



UHN Sustainability Report

2023

by Energy & Environment, FM-PRO



A Healthier World.



2023 Sustainability Highlights

Supporting 'A Healthier World' through a sustainable environment

UHN, with a strategic plan to achieve a healthier world, consistently nurtures a robust culture of sustainability and has advanced its environmental initiatives. The success of these sustainability measures relies heavily on extensive collaboration and support across all levels of the organization.

Notable achievements from 2023 include:

- UHN was recognized as one of **Canada's Greenest Employers**, part of Canada's Top 100 Employers award program, for the third straight year
- Energy management planning and projects resulted in **\$4.4M** saved in utility costs this year, with cumulative savings of **\$43M** since 2012
- Avoiding **10,359 tonnes** of greenhouse gas emissions (equivalent to removing **3,174** cars from the road last year)
- Substantial work on the **Noventa WET system**, which will reduce UHN's direct emissions by **60 per cent** and enable public health-related wastewater research
- Anesthesia eliminated Desflurane and changed default flow rates to reduce climate emissions of anesthetic gases by **56%**, equivalent to taking **351** cars off the road
- Reducing water use by **38 per cent** since 2012 (equivalent to saving **150** Olympic swimming pools of water)
- Planting the third season of UHN's first **Indigenous Healing Garden**, Michener Gitigan and eighth season of wheelchair-accessible Bickle GROW (Garden Rehab On Wheels)
- Achieving a **41 per cent** waste diversion rate (recycled or composted instead of going to landfill), steady from last year and a **20 per cent** improvement from 2021
- **+99%** of isolation gowns and **95%** of sterilization boxes are reusable, not disposable
- Adding **94 new Green Team members**, totaling almost **700 UHNers** championing sustainability at UHN, with notable department teams in the OR and Research
- A **Smart Commute Platinum** Workplace designation for ongoing efforts to promote a green commute such as **399** secure bike spots and **54** EV Charging Stations.



Energy

Behaviour change, engagement & collaboration across UHN remain constant pillars of UHN's Energy Management Program

Gigajoules energy consumed in 2023:

1.25 Million GJ

7.9% decrease* from 2022
*weather-corrected

Energy projects completed between 2012-2022 **631**

Total \$ spent in 2023: energy + water

\$36.5 Million

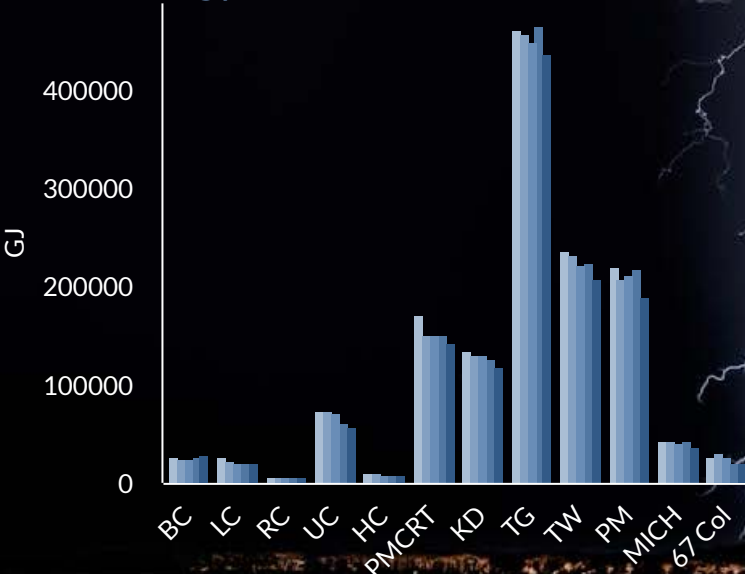
9% increase from 2022**

Total \$ saved in 2023 by energy management

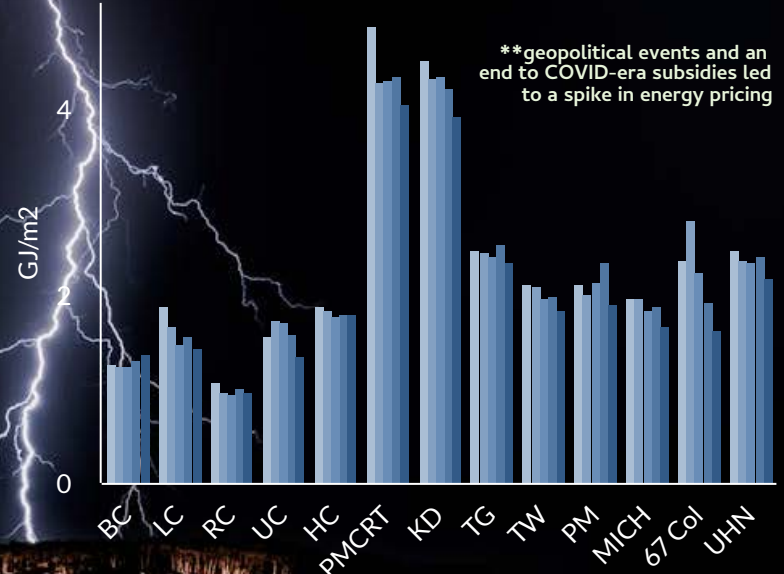
\$4.4 Million

11% less than pre-energy-management baseline!
Cumulative savings of **\$43M** since 2012

Energy Use 2019-2023 (GJ)



Energy Use Index 2019-2023 (GJ/m²)



BC=Bickle Centre, LC=Lyndhurst Centre, RC=Rumsey Centre, UC=University Centre, HC=Hillcrest Centre, PMCRT=Princess Margaret Cancer Research Tower KD=Krembil Discovery Tower TG=Toronto General Hospital, TW=Toronto Western Hospital, PM=Princess Margaret Cancer Centre, MICH=Michener Institute, 67 Col = 67 College, UHN=University Health Network

■ 2019 ■ 2020 ■ 2021 ■ 2022 ■ 2023

■ 2019 ■ 2020 ■ 2021 ■ 2022 ■ 2023

Energy Highlights

Just some of the energy projects completed in 2023 (more underway) that make UHN more efficient & resilient



Digging deep into the TWH WET System

By capturing heat from sewers instead of running a gas boiler plant, the TWH Waste Water Energy Transfer (WET) system will reduce UHN GHG emissions by **60%** and provide an outlet for health research. The reduced reliance on fossil fuels is equivalent to removing **1,811 cars** from the road. The TWH WET system will be the largest of its kind in the world.



like taking **1,811** cars off the road



Rehabilitating the Chilled Water System

This series of projects at Toronto Rehab - University Centre ensured the chillers no longer tripped during warm weather (which interrupted key research), water savings in the IT cooling closet by avoiding city water cooling, fixes to the building automation system and more. Better controlled pumps meant a 10-12% reduction in electricity consumption!

- Savings: **\$95,000 avoided costs**
- **10-12% electricity consumption**
- **19 tonnes CO2e**



like taking **6** cars off the road



Removable Jackets = Steam Line Savings

Toronto General's steam lines got a major boost in efficiency with the latest fashion, a removable jacket. As steam is generated from fossil fuels, this increase in efficiency is a major GHG saver as well.

- Savings: **\$66K/year & 4 million lbs steam/year**
- GHG Reduction: **366 MT CO2e/year**



like taking **112** cars off the road

“Fewer people will need to be admitted to hospitals, including University Health Network, because of projects like these. Climate change is likely the number one threat to the well-being of society and the planet”

- Dr. Kevin Smith, PhD, CEO, UHN

... and so much more ...

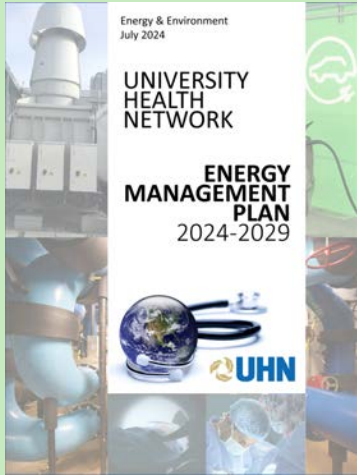
- **Deep Lake Cooling** at TG, PM and TR uses renewable cooling from deep Lake Ontario in place of electric chiller plant. **TG/PM combined savings:**
 - 12,750,000kWh electricity
 - 90,000m³ water
 - \$1.4M
 - like taking **947** cars off the road
- Steam trap repair and replacement, saves \$6,269/yr, 33.8 MT CO2e (**7 cars**)
- Energy behaviour change in research: Shut-the-Sash and Shut the Door at **+98%!** New: the Freezer Challenge

What's next?

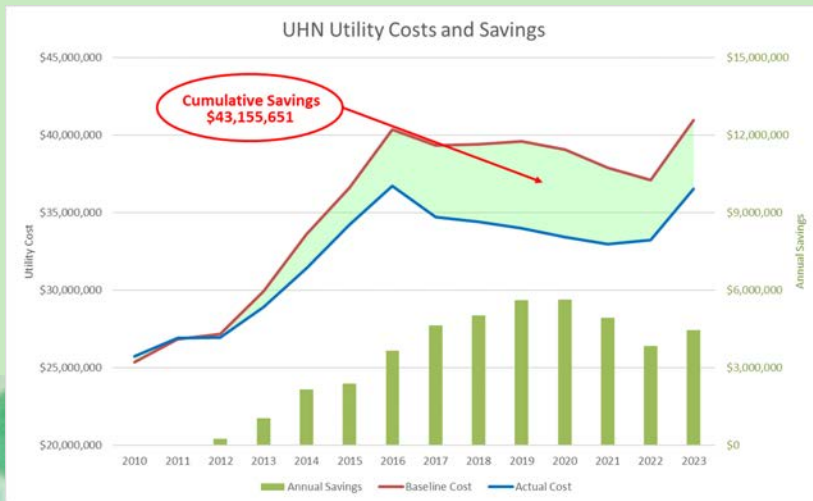
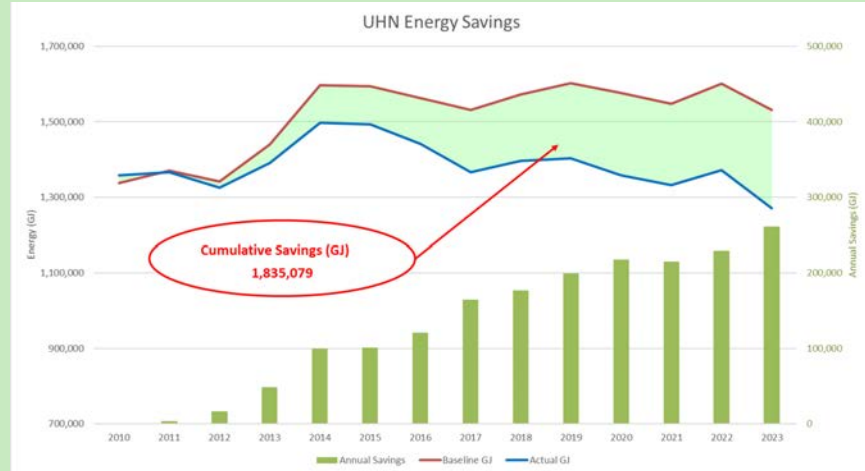
- Plans to expand Deep Lake Water Cooling & low-carbon heating district
- GeoExchange, solar & battery storage
- Replacing steam derived from fossil fuels with a district heat pump plant, reduce GHG by 30% at first, then 80%!

Energy Management

UHN has saved \$43 million through its robust and integrated energy management program

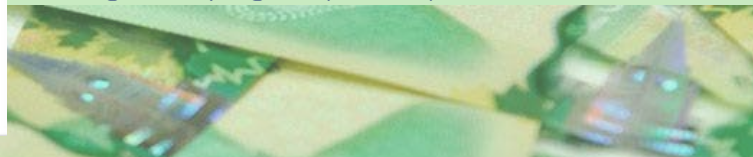


Through 631 energy projects completed from 2012-23, including retrofitting with more efficient equipment, construction, and optimizing building operations, UHN has avoided spending \$43 million in utilities and saved 1.8 million GJ in energy consumption.



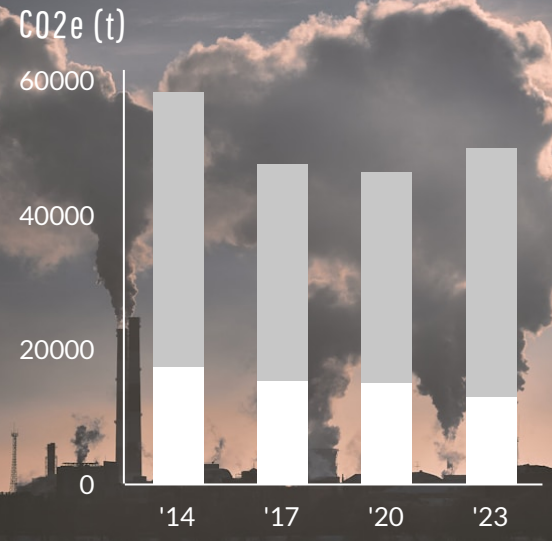
Despite extensive energy efficiency work, energy costs rose due to global conflicts affecting supply chain, rate escalation, weather, building expansions, space use changes, and equipment wear & tear.

While UHN's costs rose in 2023 (the **blue lines** in the graphs to the left and above), our consumption was quite a bit lower, and especially lower than what UHN would have used and spent without its energy management program (**red line**).



Greenhouse Gas Emissions (CO2e)

Direct & Indirect Emissions



Direct (Scope 1)
 Indirect (Scope 2)

Direct Greenhouse gas emissions from on site combustion of natural gas and oil

Indirect Greenhouse gas emissions from offsite energy generation, including electricity, steam and district cooling*

CO2e Carbon Dioxide Equivalency: standard measure for greenhouse gas emissions, rolling many gases** into one number:

** carbon dioxide (CO2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride

Emissions associated with electricity production in Ontario have risen by 240% since 2020, leading to significant growth in UHN's indirect emissions despite overall energy use reductions over the same time period.

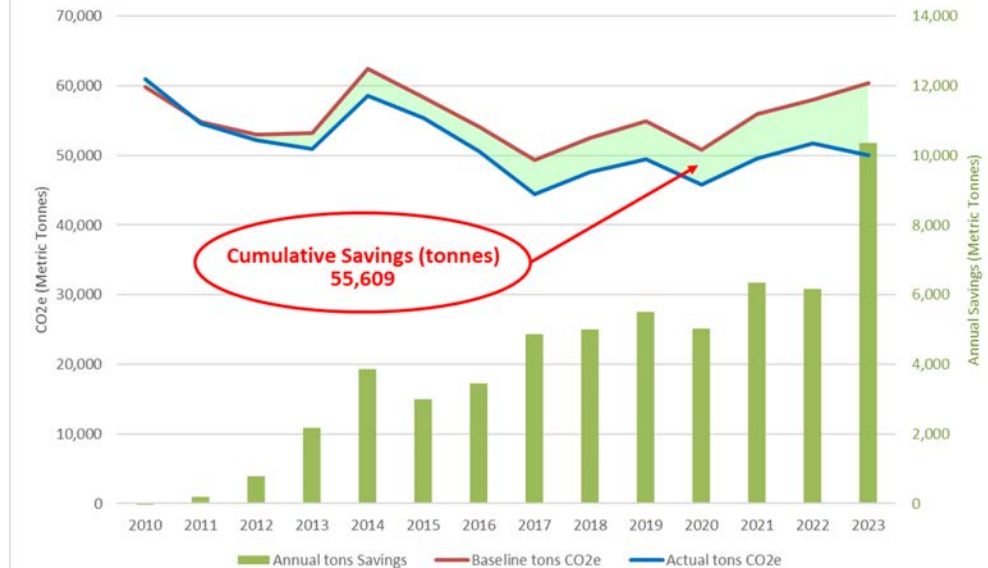
Burning fossil fuels creates the emissions that cause climate change, while energy efficiency and a transition to renewable energy reduces those emissions. By those means, UHN has lowered its greenhouse gas emissions by 55,609 t since 2010, like taking 17,037 cars off the road or planting 919,500 trees! In 2023 alone, we avoided 10,359 tonnes of greenhouse gas emissions (like removing 3,174 cars). UHN recognizes the public health threats posed by climate change and aims to be a leader in GHG emissions reductions..

Emissions reduction?

Like planting
919,500
TREES



UHN CO2 Emissions and Savings



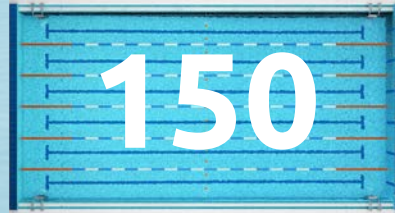
Water

In deluges and drips, UHN has reduced water consumption by 38% since 2012!

606,981 m3 total water used in 2023

17% Reduction in water use from 2019! (pre-pandemic)

38% Reduction in water use from 2012! (baseline)



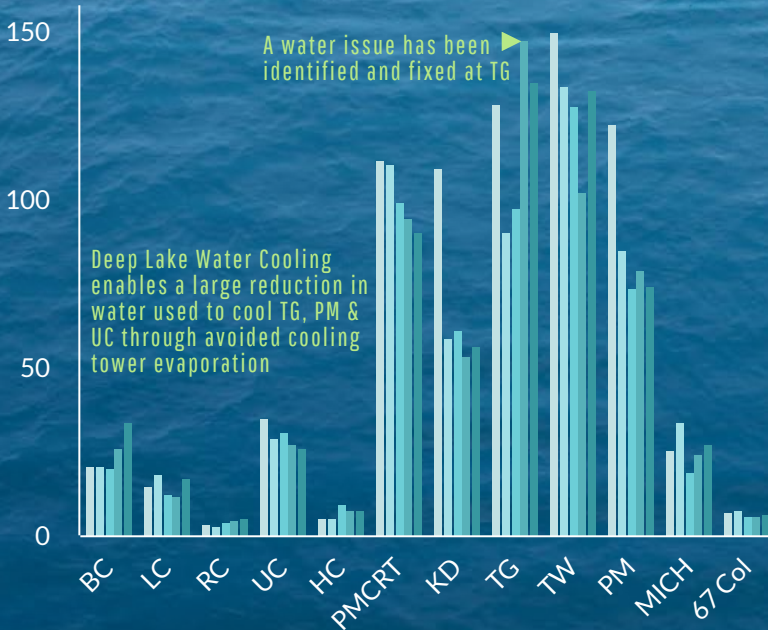
Like saving 150 Olympic-sized swimming pools of water from 2012 rate of use

Water saving highlights include:

- Deep Lake Water Cooling
- removing refrigeration units from municipal water cooling
- optimizing water use in buildings
- converting to low flow toilets
- more efficient sterilization

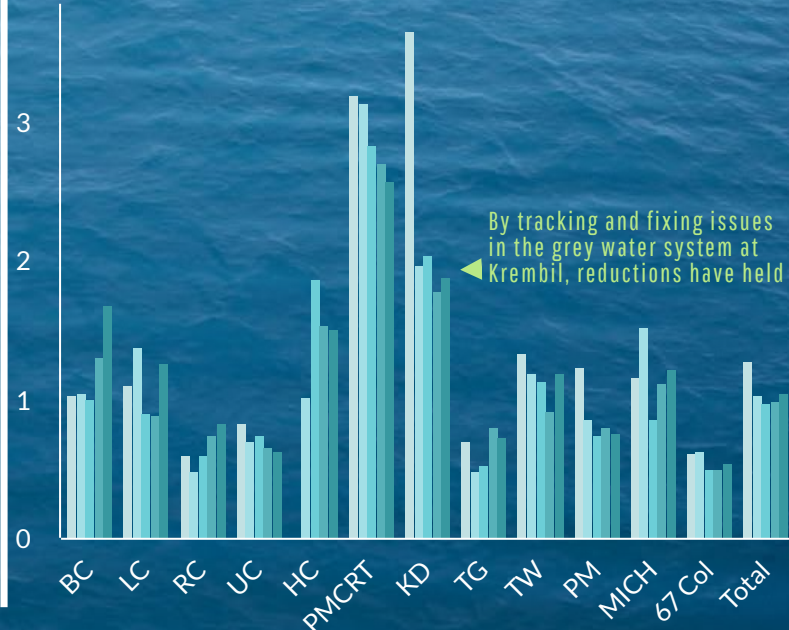
Water Use (in thousands of m3)

2019 2020 2021 2022 2023



Water Use Index (m3 water / m2 floor space)

2019 2020 2021 2022 2023



Hazardous Waste

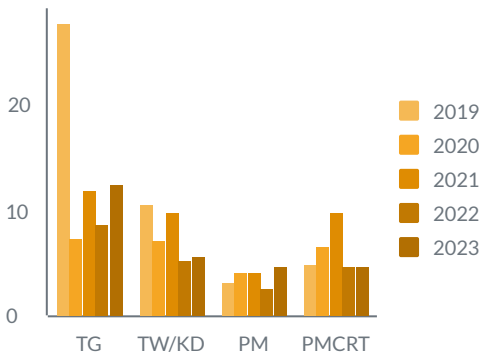
Proper disposal of hazardous waste is key to protecting people, waterways, land & air

Hazardous waste is the most expensive, energy intensive and air-polluting stream of waste, so it is essential to generate it sparingly. The resurgence in clinical activity following the COVID19 Pandemic has resulted in a spike in biomedical and pharmaceutical waste, though the amount generated/patient activity remains steady. More cancer treatment at LC lead to a site increase. Chemical waste generation remains steady, and below pre-pandemic levels.

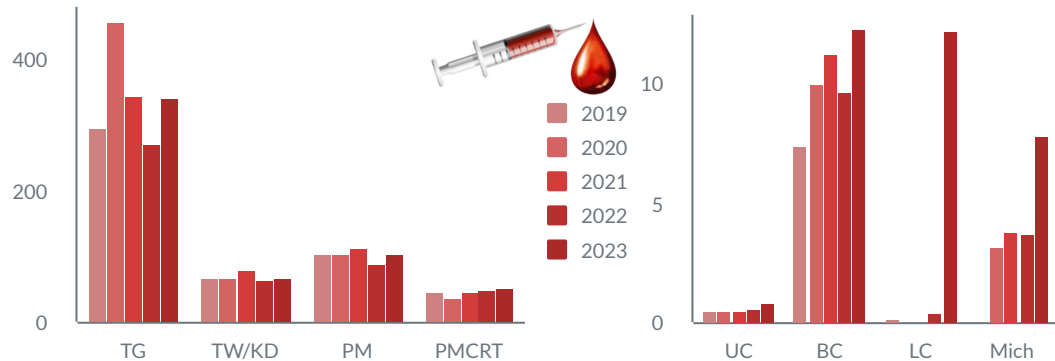
Education on stewardship of biomedical waste is provided for all new clinical staff, but may need reminders for long-time staff.

Recommendation: Expand Hazardous waste stewardship to an annual elearning module for all affected staff.

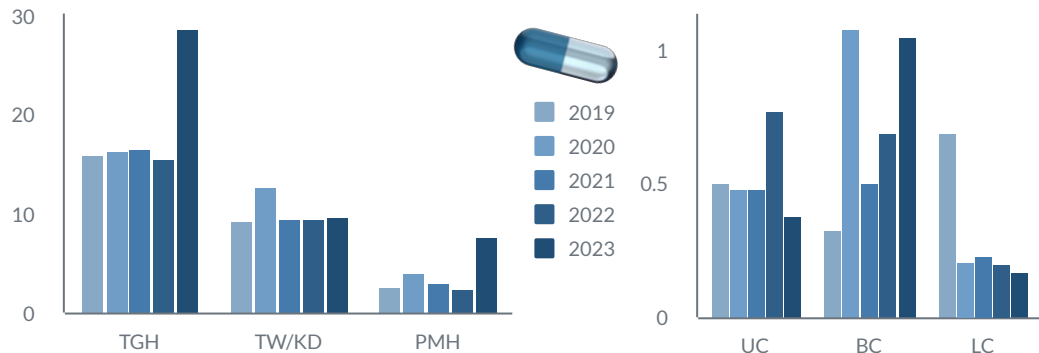
Chemical Waste (MT)



Biomedical Waste (MT)



Pharmaceutical Waste (MT)



79 tonnes

Plastic waste eliminated by using reusable sharps bins instead of disposable ones



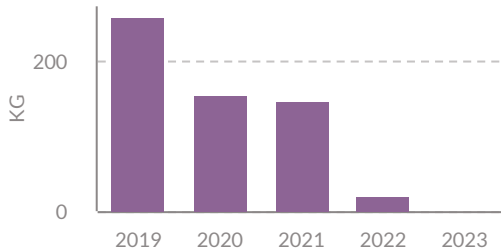
Spotlight: Anesthesia

Leadership in Anesthesia minimizes climate impact and reduces waste

Eliminating Desflurane!

Anesthetic gases have a high global warming potential (GWP). Emitting one molecule of desflurane to the environment is equivalent to emitting over 3,500 molecules of carbon dioxide. Desflurane's GWP is also approximately 26 times sevoflurane, another commonly used anesthetic. In collaboration with Anesthesia leadership, desflurane use was phased out at UHN, with sevoflurane now the primary anesthetic.

Desflurane at UHN 2018-'23

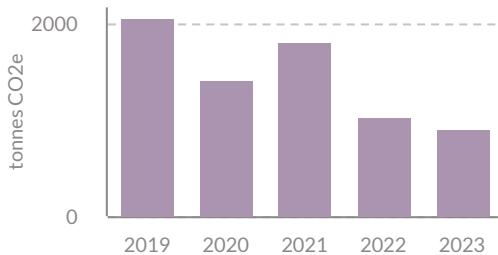


The climate savings from removing Desflurane and lowering the flow led to a **56%** emissions drop from 2019! Like taking **351** cars off the road!

Lower the Flow!

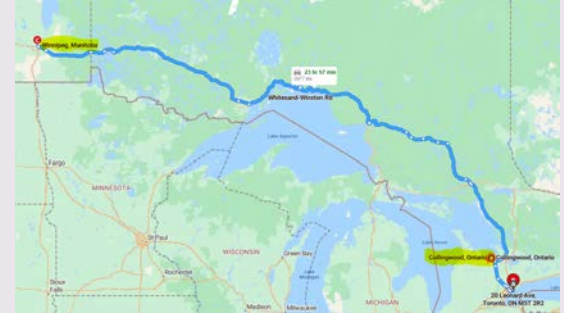
Anesthesia then reset the default flows in every machine from 2 L to 0.5L so GHGs are a fraction of what they were, despite no reduction in the number of surgeries.

Anesthetic Gas Climate Impact



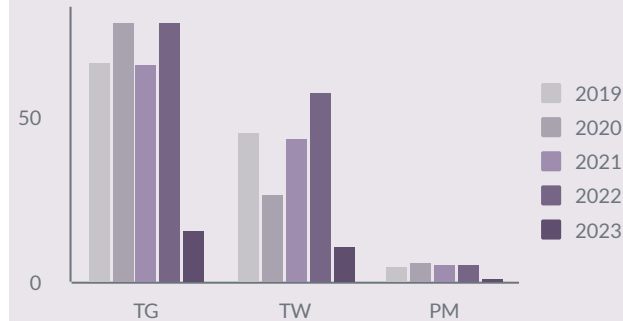
Climate impact by gas type

Putting one patient under anesthesia using Sevoflurane or Isoflurane is like driving a gas car to the cottage (A to B). Desflurane is like driving to Winnipeg (A to C)!



Anesthetic Gas Recapture (kg)

During surgery, most patients receive anesthetic gas but only 5% reaches the patient. 95% is in the operating room, then outside. UHN has taken care to recover it through **Blue-Zone Anesthetic Collection**, saving over **1,447 KG** anesthetic gas for reuse since 2004. 2023: *New measuring standards makes data appear artificially low.*



Non-Hazardous Waste

Practicing the 5-Rs:
Refuse, Reduce, Reuse, Recycle, Rot (compost)



Operation Green program has run for 10+ years, saving surplus medical supplies from landfill, sending them to communities in need around the globe, e.g. Ukraine, Haiti, Syria, Somalia & more.

1,700 kg surplus med supplies donated in 2023



Centralized Multi-stream collection

Jan Newton, Vice President, Clinical, hands her under-desk bin to Lourdes Singh, Environment Services staff, Over 3,000 small bins were donated.

Non-hazardous waste disposal volumes increased slightly as more staff returned to work onsite. This is a transition year as many small and under desk bins were removed, replaced with a centralized multi-stream bin collection that enables better sorting and adds compost. Tremendous work by Environmental Services, building to better future results.

Diversion rate from landfill through recycling & composting **41%**

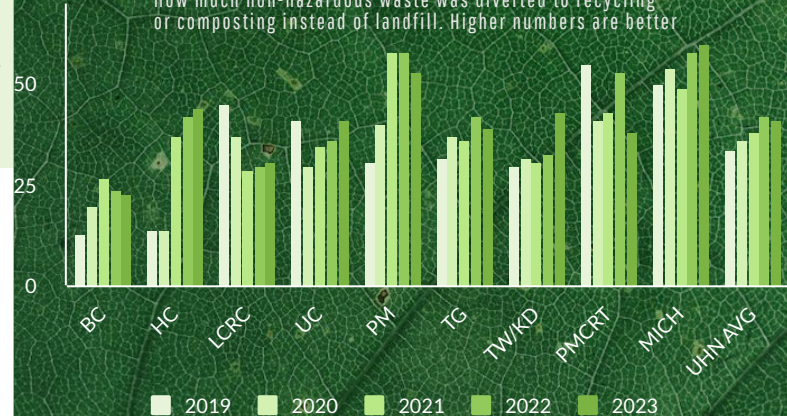
Steady from 2022 rates, and a 20% improvement over 2019!

Cost savings from recycling in 2023 **\$185,189**

Recycling materials costs less to dispose of than landfill and generates rebates. Recycling is sustainable financially & environmentally.

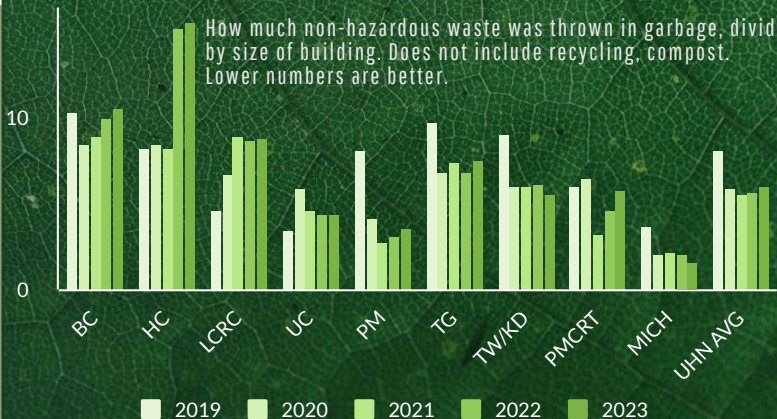
Diversion Rate %

How much non-hazardous waste was diverted to recycling or composting instead of landfill. Higher numbers are better



Landfill Index kg/m2

How much non-hazardous waste was thrown in garbage, divided by size of building. Does not include recycling, compost. Lower numbers are better.



Waste Reduction Highlights

Just some of the ways
TeamUHN saves resources



99% of Isolation Gowns are Reusable

UHN has achieved over 99% reusable isolation gowns, instead of single-use plastic disposable gowns. These are more sustainable, more comfortable and actually less expensive ... 40% less than disposables. 1 reusable gown can displace over 60 disposable gowns. They also protect the supply chain. The support services team works magic to collect and return soiled gowns to Ecotex, as much as three times a day during the height of COVID when demand tripled.



BYORB: Bring Your Own Reusable Bag

The Sprott Surgery Quality team aimed to stop waste before it starts by having patients bring in their own reusable bags for planned surgeries, instead of getting several disposable plastic bags from UHN.

- Messages to patients to bring their own belongings bags
- Stops **4,000** plastic patient belongings bags/month!
- If patients forget, they can have a bag

The BYORB stats for Dec 2023 were **63%** compliance! Even better than the target of 50%

MDRD: Reusable Sterilization Boxes at 95%

Medical tools require sterilization, and previously, much of it came wrapped in disposable blue polypropylene sterilization wrap. Although the wrap was previously collected for reuse and donation, there was never enough demand for the tremendous supply. The Medical Device Reprocessing Department (MDRD) has built up their supply of reusable metal sterilization containers so that now, 95% is contained in a reusable box, not a disposable wrap!



“For UHN, reusable isolation gowns ensure staff and patient safety, save money, and are better for the environment. It hits our sustainability sweet spot”

- **Joanne Bridle**, Executive Director,
FM-PRO Operations

... and so much more ...

- 1,500 kg Ice Packs collected and returned to vendors for reuse
- 705 kg medical single-use devices collected by Stryker refurbish/resale
- 45 tonnes of e-Waste recycled
- 57 tonnes of scrap metal recycled
- 171 tonnes of wooden pallets recycled
- 6 tonnes of batteries recycled
- +3,000 small waste bins donated
- Patient room Supplies Stewardship counts unused items to aid prevention
- TG OR collects cautery cords for scrap metal recycling, generating rebates
- Nutrition switched many unrecyclable plastics to recyclable or reusable items

What's next?

- Anesthesia is moving to 7-day reusable breathing circuits from single use
- Glove Stewardship policy and campaign designate when gloves are not needed

Telling Our Stories

UHN GREEN PLEDGE



BY THE SHOW OF HANDS...

I WILL USE THIS GREEN KNOWLEDGE AT WORK!

DATE January 12, 2024 - in service
DEPT. TWH - OR team



Blog & Social Media

Talkin' Trash with UHN

31,764

page views/year

+4% increase in page views compared to 2022

Twitter

934

Facebook

409

followers

Social media sites centre on our [Talkin' Trash with UHN Blog](#) to tell UHN's greening stories so they may be amplified and repeated. Social media like Linked In, Twitter and Facebook play a supporting role. Outreach is modeled on community-based social marketing methodology.

Training

44,298 staff trained live 2000 - 2023

1,637 staff trained live 2023

2,060 staff trained virtually 2023

Communication, training & staff engagement are key to the organizational reach of all of UHN's sustainability programs.

Live training tripled from 2022 to 2023, with an increase in the number of annual refresher training sessions for key departments, as well as a monthly detailed session for all new clinical employees. By incorporating a "green pledge" (pictured left), staff are more likely to take messaging to heart. General New Employee Orientation also features a small sustainability section and reach an extra **3,000+** staff annually (not included in the data below).



*Buy, Build, Move, Grow & Eat

*Broadening sustainability

... and so much more ...

- UHN working group to address federal and municipal Single-Use Plastic reduction, ensuring sustainable replacements and system changes in nutrition, retail, environmental services, procurement and clinical areas
- Food gardens for patient therapy and staff engagement:
 - The Bickle GROW garden (Garden Rehab on Wheels)
 - Lyndhurst Patient Garden (both wheelchair-accessible)
 - University Centre rooftop garden.
 - UHN supports the Bonnie Storr Community Garden, building a haven for the people and families near Bickle Centre
- Carpool matching program for UHNers via Smart Commute lowers costs, reduces emissions and eases traffic congestion.
- Sustainability and energy efficiency is built into the UHN Design and Construction Guidelines in FM-PRO

Indigenous Healing Garden

Now in its 3rd year, the Michener Gitigan (Anishinaabemowin word for garden) continues to grow with a multitude of healing plants, like the additional tobacco, sage, cedar and sweetgrass, and a custom mural. Led by the Indigenous Health Program, partnered with Michener Facilities, his site hosted many key educational and spiritual events. Green Team volunteers helped plant and tend the garden. The plants are used for additional medicine to support patient care.



Bike Parking + EV Charging = Clean Commute

UHN enables staff to be climate champions on their way to work, especially through cycling and Electric Vehicle (EV) infrastructure. UHN has **54 EV charging stations** with no additional fee. UHN has **399 secure bike parking** spots, notably the Bike Vault with 126 spots accessible from 4 UHN sites free for staff. **500 open racks** serve staff & visitors alike. Our Bicycle User Group has **562** members. We celebrated **Bike Month** with two live, well-attended Bike Maintenance Workshops, and provide a **25%** staff discount for Bike Share Toronto.



Sustainable Packaging in Research

A joint initiative to improve the sustainability of packaging in research. The aim: reduce waste and improve reusability, recyclability and lower GHG emissions — especially for temperature sensitive packaging which often involves Styrofoam and icepacks. UHN partnered with SickKids, Sunnybrook, Sinai, TMU, UofT, Unity Health, harnessing shared purchasing power. By sending a letter to vendors, signed by the heads of each research facility, thus began the conversation and collaboration to improve sustainability of these key supplies, critical to research.



Green Team at UHN

All 691 Green Team champions across UHN pledge to green their workplace through their day-to-day actions, driving sustainable behaviours organization-wide.

691

94 New Green Teamers joined in 2023, a **68%** increase over 2022!

Green Team success stories have their own page, inspiring and mentoring members, new and old.



Earth Month bloomed with live and virtual events. Almost 600 staff joined in some way, from Nature Stewarding (pulling invasive plants so native plants can thrive), weekly themed quizzes, climate workshops and more!



This Green Team video collaboration with Public Affairs aims at **supplies stewardship**. If staff bring too many supplies into a patient room, these often go to landfill when the patient leaves. Worse than single-use is no use at all. This teaches to look first, then only bring what is needed, The video inspired a pilot quantification project to count supplies after each discharge, and coach on waste reduction strategies on 7 units.



UHN created and led the 8th annual Inter-Hospital Waste Reduction Week Challenge with 2k participants at 8 organizations! A perfect lead in, Staff BBQ's now encompass the Waste Wizard role.

Energy & Environment Video



**Creating A Healthier World
Through A Sustainable Environment**



[click here to view](#)



At UHN, we know climate change is a major threat to human health. Since its inception in 1999, the Energy & Environment team has guided UHN to embed environmental stewardship in its planning, operations and culture, providing a triple benefit to the environment, finance and health that far outweighs the efforts. Energy & Environment supports UHN's vision of "A Healthier World," through a sustainable environment. This one minute video is a snapshot of how TeamUHN powers patient and planet-centred care, research and education.

Providing Patient & Planet-Centred Care

For more information on sustainability at UHN...



green@uhn.ca



www.talkintrashwithuhn.com



www.uhn.ca/corporate/AboutUHN/Greening_UHN



www.twitter.com/UHNTalkinTrash



UHN Energy Plan 2024-2029



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