVERSITY OF WATERLOO

UNIVERSITY OF WATERLOO
200 UNIVERSITY AVE. W., WATERLOO, ON, CANADA N2L 3G1

uwaterloo.ca/sustainability
sustainability@uwaterloo.ca

@uwsustainable @uwsustainable