Sustainability at University Health Network: Presentation & Tour for the Circular Economy Consortium



Mike Kurz Director, Director Environmental Compliance, Energy & Sustainability at UHN Michael.Kurz@uhn.ca 8

Lisa Vanlint Manager, Environmental Sustainability at UHN lisa.vanlint@uhn.ca



Sustainability at UHN, led by the Energy & Environment Team

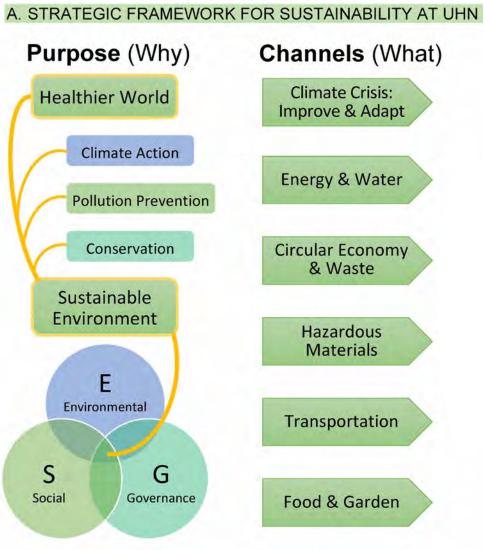
What is sustainability?

To meet our needs today without endangering future generations.

How we do that at UHN?

 Since 1999, the Energy & Environment team, part of Facilities Management-Planning, Redevelopment & Operations (FM-PRO), collaborates across all sites and departments to foster a culture of sustainability.





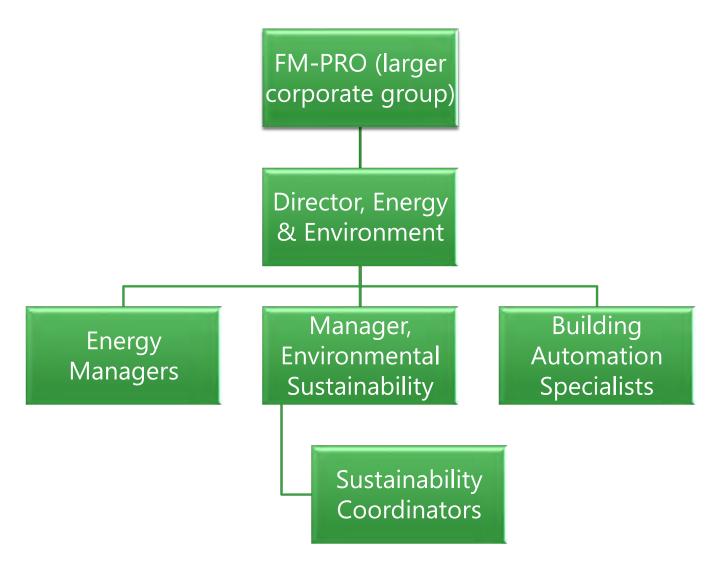
UHN's Values: Our Favorite...

What are resources?

- Staff time, money, supplies and materials, energy, water, air, soil, the environment
- Saving energy & reducing waste saves money, fights climate change and improves public health

Optimize our resources for the greater common wardship afety - Safest healthcare for patients and sta greater common Triple Bottom Line PEOPLE (the 3P's) Much like ESG SUSTAINABLE The center is -PROFITS sustainability OUR PRIMARY VALUE AND ABOVE ALL ELSE, VIABLE THE NEEDS OF PATIENTS COME FIRST

The Energy & Environment Team





Education and Communication

Telling Our Stories

UHN GREEN PLEDGI



SHOW OF HANDS WILL USE THIS GREEN DERT TABLE DELLAR KNOWLEDGE AT WORK!

Blog & Social Media Twitter

934

409

Talkin' Trash with UHN 31.764

page views/year

% increase in page views compared to 2022

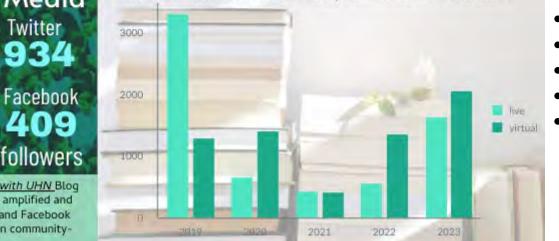
Social media sites centre on our Talkin' Trash with UHN Blog to tell UHN's greening stories so they may be amplified and repeated. Social media like Linked In, Twitter and Facebook play a supporting role. Outreach is modeled on communitybased social marketing methodology.

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.

Detailed sustainability training restarted for all new clinical staff in September 2022, with an increase in the number of annual refresher training sessions for key departments as well. Sustainability training at New Employee Orientation shifted to a lean online model that features a small sustainability section and reaches 3,000+ staff annually (not included in the data below).



Training Key departments:

- New Clinical Orientation
- New Leaders Orientation (partnered w Finance)
- Green Team Orientation
- CLEC Clinical Learners
- Nurse Educators
- Health & Safety
- **Environmental Services**
- **Facilities**
- Pharmacy
- IPAC
- FM-PRO
- Transportation
- Security
- Other Departments (green team invitations)

Climate Change: Cause, Effects and Cure?



Climate change is the biggest global health threat of the 21st century...Tackling climate change could be the greatest global health opportunity. People in healthcare must lead. (The Lancet)

Cause = People burning fossil fuels (Coal, Oil, Gas, Natural Gas) create carbon emissions (carbon footprint) Where? transportation, buildings, stuff Healthcare in Canada ~ 10 million cars*

*Greenhouse Gas emissions = 33 million t CO_2e/yr

Effects = **Environment:** Rising sea levels, global warming, extreme weather/storms/heat, droughts/floods = **Health:** respiratory and vector-borne disease, food/water scarcity, heat-related deaths, forced migration

Cure: Climate Action = transition from fossil fuels now, electrify everything with <u>clean</u> electricity

• Use less, reuse/recycle what you can, reduce plastics (made from oil)



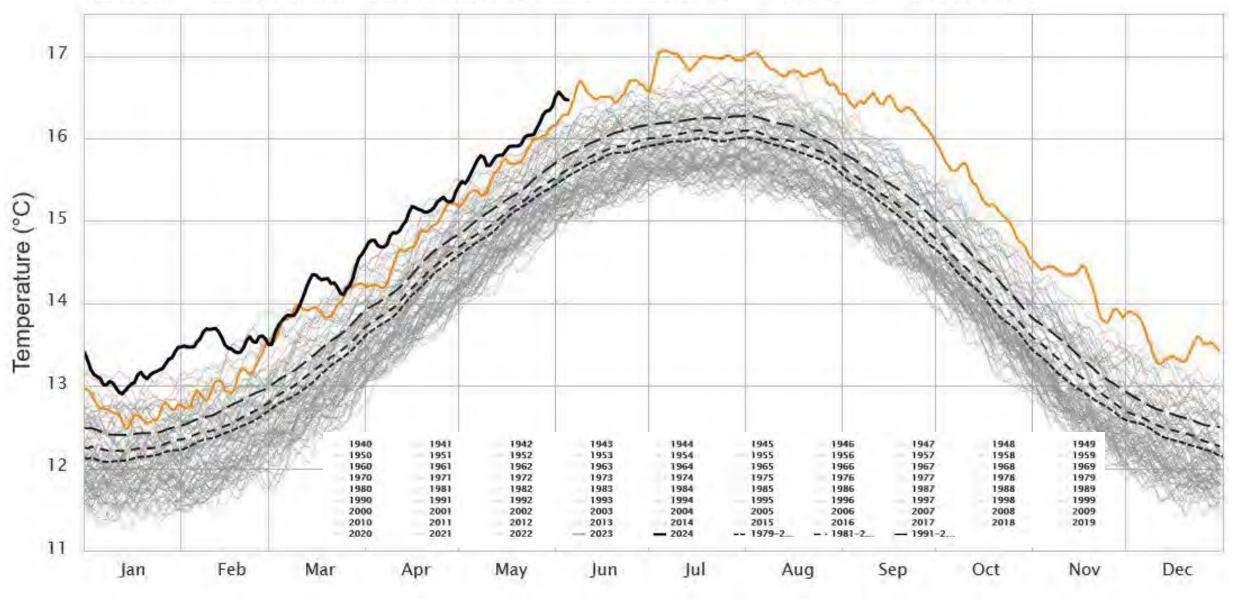
In 2013, Ontario closed all coal-fired power plants.
What did that stop?
1. Blackouts



3. Smog Days

Daily Surface Air Temperature, World (90°S-90°N, 0-360°E)

Dataset: ECMWF Reanalysis v5 (ERA5) downloaded from C35 | Image Credit: ClimateReanalyzer.org, Climate Change Institute, University of Maine



UHN Toronto General Toronto Western Princess Margaret Toronto Rehab Michener Institute

7

Energy, Sustainability, and Climate in Healthcare



"Code Red for humanity"

- UN Sec. Gen. Antonio Guterrez



"A lack of progress in reducing emissions and building adaptive capacity threatens both human lives and the viability of the national health systems they depend on, with the **potential to disrupt core public health infrastructure** and overwhelm health services." -The Lancet



"Climate change is impacting human lives and health in a variety of ways. It **threatens the essential ingredients of good health** – clean air, safe drinking water, nutritious food supply and safe shelter – and has the potential to undermine decades of progress in global health." – World Health Organization



"The Canadian Medical Association recognizes that the **impact of climate change on human health is accelerating at an alarming pace.** With that in mind, the CMA advocates transitioning to an environmentally sustainable, net-zero and climateresilient health system in Canada."

Gitigan and GROW – Gardens at UHN



Bickle GROW Garden

- Garden Rehab On Wheels
- First wheelchair-accessible food garden
- Now in 8th season
- Patient rehabilitation and staff engagement
- See also, TR-UC Rooftop garden, TR-LC raised beds



Michener Gitigan

- UHN's first Indigenous Healing Garden
- Led by Indigenous Health Program, Michener Facilities, Energy & Environment
 Shall
- Now in 4th season
- Staff & student education & engagement

we

visit it?

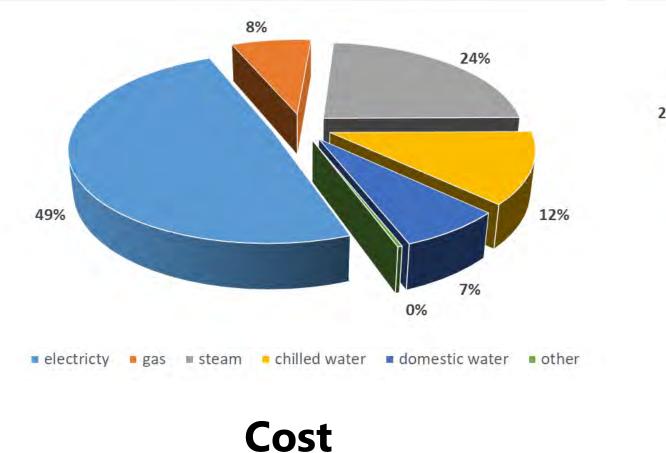
Energy Management at UHN

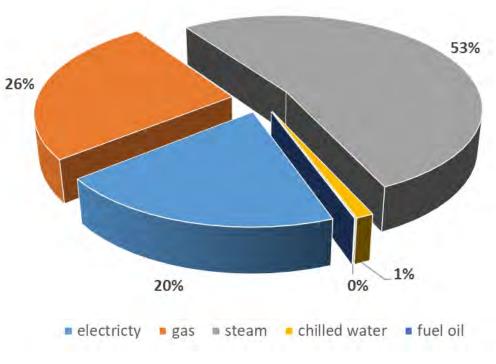
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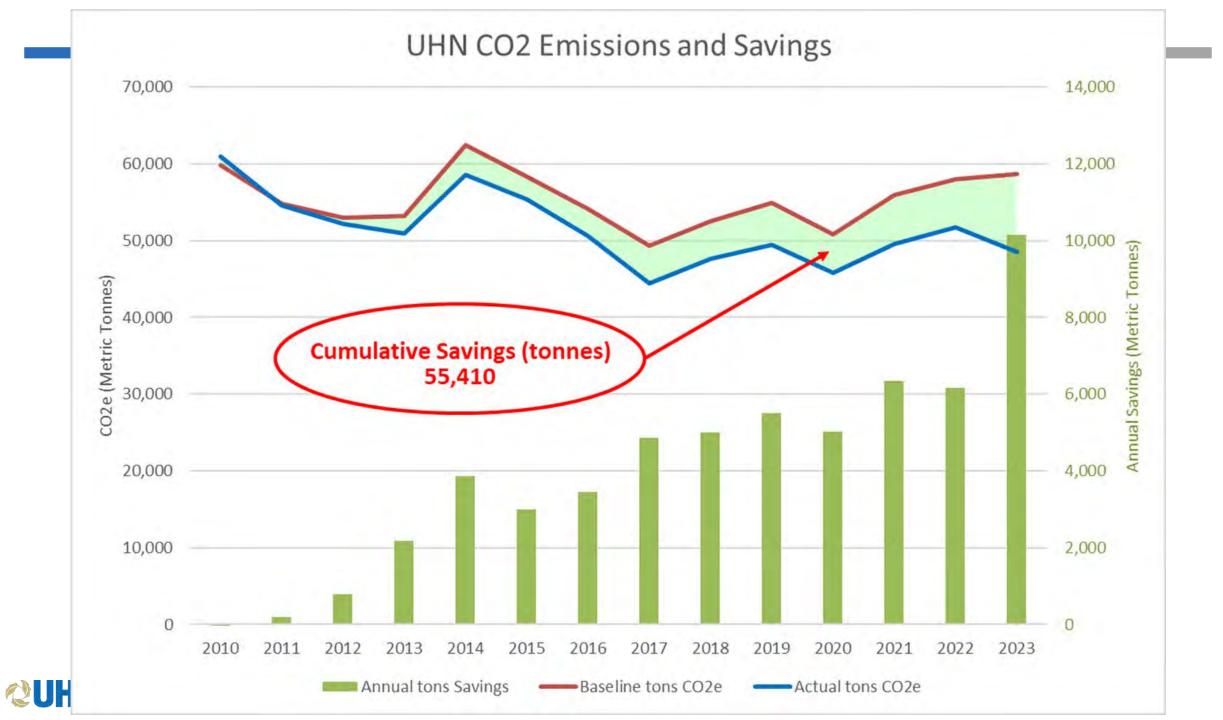
UHN Utilities - 2023

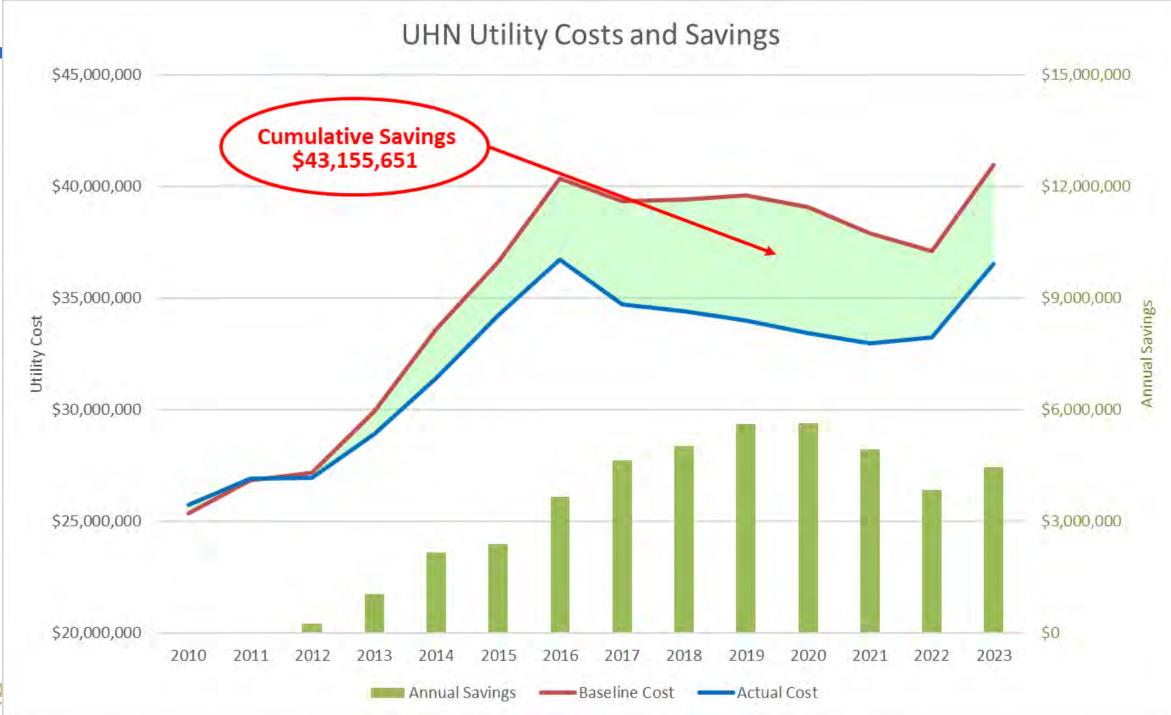




GHG





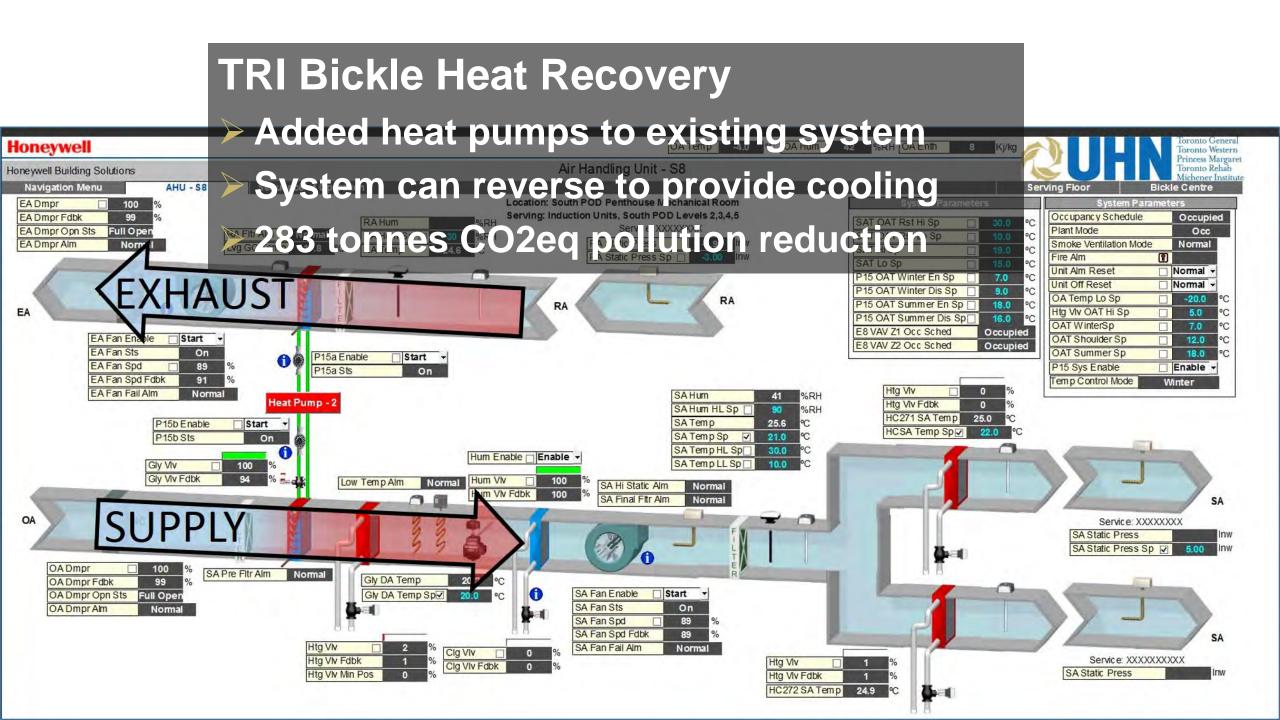


Demand Controlled Lab Ventilation

- Typical lab systems designed for worst case scenario operations 24/7/365
- System in place at PMCRT and KDT
- Continuous lab air quality monitoring
- DCV allows energy efficiency with ability to purge air
 Utility cost savings of \$870,000 per year
 - GHG savings of 2,700 Tons CO2e per year



Deep Lake Cooling at TGH and PMH
Uses renewable cooling from bottom of Lake Ontario in place of electric chiller plant
Improve site cooling resilience
Combined savings: 12,750,000kWh electricity
Combined savings: 90,000m3 water
Combined Savings: \$1.4M



Under Construction: WET System Will use renewable energy from wastewater to heat/cool TWH and KDT Eliminate 20% of UHN's CO₂ emissions Eliminate 10% of UHN's water consumption Equivalent to 1800 vehicles off the road

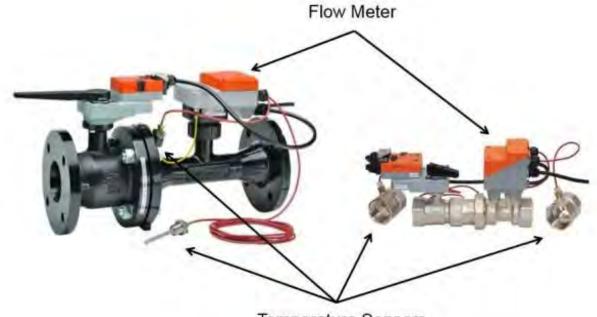


"Fewer people will need to be admitted to hospitals, including University Health Network, because of projects like these. Climate change is likely the number one threat to the well-being of society and the planet "

- Dr. Kevin Smith, PhD - CEO, UHN

Data and Retro-commissioning

- Installation of smart values helped document poor performance of "free cooling" winter operations
- Determined that operating CHW systems in winter was wasteful and caused higher steam consumption
- Approx 1000 tons CO2 emissions reduction
- \$100,000 utility cost savings
- Cost to implement included labour to winterize additional CHW coils



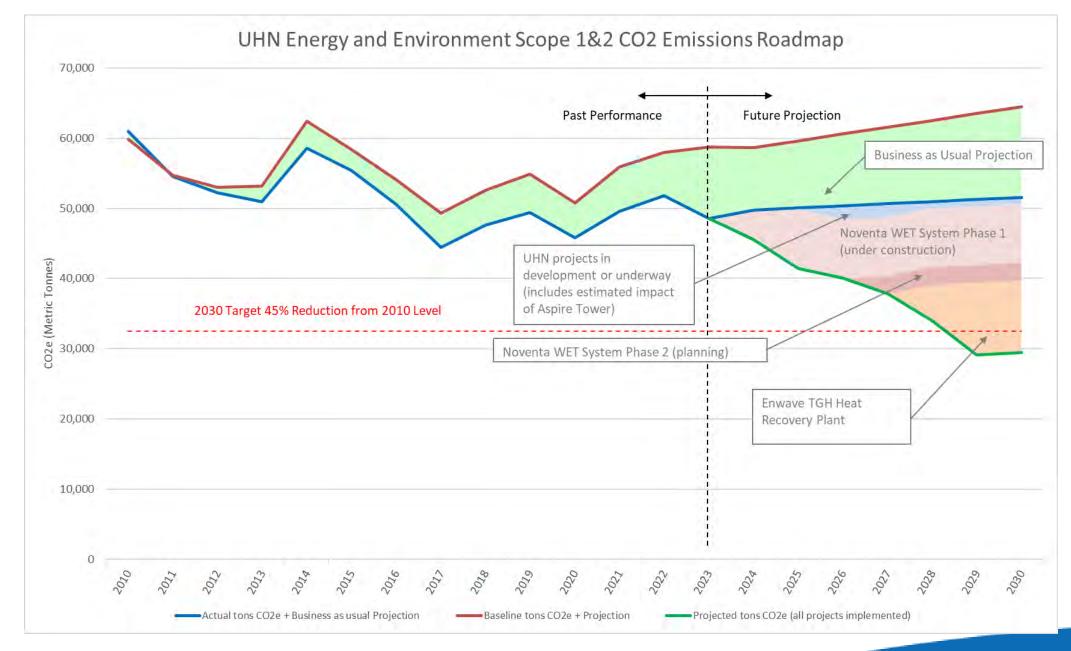
Temperature Sensors



Future Projects in Development

- Enhanced heat recovery from PMCRT exhaust air streams – Potential GHG reduction of 1,000 tonnes CO2e
- Enhanced Heat recovery at PMH 1,280 tonnes CO2e
- District heat pump plant to replace steam derived from fossil fuel – Potential to reduce TGH, PMCRT, 67 College GHG by 30% initially and 80% eventually







Anesthesia & Sustainability

- Anesthetic gasses have a high GWP (Global Warming Potential)
- Some anesthetic gases are worse than others
- One dose of Sevoflurane or Isoflurane:
 - like driving to the cottage (Toronto to Collingwood)
- One dose of Desflurane:
 - like driving to Winnipeg!!!
- Presented findings, recommendations to Anesthesia Governing Council
- Anesthesia leadership removed Desflurane from UHN!

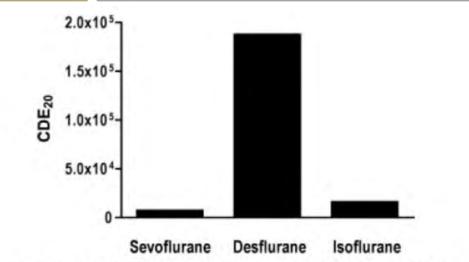
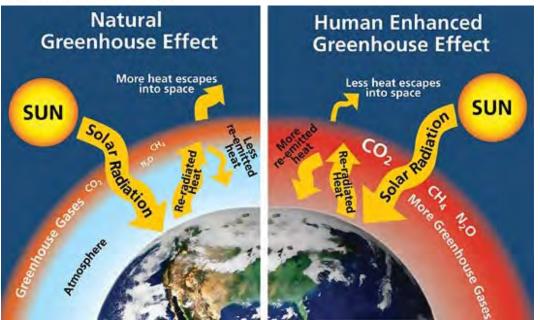
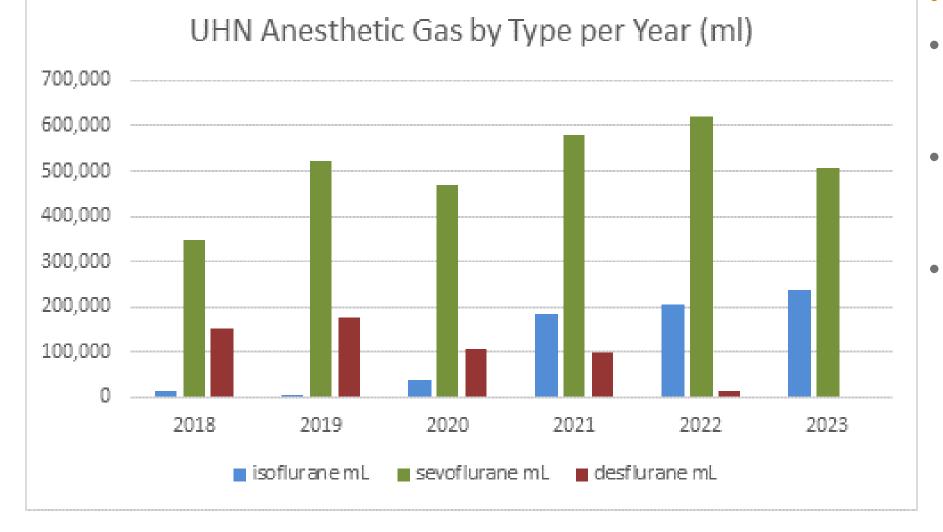


Figure 1. Relative global warming impact of 1 MAC-hour of 3 inhaled anesthetics at 2 L fresh gas flow. $CDE_{20} = 20$ -year carbon dioxide equivalent (in grams).





Anesthetic mix UHN 2018 - 2023

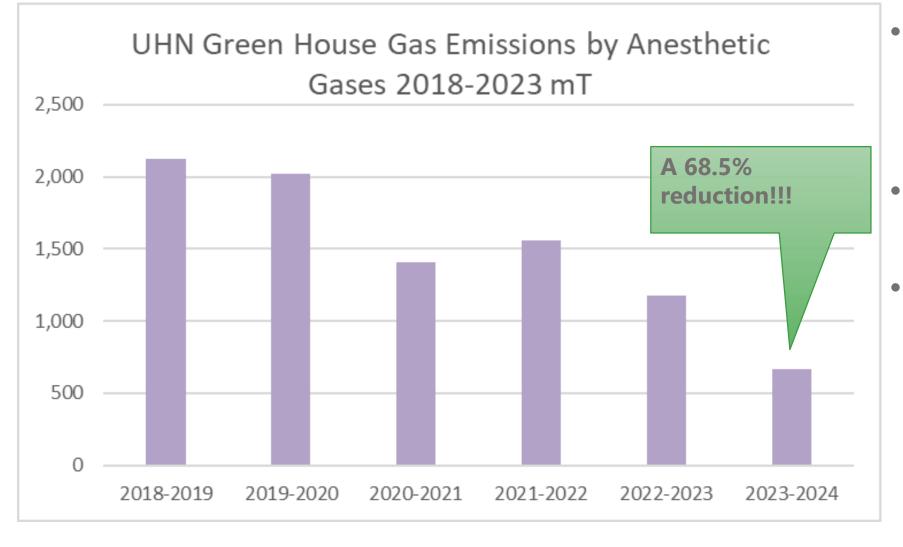


Desflurane gone!

- Changes in default to lower flows = greater efficiency!
- 2 L to 0.5 L, reset the default on all machines
- Reduction of anesthetic gas despite no reduction in #surgeries



How this impacts the climate



- GHGs from anesthesia a fraction of what they were, despite no reduction in #surgeries
- 2018 → 2023: 2,125 → 669!
- Savings comparable to reducing UHN-wide natural gas consumption by 11%!



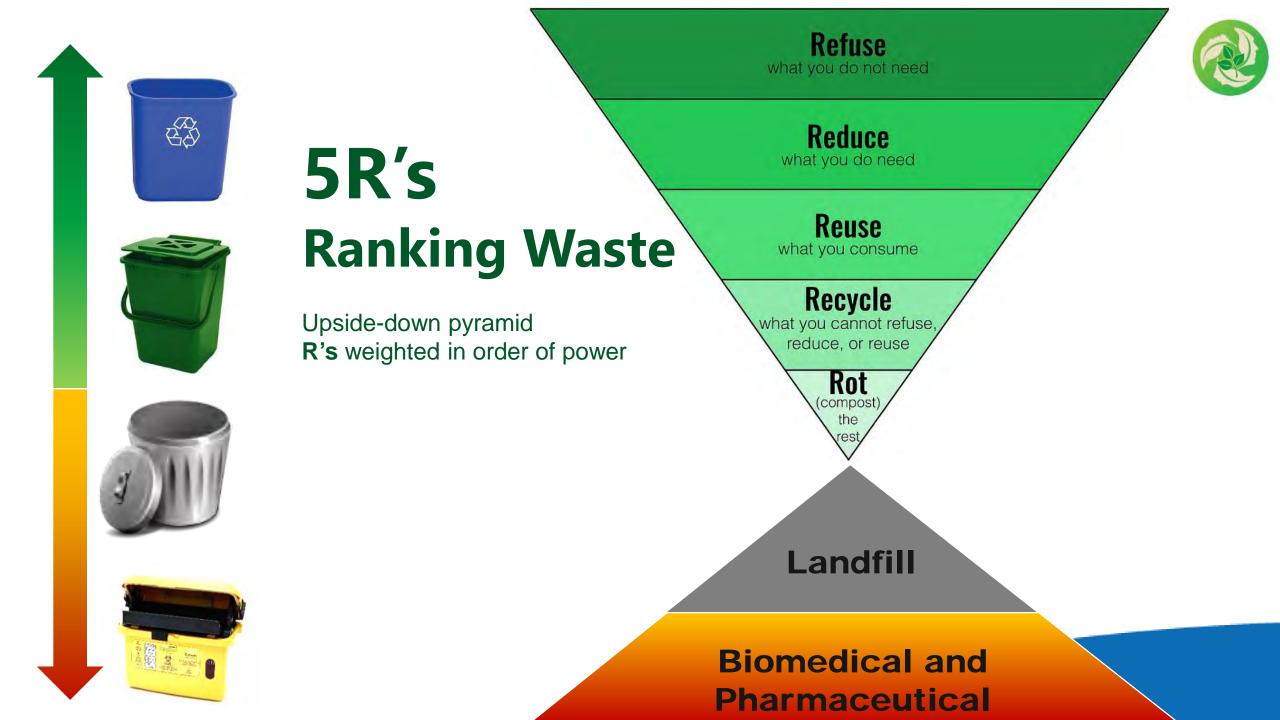
What Else – Silver Knight Breathing Circuits

- Project initiated and implemented by UHN Anesthesia department
- 7-day reusable instead of disposable
- Silver ions provide anti-microbial protection
- Save 3 tonnes plastic waste and over \$100,000 per year



Image from Intersurgical Ltd info sheet





Reduce Waste: Reuse over single-use (no greenwashing)

Disposable

Reuse = Supply Chain Protection

Reusable

Global conflicts & COVID-19 tangled supply chains, big problem if single-use

Reusable Gowns = climate win!

- TG/TW = 40K surgical gown washes/year!
- UHN = 99% reusable isolation gowns
- On our tour!

60 disposable VS. 1 reusable gown



Greenwashing ...

This!

Not

this

(misrepresenting something is eco-friendly) vendor touted the recyclability of their product to replace a reusable one. But Reuse is greener than recycling!

Reduce Waste

Wasted supplies = double waste

- pay to dispose of &
- pay to order again (& pray the supply chain works)

Olga Muir: Waste Warrior

- Encouraged using supplies wisely, showed cost
- IPAC recommends no more than 24hrs-worth in room



Marianne Ng: Policy Sleuth

•

- Policy said change Tracheotomy "every shift"
- Shift can be 12 hrs or 8 hrs, only needed q-12 hr
- Practice change = saves the time, supplies and waste of 22,000 changes/year

Honourable mentions!

- UHN Digital captures **e-waste** for special recycling
- MDRD uses more reusable sterilization trays than single-use sterilization wrap
- Custom Packs = Climate Win! OR Green Team worked to reduce unnecessary items in packs
- Finance, Procurement, Volunteer Resources, People & Culture+ have gone paperless for many processes

Reduce Waste: Supplies Stewardship Project



Supplies Stewardship

Use only what you need stop waste before it starts

- New Video! <u>https://videopress.com/v/jHq1VSIv</u>
- Pilot on 7 units: Baseline data: 1 week of counting all unused supplies after patient discharge
 - TG 6A Multi-Organ Transplant
 - TG 10ES Post-Surgical
 - TW 9A Orthopedics
 - TW 9BF
 - TR 8S MSK & Multisystem Rehab
 - PM 14A & 15A Inpatient Leukemia
 - PM 15B/15C Autologous & Cell Therapy





SUPPLIES STEWARDSHIP CHAMPIONS



LET'S RAISE A HAND TO... REDUCING WASTE & SAVING RESOURCES!



DEPT8S MSK & Multisystem RehabSITEToronto Rehab - University CentreKICKOFFFebruary 13, 2024

Where we can save: <u>Before</u> a Patient Discharge

- Check patient room first bring what's needed
- IPAC recommends stocking only 24 hours worth of supplies

Tag-Team Efficiency Technique!

- 1 person goes in room with patient, then someone nearby gets the supplies and passes them in
- So no need to don and doff new PPE ... all done from a staff-efficiency perspective!
- Created by Adassa Wilson at TW

Tag Team? Is it doable?



Where we can save: <u>After a Patient Discharge</u>

Reusable Supplies: IPAC confirmed

**unopened & wiped down

- Blood Transfusion Line
- IV Alcohol Cap
- IV Bags
- IV Catheter
- IV Primary & Secondary Line
- Phlebotomy Butterflies
- Phlebotomy Vacutainer
- Saline Flush
- Sterile Water Bottle
- Tape
- Blue Pads

- Dry Cloth
- Hygie Bags
- Wipes
- Nasal Prongs
- O2 Tubing
- Suction Tubing
- Yankaur Suction
- Foley Catheterization Kits
- Specimen/Sample Jar

Operation Green

Save surplus med supplies from landfill and send to communities in need. Email OperationGreen@uhn.ca



Reduce: Patient Bags

To stop waste before it starts:

- Message to patients to bring their own belongings bags:
- E&E worked with Quality Improvement
- Stops **4,000** plastic patient belongings bags/month!
- If they forget, they can have a bag



UNIVERSITY HEALTH NETWORK IS GOING GREEN!

STARTING NOW



BYORB

2023 =

brought

Even better

than target

bags!

of 50%!

63%

stats Dec

Each month, we use **4,000 PLASTIC BAGS** for patients having surgery at UHN.

This is produces the same carbon emissions as driving 3000 km or driving from Toronto to Edmonton.

PROTECT

OUR EARTH

PLEASE BRING **2 REUSABLE BAGS** TO HOLD YOUR BELONGINGS DURING SURGERY.

1 small bag for your shoes, 1 large bag to hold all of your other belongings.

Bags that can be closed with a zipper are preferred to keep your belongings safe. Please see below for some examples.

Please leave your valuables - such as jewelry, watches, and credit cards - at home. The hospital is not responsible for lost or stolen items.



When you realize Heart and Earth are spelled with the same letters, it all starts to make sense



Reduce Waste with Vendors

Temperature Sensitive packaging in Research:

Issue: a lot of wasted packaging, non-recyclable, styrofoam, icepacks, plastics

- Letter signed by Research Leaders at multiple sites: SickKids (leads), UHN, Sunnybrook, Sinai, UofT, TMU, Unity Health
- Aim to partner with vendors to fix the issue, and let the know we care
- Foci: right-sizing material, take-back programs for reuse, contain post-consumer recycle product, be recyclable
- Continued meetings with vendors with progress in many e.g. take back at NEB







An example of 1 vendor's solution Due to low weight of EPS, they mention size of 7 x 747s worth of EPS saved and 60 tonnes of C0₂e



As leading institutions in scientific research, we are committed to minimizing our environmental footprint while our facilities conduct groundbreaking research, train the next generation of researchers, and support global scientific communities with knowledge and state-of-the-art facilities.

As one of our vendors, we believe we have a common goal to build a culture that contributes to a healthy and environmentally sustainable society.

Currently, temperature-sensitive products generate a large volume of packaging waste during shipment. Unfortunately, the life cycle of packaging supplies, like Styrofoam and ice packs, is not sustainable, starting with the use of petroleumbased plastic during its manufacturing process which has no recycling options and is unable to be reused. These items take hundreds of years to break down in landfills during which time they release chemicals into the soil and greenhouse gases into the atmosphere.

End-of-life management for cold shipment packaging is challenging, but we believe there are ways this process can become more sustainable. Therefore, we ask you to work with us on environmentally sustainable solutions for cold shipment packaging.

Our aim is to reduce our environmental impacts and avoid, minimize, or mitigate health and environmental risks associated with the products we need to continue our work. To achieve this goal, we have developed several sustainability solutions and requests as follows:

- 1. To size packaging material to product size to prevent waste before it occurs.
- To extend the embodied value of packaging material that has yet to reach the end of life by taking back used packaging material for reuse, whether for original or alternate purposes.
- For packaging material to contain recycled content as post-consumer and post-industrial recycled materials reduce the use of virgin materials.
- To reduce packaging materials entering landfills by designing packaging materials that can be recycled in our respective recycling programs.

By focusing on preventing waste and reusing and recycling packaging material, packing solutions can be part of a more sustainable future.

We are open to discussing your questions, concerns, and ideas for sustainable solutions. We understand the direct links between research, the environment and human health, and we look forward to working with you.

Dr. Stephen Scherer Chief of Research SickKids Research Institute

Kullervo Hynynen

Dr. Kullervo Hynynen Vice-President Research & Innovation Sunnybrook Research Institute

Brad Wouters

Dr. Bradly G. Wouters Senior Scientist, Princess Margaret Cancer Centre Executive Vice President, Science and Research University Health Network

Dr. Ori Rostein Vice President, Research & Innovation Unity Health Toronto

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Dr. Anne-Claude Gingras Director, Lunenfeld-Tanenbaum Research Institute Vice-President Research, Sinai Health

Stoven N. Liss

Dr. Steven N. Liss Vice-President Research & Innovation Toronto Metropolitan University

Dr. Leah Cowen Vice President Research & Innovation & Strategic Initiatives University of Toronto

Sunnybrook RESEARCH DATE FOR THE PROPERTY OF THE P





SHUT THE SASH



SHUTTING THE SASH CAN SAVE 2 HOMES WORTH OF ENERGY



FUME HOODS CONSUME 3.5 HOMES WORTH OF ENERGY







Audit program helps boost levels to +98%

SWAP SHELF



PMCRT, 5th floor PMH, 9th floor



Reevaluate your Inventory

reduce costs & avoid unneccessary waste

Wasted Supplies = Triple the Waste 1. Pay to dispose of it 2. Pay to order it again 3. Supply chain reliance



ICE PACK REUSE

Baxter

1011 UPI CAUR

1,630

Ibs Donated in 2023!





70

60

50

40

0

Garbage

- Waste can be a resource! 30
 Recycling saves new materials
- Recycling bins must be greater 20 than 90% uncontaminated
- Contamination means whole ¹⁰ bin goes to landfill
- Environmental Services Staff can't fix our sorting mistakes (safety & time)
- If in doubt, throw it out in garbage. NO WISHCYCLING

Which Is More Expensive?

Comparing cost to throw out a tonne of garbage to recycling

Recycling

FYI: Hazardous waste is the most expensive, energy intensive & air polluting waste stream. Use sparingly.

Multi-stream Bin Project

- more multi-stream bins
- fewer under-desk bins
- helps staff sort better

Goodbye under-desk bin, Hello Multi-stream bin...

- Expands compost collection
- Reduces plastic bag liners
- Donated +2,000 small bins for reuse



Green Team Waste Wizards at the BBQ help teach what goes where







Special Recycling Programs

- E-Waste
- Batteries
- Scrap Metal
- Toner
- Stryker Single-Use Medical Devices:
 - Potential to purchase refurbished medical devices
- Blue wrap periodically, if have recipient
- Anesthetic Gas Bluezone and Desflurane reduction
- Not sure? Ask Green@uhn.ca





Green Transportation

- Anything but driving alone (gas car)
 - Save \$\$
 - Reduce air pollution & congestion
- Active Commuting: Walk/Bike
 - o 25% Discount for BikeShare
 - Protected bike parking (free)
 - BUG: Bicycle User Group
- Public Transit all around
- Carpool matching program, Smart Commute
- Electric Vehicles

Toronto Western Princess Margaret Toronto Rehab

- Zero emissions = no GHGs!
- 54 Charging stations @UHN-free!
- \$5K Fed rebate, lower operational/maint costs

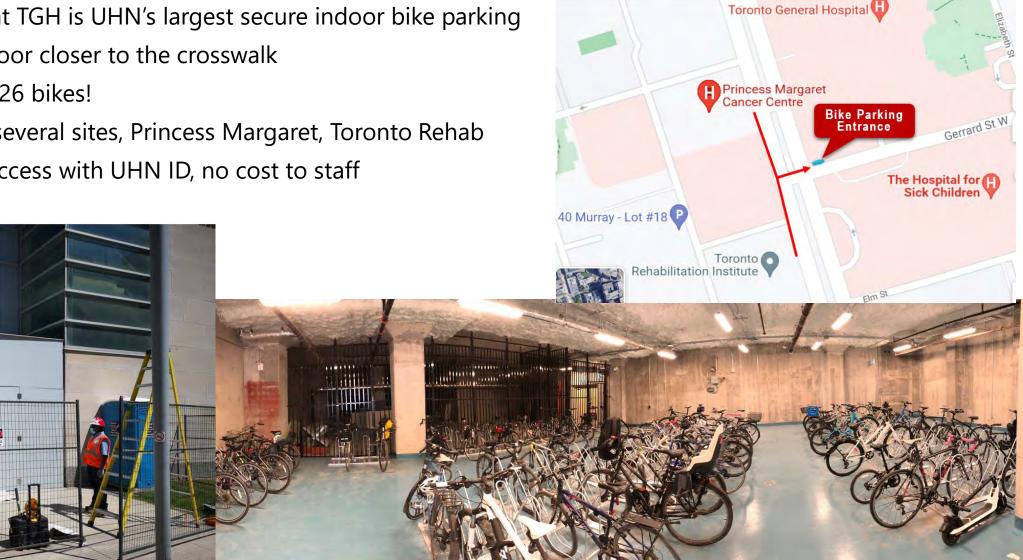






And for a cleaner commute...

- Bike Vault at TGH is UHN's largest secure indoor bike parking
- Blasted a door closer to the crosswalk
- Space for 126 bikes!
- Shared by several sites, Princess Margaret, Toronto Rehab
- Easy staff access with UHN ID, no cost to staff



Green Teams help:

- Departments with green teams save more energy, use resources wisely and recycle better.
- Employee engagement, staff bond over common purpose
- Help lead and develop your employees' potential a way to let them stretch!
- Give staff protected time to participate, only a few minutes/week
- Events: Earth Month, Bike Month, Waste Reduction
 Week



OR GREEN TEAM



Left (L to R): Vickie Morley, Nicole Maia, Jocelyne de Romana, Nicole Chambers, Lorna Button, Marcus George, Julie Yip, Carla Luzzi, Coimbatore Srinivas, Georgia Smickle, Genevieve Martel, Jennifer Perry, Laura Donahoe.

Right: Glass medication bottle recycling station.

What We've Done:

Compostable Cups Project: We traded the non-recyclable styrofoam cups in the OR and patient rooms for compostable cups to prevent thousands of styrofoam cups from entering landfills. We also continuously coach both our staff and patients on how to properly dispose of them.

Reprocessing Laparoscopic Devices: We started a program with Stryker where approximately 1,000 single-use laparoscopic devices are collected and reprocessed to be used again, diverting OR waste.

Glass Recycling Program: We started a glass recycling program to divert medication bottles from entering landfills. We ensure the metal caps are removed and the glass containers are collected.

Cautery Cord Recycling: We have started to cut the cords off cautery devices to ensure they are being recycled and diverted from landfill.





followed by Tour:

Walk from Princess Margaret to Toronto General:

•MC: Gitigan (earlier)

•PMCRT: Multi-stream bins, TV screens, Swap Shelf, Shut the Sash, ice pack recycling

- •TG: Elizabeth parkade: EV charging
- •TG: pollinator garden
- •TG: Reusable Linens
- •TG: Bike parking Bike Vault
- •PM: Lunch



Now What?

Lead by example

 Practice stewardship of resources for better patient, staff and public health outcomes

Lead/encourage a Green Team

Stay informed and use us as a resource

- Energy & Environment Intranet Page
- TalkinTrashWithUHN.com blog, Twitter & Facebook
- Get in touch: Lisa.Vanlint@uhn.ca or green@uhn.ca





Michener Gitigan A leader reallocated budget for planting annual flowers to building the Indigenous Healing Garden

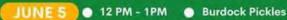
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gram Groupings	FRANKE WARA	AND	E-mail: Edward.Rubinstein@uhn.ca
ncial Services	Part Area and		Tel: 14-6190 Manager, Energy & Environment
in Resources			
tion Control	CARDON PURC	E-mail: Kady.Cowan@uhn.ca Tel: 14-5740	
Affairs	Committed to Patient & Planet-Centered Care		Energy Steward
olical Affars rrsing trition to: Health & Safety tient Relations blic Affars ak Management JS			E-mail: Lisa Vanlint@uhn.ca Tel: 14-5130
	UHN & THE ENVIRONMENT		
	E-Learning Enviro Course	Green Procurement	Energy Steward E-mail: <u>Songvang Hu@uhn.ca</u> Tel: 14-2886 Energy Project Manager
	Talkin' Trash Newsletter	Environmental Policies	
	<u>Talkin' Trash Blog</u>	Green Annual Report	
	Green Food Court Discounts	Enviro Certificates & Plans	
	GREEN TEAM		E-mail: Chad.Berndt@uhn.ca Tel: 14-5288
	Green Team - About Us	Take the Green Pledge	Energy Project Manager
	Join the Green Team	UHN Real Food Garden	
	Green Team Toolkit		
	ENERGY & TLC		
	<u>TLC - Care to Conserve</u>	See Real Time Energy Use	Talkin' Trash Read the Blog
	Energy Efficiency Tips	and and the local states have	
	• Real Time Energy Use @ UHN		
	RECYCLING & WASTE		-
	Recycling @ UHN	Hazardous Waste Disposal	Send us your ideas
	Paper Recycling	Pharmaceutical Waste-White	
	Metal/Glass/Plastic Recycling	Biomedical Waste - Yellow	
	Beyond the Bluebox	Biomedical Waste @ PMH	
	<u>Composting</u>	<u>Cytotoxic Waste</u>	
	Paper Reduction	Chemical Waste	
	TRANSPORTATION ZONE		UHN Numbers (since Jan 1, 2013)





Events

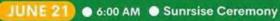
Michener Gitigan



Come and dig burdock roots from the Gitigan and make them into tasty pickles with Ella LaForme!

JUNE 19 🕒 11:30AM - 12:30PM 🌔 "Weeds" as Food & Medicine

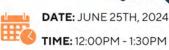
Change your perception about the "weeds" in the Gitigan and learn how to uplift them as food and medicine with Carolynne Crawley!



Celebrate National Indigenous Peoples Day with a Sunrise Ceremony at the Gitigan!

BIKE MONTH MAINTENANCE STATION

Cycle Toronto



LOCATION: TORONTO WESTERN HOSPITAL

Safety checks, assessing air pressure and flat tires, tightening your brakes, lubing your brakes, lubing your chain, and ensuring your bike is the right fit.



For more information and to register contact Green@uhn.ca

H Toronto Western Hospita

Krembil search Institute

BIKE MONTH MAINTENANCE STATION

Cycle Toronto



LOCATION: TORONTO GENERAL HOSPITAL

Safety checks, assessing air pressure and flat tires, tightening your brakes, lubing your brakes, lubing your chain, and ensuring your bike is the right fit.





For more information and to register contact Green@uhn.ca