ENVIRONMENTAL PERFORMANCE REPORT 2021

Hamilton Health Sciences

INTRODUCTION

This Environmental Performance Report highlights the actions and outcomes of Hamilton Health Sciences' (HHS) environmental initiatives in the 2020 calendar year, with 2016 as the baseline-reporting year. Our report is a snapshot of a larger "Sustainability Report" submitted to Sustainable Hamilton Burlington and based on Global Reporting Initiative (GRI) standards of excellence in sustainability reporting – the generally accepted framework worldwide.

HHS is committed to environmental stewardship and is a member of Sustainable Hamilton Burlington, the Canadian Coalition for Green Healthcare and the Bay Area Climate Change Council. In June 2021, HHS's environmental stewardship efforts were recognized by Sustainable Hamilton Burlington with the presentation of two awards: **Best Sustainability Report, Best Social Initiative.**

▲ *Hamilton General Hospital*

ABOUT HHS

Hamilton Health Sciences is a hospital system of 15,000 staff, physicians, researchers and volunteers serving a population of 2.5 people in southwestern Ontario.

Our breadth of services support care for all ages, from pre-birth to end-of-life, and our regional programs offer specialized care for people from across the province.

We offer world-class expertise in many areas, including trauma, neurology, cardiac and stroke care, cancer care, palliative care and pediatrics. We are also a global leader in healthcare research.

As the largest employer in the Greater Hamilton region, we play a vital role in training the next generation of health professionals in collaboration with academic partners, including McMaster University and Mohawk College.

HOSPITAL SITE ACRONYM LEGEND

MUMC	McMaster University Medical Centre
JHCC	Juravinski Hospital and Cancer Centre
HGH	Hamilton General Hospital
SPH	St. Peter's Hospital
WLMH	West Lincoln Memorial Hospital

▲ *Juravinski Hospital and Cancer Centre*

At Hamilton Health Sciences (HHS), we're serious about operating responsibly by managing our facilities, services and resources in a way that reduces our impact on the earth.

This annual environmental performance report provides highlights of the progress we're making across our enterprise in being a good steward of our resources. We don't always meet the ambitious goals we have set, but regularly measuring, evaluating and reporting how we are doing keeps us accountable and motivates us to keep working at it.

As the greater Hamilton area's largest employer, with numerous sites and millions of square footage in operation, our environmental impact is significant. Our philosophy is to not just meet but exceed the legislated requirements wherever possible.

This past year was no exception, despite being a uniquely challenging time for all healthcare providers. Although some forms of waste and energy use were reduced because of fewer people in our buildings, the waste associated with discarded personal protective equipment was a new challenge. We started a pilot project to divert surgical masks from landfill and will continue refining it, as the enhanced use of PPE will be with us for some time to come.

HHS is a regional leader in environmental initiatives and I would like to thank our staff, physicians, volunteers, and the many partners who support us in this ongoing commitment, including our partners at Sustainable Hamilton Burlington.

Rob MacIsaac
President and CEO

The declaration by Hamilton City Council in 2019 that we are in a climate emergency can serve as a wake-up call to any local organization not already engaged in reducing greenhouse gas emissions and overall environmental impact.

At HHS, where for many years we have been generating our own energy, reducing waste and lowering emissions, the declaration renews our determination to keep going and do more.

As one of the province's largest hospital systems, reducing our environmental impact isn't easy or inexpensive. The very nature of contemporary health care and infection control means there are many single-use items that cannot be recycled or re-purposed, to use just one example. And creating better and more sustainable infrastructure often means capital investment.

We know there is much more to do before we can get close to net zero, but we are proud of what we have accomplished to date. With the help of everyone in the HHS family, and our community partners, we will keep working towards it. As Hamilton City Council's declaration noted, acting on climate change is a collective responsibility.

Kelly Campbell
Vice President,
Corporate Services and
Capital Development

ENERGY

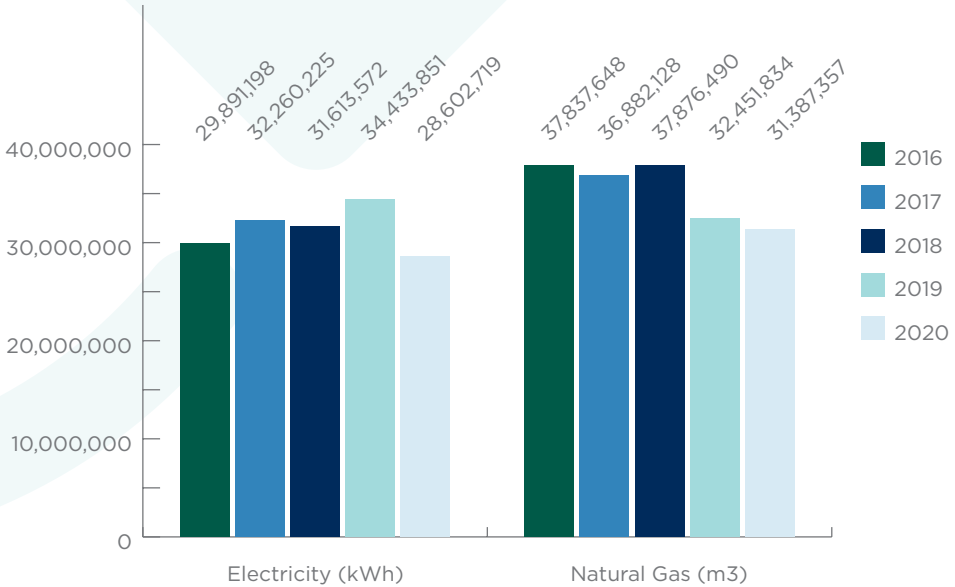
As a 24/7 operation, the lights are always on at HHS. And any power outage necessitates diesel generators switching on immediately because medical equipment, temperature-controlled storage of supplies and other systems powered by electricity mustn't skip a beat.

Despite that, HHS still counts energy saving as one of its success stories. We were one of Canadian healthcare's earliest adopters of cogeneration plants to reduce reliance on the hydro grid.

The three cogen plants – at McMaster University Medical Centre, Juravinski Hospital and Cancer Centre, and Hamilton General Hospital sites –use natural gas to produce electricity, heating and cooling in a single efficient process, reducing grid reliance by more than 70%.

Even though the lights are always on, we can still improve performance by switching to LED bulbs. In 2020 we replaced approximately 2,200 tubes with energy-efficient LEDs at the

ENERGY CONSUMPTION, ALL SITES COMBINED



Juravinski Hospital and Cancer Centre, an upfront investment that saves the equivalent energy generated by 25 homes for one year. Other sites will be converted to LED bulbs over time.

MORE PROJECTS, MORE SAVINGS

How efficient is HHS' energy use? We work on reducing it in a variety of ways, although comparing our energy performance to prior years isn't straightforward, as facilities expand and change over time. Despite the addition of new patient care units at both the Hamilton General Hospital and the Juravinski Hospital and Cancer Centre in 2020, overall HHS has been able to reduce our consumption of natural gas and electricity, as compared to our baseline year (2016).

2020 Initiative	Location	Energy Savings in 2020	Emissions Savings in 2020	Equivalency
LED Fixtures Replacement of HPS (high pressure sodium) and fluorescent fixtures with efficient LEDs.	JHCC	67,000 kWh Per Year	37.24 tCO2e	25 homes' electricity use for one year
Insulation Project Repairing existing and Insulating pipes, and placing removable jackets on valves and flanges to prevent heat distribution losses.	JHCC, MUMC and HGH	1,531,000 M3 natural gas	2932 tCO2e	670 homes' energy use for one year
		TOTAL 2020 SAVINGS	**2969 tCO2e**	

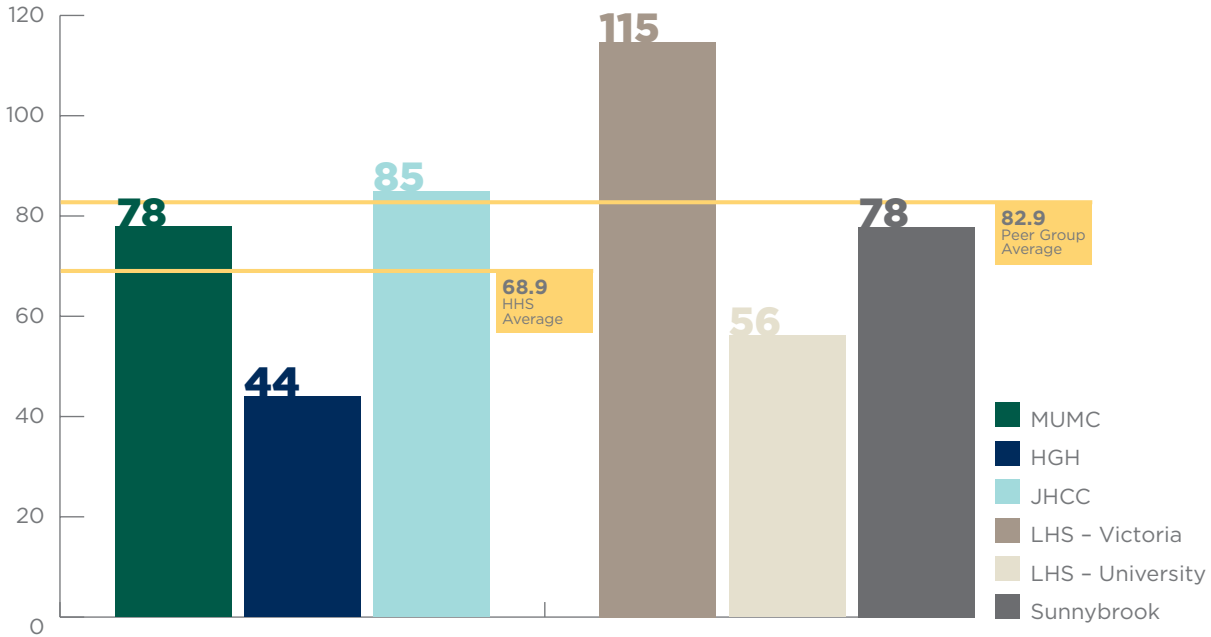
tCO2e = Tonnes of Carbon Dioxide Equivalent

BENCHMARKING AGAINST PEERS

Not all Ontario hospitals cogenerate energy and some may be newer or older buildings, larger or more compact facilities. All of these variables impact energy performance. For the purposes of this report, we're comparing the three HHS sites that cogenerate to three other hosptial sites that also have cogeneration plants: Sunnybrook Hospital, London Health Sciences (LHS) Victoria Site and London Health Sciences (LHS) University Site by looking at the energy intensity equivalent per square foot.

Data for peer comparators is publically available and was taken from the Broader Public Sector (BPS) GHG emissions report, as all Ontario hospitals are required to submit to BPS annually.

2018 ENERGY INTENSITY EKWH_SQFT



EMISSIONS

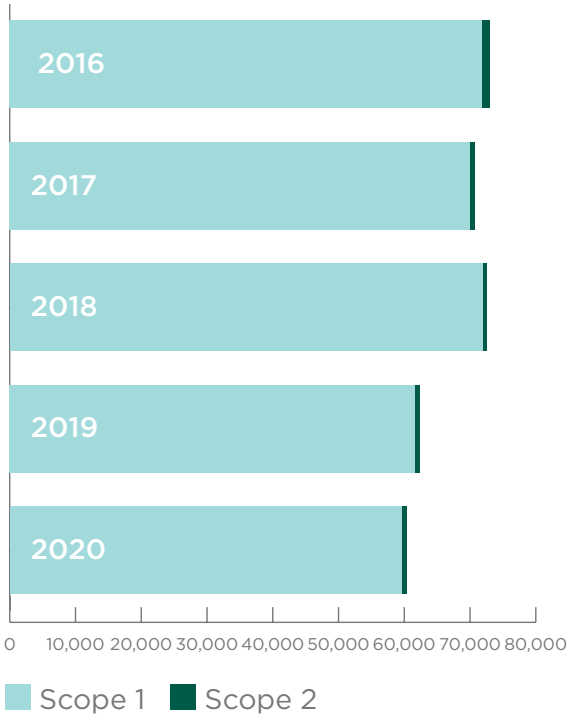
At HHS, the main source of emissions is from our natural gas generators, while steam and hot water boilers produce the remainder. HHS keeps a comprehensive inventory of emissions through carbon and energy audits. This gives us standardized data for year-over-year comparison, allowing for greater insight in creating tactics to reach our reduction targets.

2020 EMISSION REDUCTION TARGET

In 2016, HHS set a greenhouse gas (GHG) reduction target of 20%, or 15,000 tCO2e, by 2020. We fell short of that target, instead achieving a 17.28% reduction. Missing our target is largely attributed to expanded facility operations at Juravinski Hospital and Cancer Centre and Hamilton General Hospital.

Inspecting Air Handling Units at MUMC

EMISSIONS - SCOPES 1 & 2 COMBINED (YEAR OVER YEAR, TONNES OF CO2E)



Legend: Scope 1 emissions are those from sources that are owned or controlled by the organization (e.g: cogeneration plants). Scope 2 emissions stem from the consumption of purchased electricity, steam, or other sources of energy generated upstream from the organization by central utility services.

HHS'S NET ZERO FUTURE

"Net Zero," or carbon neutrality, refers to achieving net zero carbon dioxide emissions by balancing carbon dioxide emissions with removal, carbon offsets or simply eliminating carbon dioxide emissions altogether. To reach net zero carbon emissions, we have to either eliminate the hospital activities which create emissions and/or balance them with offsets.

Given the significantly higher emissions from burning natural gas, in comparison to purchasing electricity, HHS is targeting a reduction in natural gas consumption. To achieve this, the aged engines in the cogeneration plants will be replaced. This multi-million dollar upgrade will significantly reduce the CO2 emissions at our largest sites and help us achieve a 50% reduction target by 2023. While not "Net Zero," this target was set based on what we know to be practically and fiscally feasible for HHS right now.

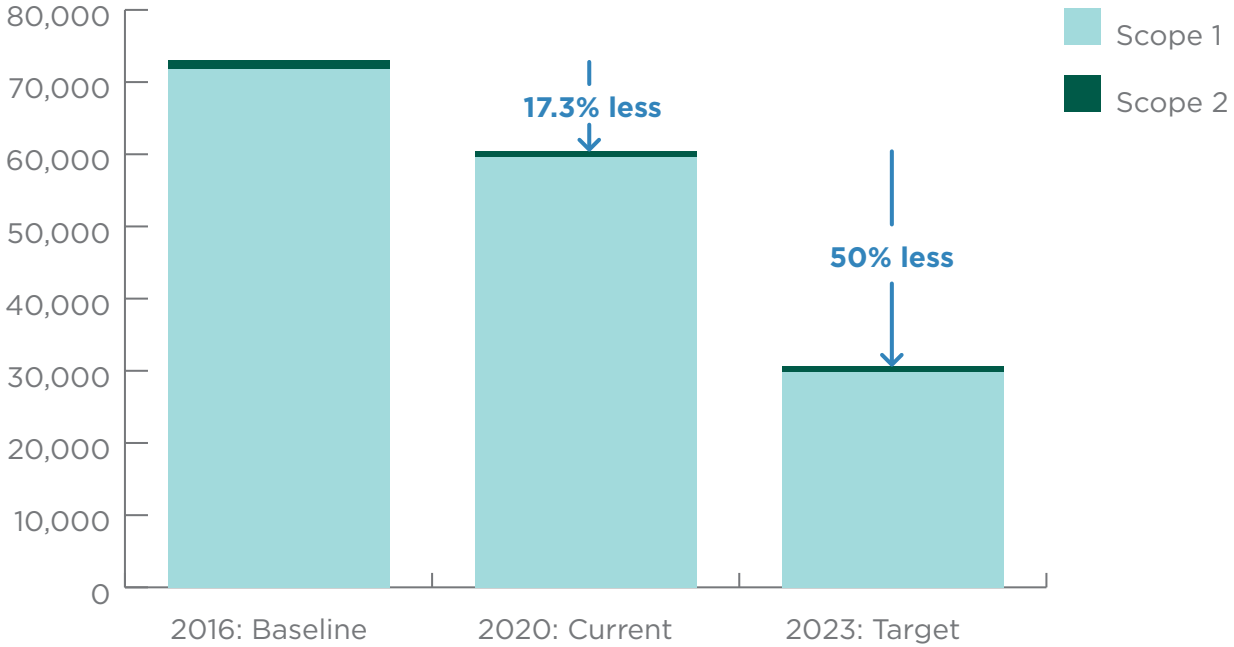
50% reduction target by 2023

Performing maintenance on chilled water pump

Inside the main mechanical room at MUMC

Checking sump pumps in the chiller room

EMISSIONS TARGET ROADMAP (TONNES OF CO2E)



WASTE

Hospitals are high-waste environments. In terms of impact, HHS is the size of a small town, with 15,000 staff, physicians, volunteers and learners and 1,200 beds across multiple sites. Collectively, our sites occupy an estimated 4.5 million square feet and occupy land in residential, commercial and industrial neighbourhoods.

Our 2020 waste program highlights include:

- waste diversion rate was 41.3%,
- 170 metric tonnes of food waste diverted from landfill
- 1520 metric tonnes of recycling
- 586 MT less waste than in 2019

The categories of waste are as follows:

- Reuse (diverted sharps)
- Recycle (cardboard, confidential paper waste, metal, e-waste, bulbs/tubes, toners, batteries, skids)
- Compost (organics)
- Landfill (general waste and construction waste)
- Biohazardous waste (cytotoxic, pharmaceutical, biomedical and anatomical)

IMPACT OF COVID-19 PANDEMIC ON WASTE AT HHS

In 2020, we saw an overall reduction in waste production of 586 MT from 2019. This resulted from fewer surgeries, a reduced number of staff working on site and a decrease in cafeteria waste (sales) all due to COVID-19-related changes to operations.

At the same time, the massive increase in the use of PPE gave us a new challenge in waste diversion. In a pilot project, we deployed PPE recycling boxes in 30 locations at entrances and exits of our hospital sites. These boxes can accept a variety of PPE items (masks, goggles, face shields) but at HHS the majority of items discarded were surgical masks. It's estimated that more than 70,000 masks were diverted from landfill in 2020.
A global increase in demand for alcohol-based hand rub (ABHR, or hand sanitizer) led to a supply chain shortage of wall-mounted hand pumps.

Discarding cytotoxic waste in the cancer centre

The solution was to partner with a company that took the empty ABHR bladders and refilled them with a bulk product. This refill project diverted more than 5,500 ABHR bladders from landfill in 2020.

WASTE INTENSITY & PATIENT ACTIVITY

HHS continues to out-perform the peer group average of 22kg per inpatient day. Overall, HHS waste intensity is 9.4kg per inpatient day for 2020.

HHS measures waste intensity according to patient volume. To obtain the waste intensity, we divide the totality of hazardous and non-hazardous waste by the number of inpatient days, giving an accurate picture of hospital waste activity. The pandemic-related reduction in surgical cases (which are very waste intensive) balanced out our waste intensity rates.

HHS waste intensity is 9.4kg per inpatient day

CHANGES IN GLOBAL RECYCLING AFFECT DIVERSION RATES

In 2016 HHS set a waste diversion target of 50% by 2020. We have been unable to meet that target, despite the introduction of several new waste reduction initiatives, because recent restrictions on global recycling programs have brought an end to “mixed” recycling where paper and plastics are co-mingled. This means that blue box recycling can’t be used in clinical areas like patient rooms where the risk of “contamination” of the recycling stream is too high. HHS limits

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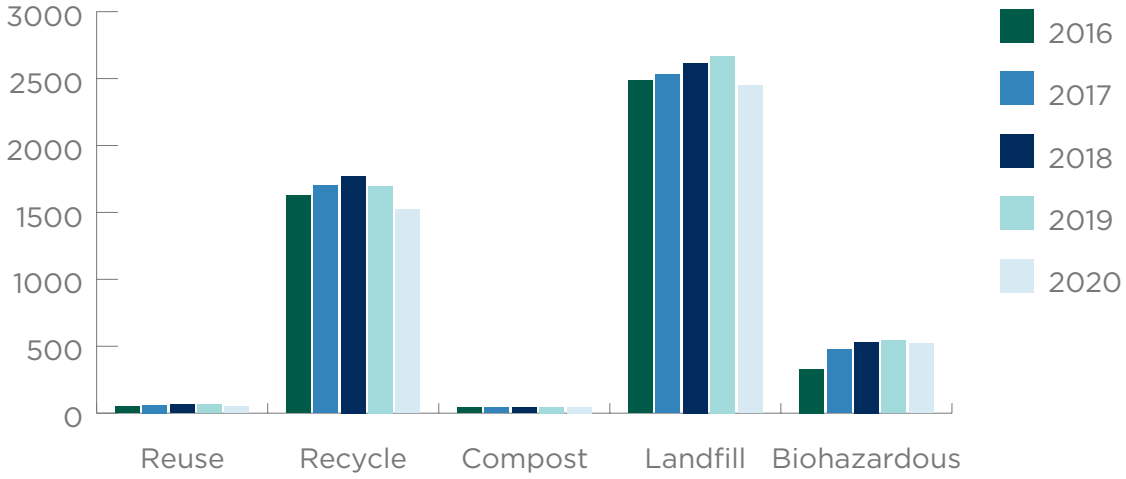
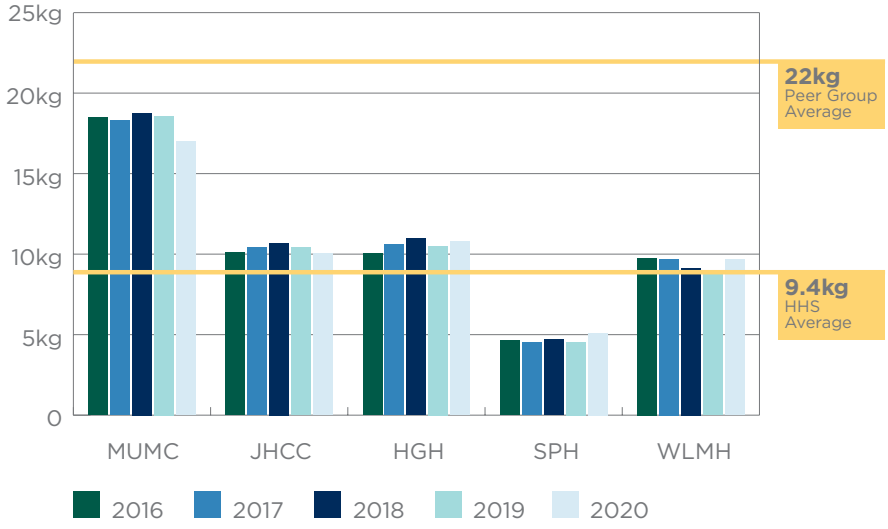
COMPARISON OF WASTE VOLUMES: ALL SITES IN METRIC TONNES (MT)



WASTE INTENSITY: KG OF WASTE/INPATIENT DAY



NOTE: MUMC is home to many academic and research labs which generate a high volume of waste (nearly 50% of all biohazardous waste for this site). Research and academic activity thus skews the waste intensity calculation for this site.

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blue bin recycling programs to common areas (lobbies, cafeteria), offices and other hospital spaces where waste can be more rigidly controlled (such as the ORs and food preparation areas).

NOTE: Prior to 2019, a significant percentage of Ontario's recycling was being sent to Asia for processing. In 2019, markets began to close, which reduced the types of materials deemed eligible for recycling. For example, where in 2019 we were able to recycle film plastic (bags, wrappers, covers), we no longer can. This greatly reduces the opportunity for recycling in clinical areas, especially the Operating Rooms (our highest single area generator of recycling to date).

Despite the recent recycling limitations, HHS continues to seek new ways to reduce waste. Other waste initiatives include:

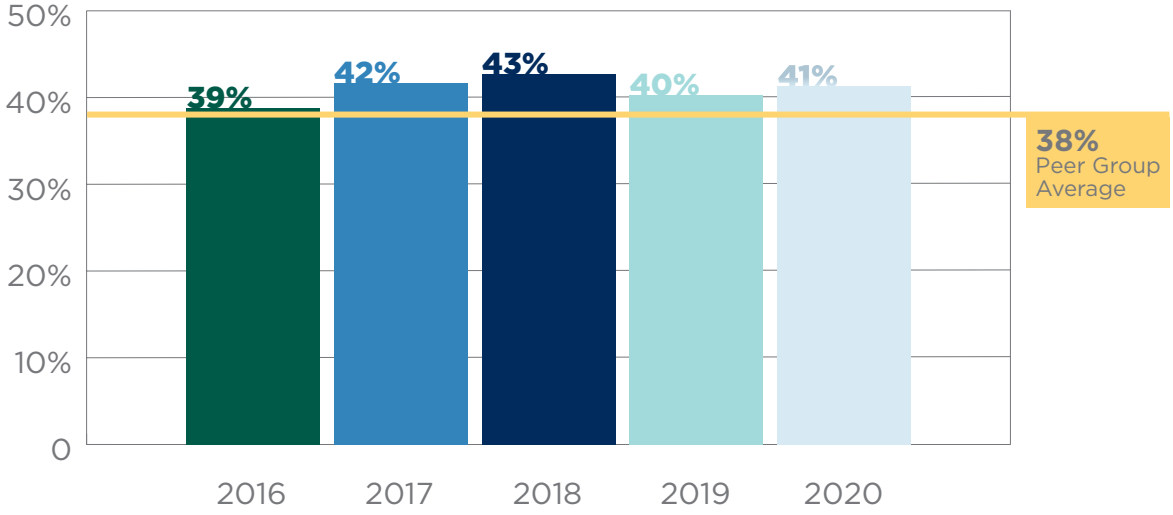
- Blue bin recycling in permissible areas
- Single-use surgical device reprocessing
- Operating Room recycling
- Nutrition Services recycling
- Food and coffee grind green bin program
- Battery, toners, e-waste, ballasts, pallets, and scrap metal recycling
- PPE recycling (new pilot)
- ABHR bladder recycling (new)
- Cafeteria recycling signage updates
- Comprehensive biomedical waste program, including narcotic waste denaturing pilot
- Confidential waste recycling

Left: Loading food waste into the dehydrator

Opposite: Recycling in a unit supply room

Diverted 41.3% of waste from landfill

WASTE DIVERSON RATE - ALL SITES COMBINED



OTHER INITIATIVES

HHS SMART COMMUTE, E-CHARGING STATIONS, BIKE SHELTERS

HHS promotes alternate ways to get to work beyond driving alone in a vehicle, such as active transit (e.g. cycling), and carpooling as a way to reduce carbon emissions created by our commute to work. We are a founding member of the Hamilton Smart Commute program, and achieved Smart Commute Employer of the Year in 2017.

Our Smart Commute 2020 program offered staff:

- More carpool-designated premium parking spots (increase to 61 from 49 in 2018)
- Secure and weather-protected bike parking for staff at three locations, including an upgrade to existing bike lock up at Hamilton General Hospital to increase security, improve lighting and overall aesthetic
- Two E-Charging stations at the Hamilton General Hospital
- Promotion of Carpool Week, Bike to Work Day, Smart Commute Month and Earth Day

Other transportation initiatives upcoming in 2021 include:

- Additional secure bike lockers at Hamilton General Hospital
- Installation of a disk mirror to increase visibility along laneway corner at Hamilton General Hospital
- A bike path linking Ferguson Street to the bike lockers at Hamilton General Hospital has been proposed to Hamilton City Council

WATER REFILL STATIONS

Since 2015, HHS has been installing modern water bottle fill stations. These stations are in place in our cafeterias and other key locations, with two new locations added in 2020.

Secure bike parking area

TREE PLANTING AND POLLINATOR GARDENS

For the last three years, HHS has collaborated with local organization Trees for Hamilton and hosts native tree-planting events on our hospital sites, in support of increasing the city's tree cover. In 2020, 10 more native tree species (Freeman Maple, Yellow Birch, Witch Hazel) were planted at St. Peter's Hospital and Hamilton General Hospital.

Hamilton General Hospital is also home to a pollinator garden, with plants and flowers that attract insects and birds to pollinate plants and spread seeds. By adding a pollinator garden, we're joining a local and international movement to create pollinator-friendly spaces. The Hamilton Pollinator Paradise Project worked with hospital staff on this project.


more
tree

Hamilton Health Sciences