Sustainability, Energy and Net Zero Targets

2020

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Overview

- Sustainability Highlights
- Long Term Energy Plan - Net Carbon Zero
- Sustainability Plan
- Broader Strategies & Plans
- Questions & Discussion

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Sustainability Highlights

- Carleton ranked 2nd in Canada (UI Green Metric)
- Zero waste certified food courts (UC and Resident Commons)
- 61% of our community travel to campus by Transit. Highest in NCR of all higher education institutions.
- 10% of our community travel to campus by Active Transportation (Cycle or Walk).
- 24% of food purchases through Dining Services designated 'local, humane or ecological.'
- 35% reduction in carbon emissions intensity (since 2005).

New plan to build upon success to date and to push for continued progress towards zero waste, increased energy reduction, engagement, and increased sustainability literacy among students.

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Timeline

- Sunset of 2018-2021 Energy Master Plan to Longer Term goals with a more holistic view.
- In 2018, the IPCC released a report for the need to limit global warming to 1.5 deg.C.
- February 2019 - Carleton sets GHG emission targets.
- April 1, 2019 - Carbon Tax set - $ 20/ tonne.
- April 2019 – City of Ottawa declares climate emergency.
- September 2019 – Federal Government announces zero carbon emissions by 2050.
- May 2020 – Carleton Long Term Energy Plan to be completed.

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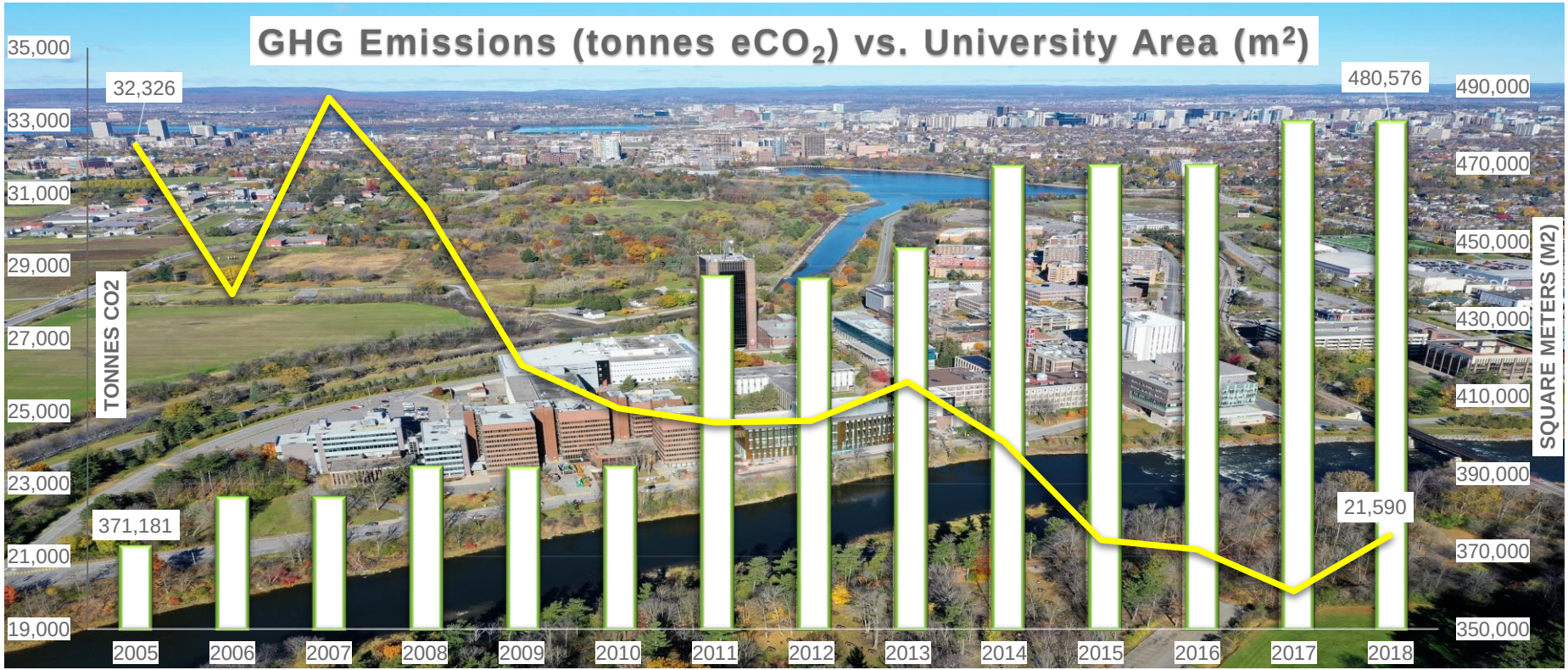
Historic Greenhouse Gas Emissions



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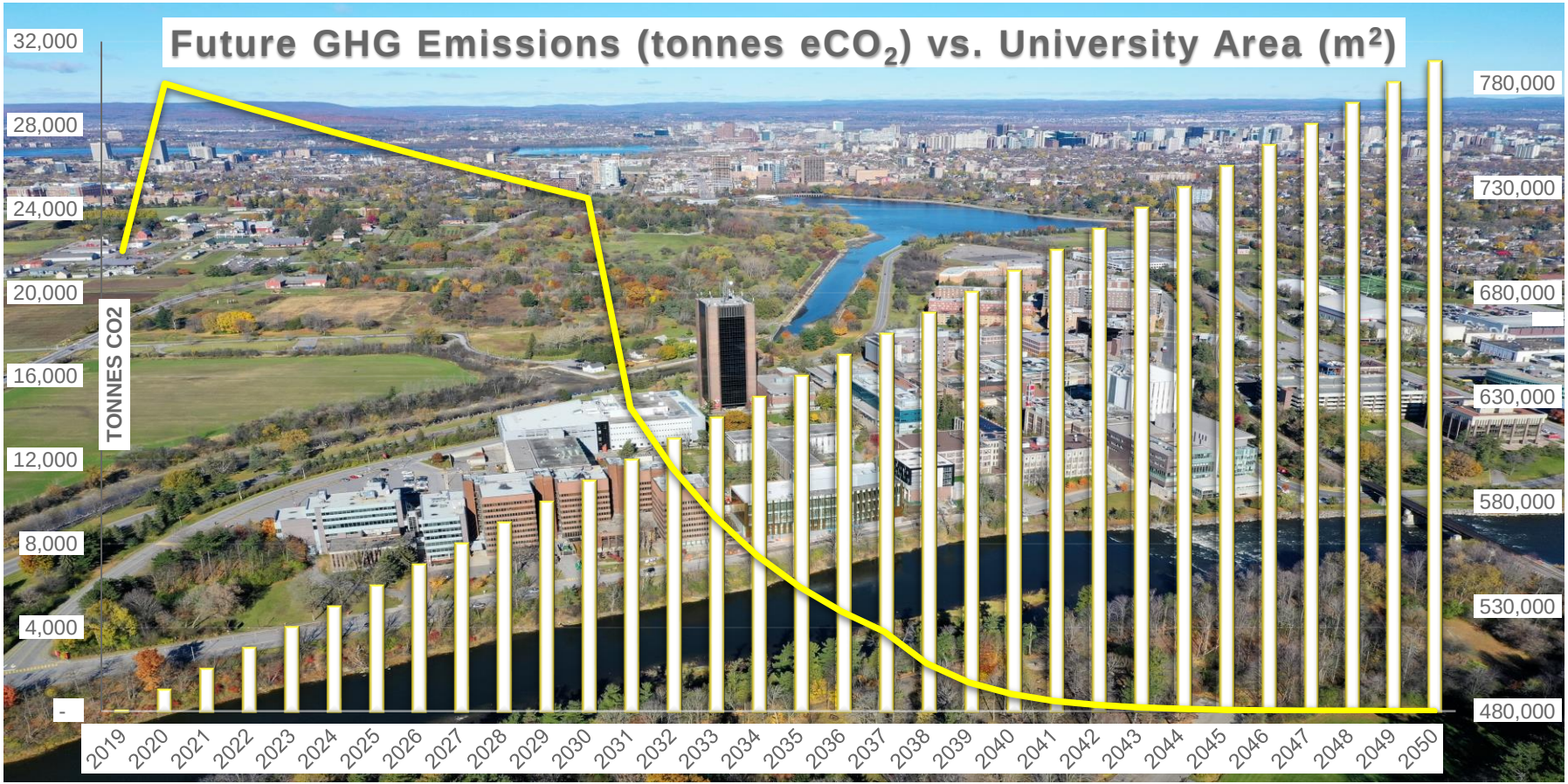
Emissions


Future GHG Emissions (tonnes eCO2) vs. University Area (m2)
TONNES CO2
32,000
28,000
24,000
20,000
16,000
12,000
8,000
4,000
-
780,000
730,000
680,000
630,000
580,000
530,000
480,000
2019
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2050

Net Zero Targets & Carbon Neutrality

- Long Term Energy Plan Goals
- Develop a plan to reduce our carbon footprint by 50% by 2030 and by 100% by 2050
- Develop a plan to expand our current district energy infrastructure to support the doubling of our campus space by 2050
- Reduce Utility Operational Costs
- Increase Reliability and Safety
    - Operation of a 4.6 MW co-generation heat and power plant by summer 2020
- Plan to be completed by May 2020.

Net Zero Targets & Carbon Neutrality

- Convert Central Heating Plant from steam to hot water
- Existing Buildings – DEEP Energy Retrofits
- New Buildings – Enhanced Building Envelope
- Renewable Energy Sources

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Central Heating Plant

- Existing Steam Central Heating Plant.
- Steam distributed at 150psi and 400F
- Convert to a hot water plant that distributes hot water to the buildings at 90C.
- ~ 40% carbon reduction

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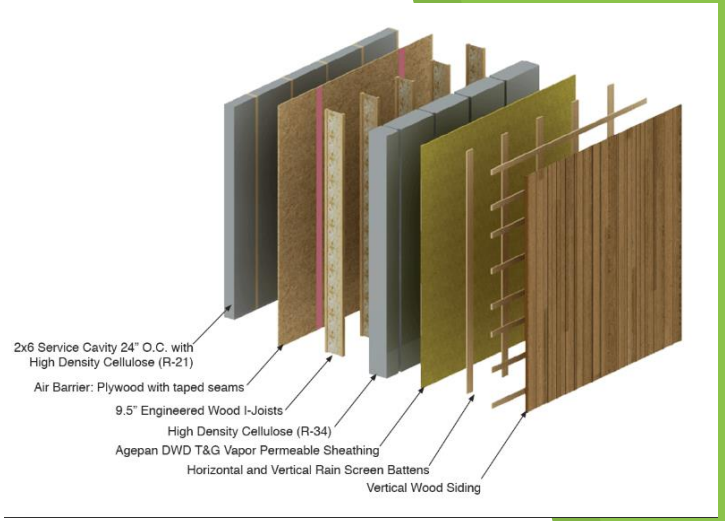
Existing Buildings & New Buildings

- Build an enhanced building envelope
- Upgrades to mechanical and HVAC systems, lighting, building automation systems upgrades
- Capture waste heat and use renewable energy sources where possible
- ~ 30% GHG reduction



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Renewable Energy

- Incorporate renewable energy as a source for the campus, both photovoltaic and solar thermal
- 1kW PV = 1,200 kWh/year
- Explore small hydro turbines and other technologies
- ~ 15% GHG reduction

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Wider Strategies and Plans

Embedding sustainability and climate change action

Sustainability Plan 2020-2025

- - Overarching sustainability strategy, including teaching, research and operations.

Transportation Master Plan

- - Linkage to sustainable transportation, decreased single occupancy, active transportation.

Outdoor Space Master Plan

- Highlighting use and access to green space and community interaction with ecology on campus.

Campus Master Plan

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Full spectrum of our impact

- Embedding continuous environmental and sustainable improvement into our operations and finding new and innovative ways to demonstrate sustainability leadership in our research, teaching, and learning.
- Key strength amongst all Faculties with links into social sciences and energy use, community impact of Climate Change, Experimental Technologies, Research towards Indigenous and Northern Canada and beyond.
- Develop our Capital Advantage, with links into NRC, NRCAN, Efficiency Canada and drive reputation.

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Work towards being the most Sustainable University in Canada across our Teaching, Research and Operations.

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Contact Us

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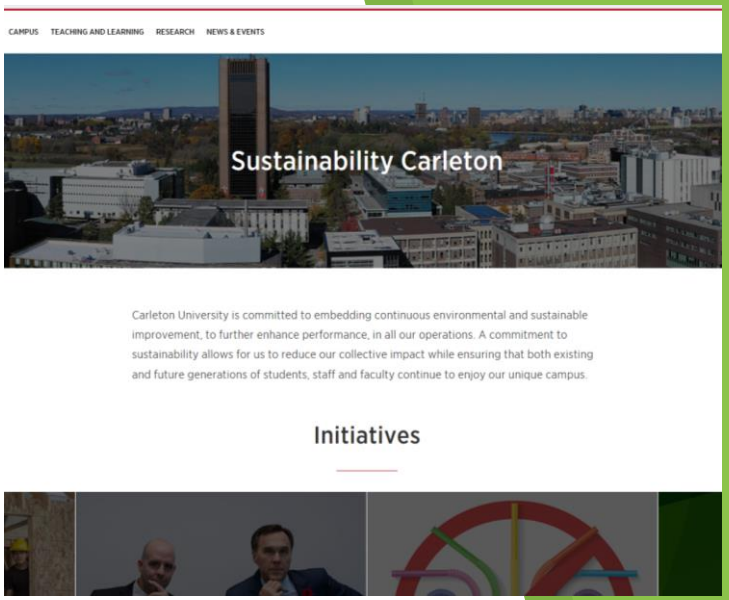

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