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Ecological Footprint Initiative is a York-based research, training, and analytics hub that produces the National Ecological Footprint and Biocapacity Accounts used around the world, plus fee-for-service work. The initiative is housed in the Faculty of Environmental and Urban Change.

## Summary of results of measuring York’s carbon and Ecological Footprints

York University commissioned an assessment of greenhouse gas emissions, and Ecological Footprint, attributable to York from May 1 2015 to April 30 2020. This was a pre-pandemic baseline of fiscal years 2016 to 2020. Emissions were assessed according to a global reporting protocol identified in Table 1.

**Table 1:** Scope of emissions assessed, with definitions applied from the Greenhouse Gas Protocol.

Scope	Definition applied to emissions and Ecological Footprint	Relationship
1	From facilities and equipment owned or controlled by York	(Self)
2	From York's purchase of electricity from the electrical grid	Upstream
3	From commuting and York purchases and reimbursements that are not counted within scope 1 or scope 2	
3	From non-York entities using York-owned assets, including commercial activities on campuses, and York investments’ scope 1+2 emissions	Downstream

Greenhouse gas emissions are carbon dioxide and other gasses which contribute to global warming. Greenhouse gas emissions are comparable in units of carbon dioxide equivalents. Ecological Footprint is a measure of the area of land and water needed to sequester carbon emissions plus the areas used to provide food and renewable materials, plus the area occupied by buildings and infrastructure. Even though the measurement of Ecological Footprint did not relate to regulatory requirements, nor to a targeted reduction by York or by Ontario or Canada, the inclusion of Ecological Footprint demonstrated York’s broader commitment to sustainability and York’s leadership in this measure of global significance.

**Figure 1:** Greenhouse gas emissions in fiscal year 2020 and the 5-year range of each component.

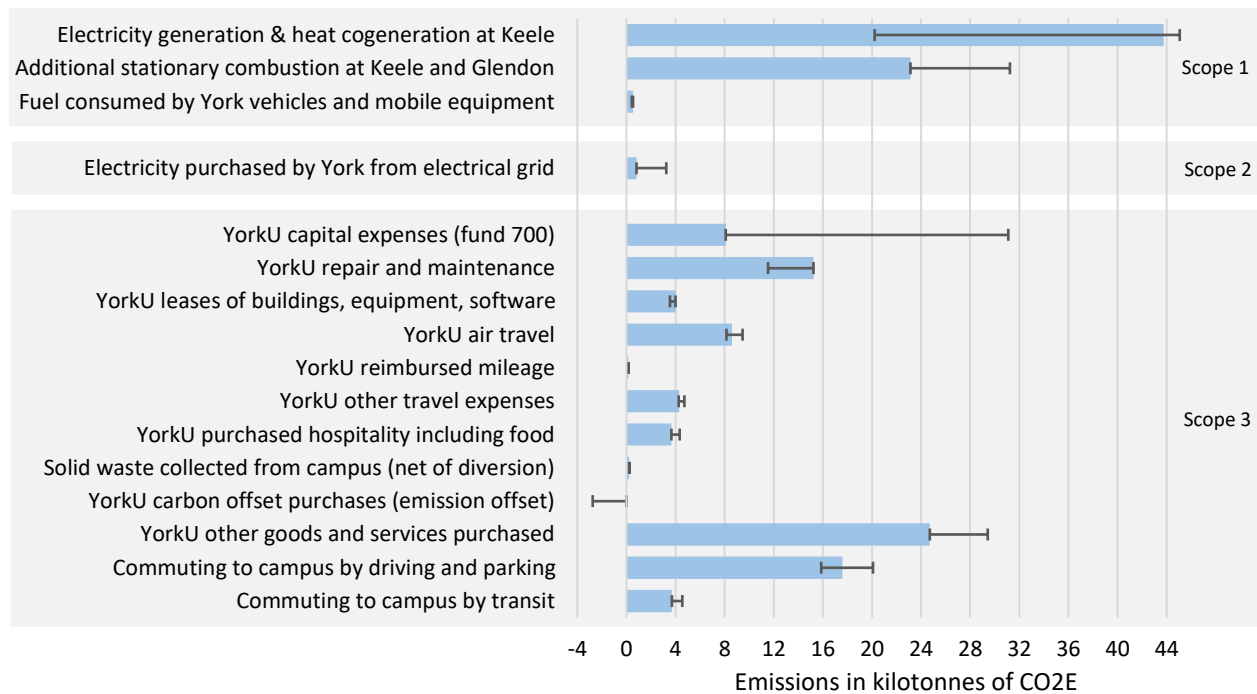
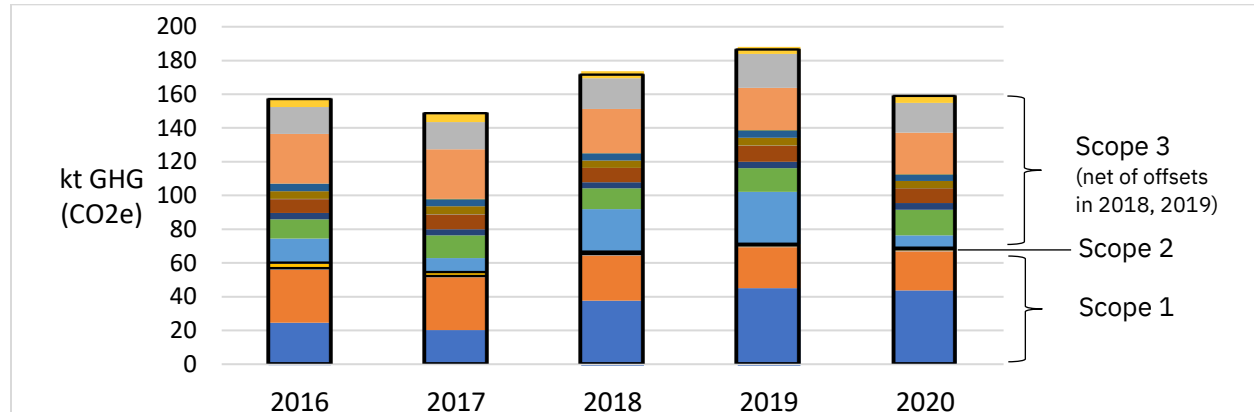


Figure 1 details emissions by scope and component in fiscal year 2020, with bars showing the range in emissions over five years ending April 30, 2020. These components and scopes are summed in Figure 2, which shows a variable trend in emissions. Year 2020 had neither the highest nor lowest emissions.

**Figure 2:** Total emissions attributed to York, from fiscal years 2016 to 2020, by scope and component.



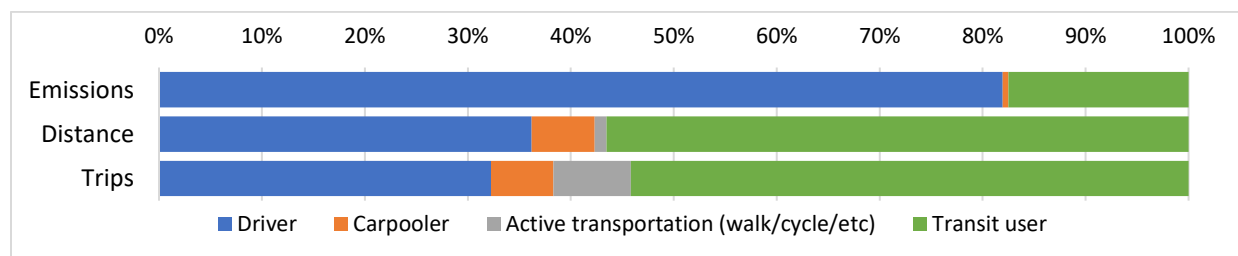
York’s generation of electricity at its Keele campus was the largest component of emissions in fiscal year 2020. This component increased over the five preceding years as York increased its self-generation of electricity, while reducing purchases of grid-supplied electricity. Self-generated electricity at Keele was significantly more emissions-intensive than grid-supplied electricity, in all years. Emissions from self-generated electricity were derived from metered fuel consumption and verified emission reports.

Emissions from stationary combustion to heat and cool buildings declined over the five years.

Emissions attributed to York’s capital expenses were highly variable, reflecting variations in total expenses. In fiscal year 2019 this component was second only to York’s self-generation of electricity. Emissions attributed to capital expenses and renovations and York’s purchase of other goods and services were derived from Canadian-average intensities of emissions per dollar of expense, per sector. Over 1200 expense accounts at York were related to 109 Canadian sectors with emission intensities.

Emissions from commuting to Keele or Glendon campuses were derived on an origin-destination-mode-frequency basis to reflect details that affected commuting emissions of students and staff and faculty. In 2020, about 80% of commuting emissions were from 30% of trips commuted by driving as a single occupant. Figure 3 compares York’s modal split in 2020 by trips versus distance versus emissions. Results reflected commutable routes from over 300 forward-sortation-areas to either campus. Transit emissions reflected commutes on electric busses versus electric streetcars or subways. Carpooling and active transportation reflected results of a York-wide transportation survey, by originating postal code.

**Figure 3:** Modal share of commuting to York’s Toronto campuses in 2020.



In 2020 York’s emissions were 14% below a comparable benchmark of all Canadian university emissions. York was also below this benchmark in other years except in 2019 when it was 0.2% higher. Statistics Canada published coefficients of emissions per unit of expenditure from all Canadian universities. These reflected scope 1+2 emissions plus all upstream scope 3 emissions except commuting. Commuting is not purchased by universities, so commuting emissions were not included in this data from Statistics Canada.

Downstream scope 3 emissions were investigated but not quantified with the same confidence as other scopes, so they are not included on graphs in this summary. Additional data would be needed from non-York commercial entities to rigorously derive downstream emissions.

Figure 4 illustrates the components of York’s Ecological Footprint of 74,328 global hectares in 2020, sized in proportion to the Biocapacity on York’s Toronto and Costa Rican campus. Biocapacity measures the potential of an area to support an Ecological Footprint. York would require about 90 times the Biocapacity of its three campuses to offset York’s emissions and its consumption of forest products and food and cropped materials. Most of York’s Ecological Footprint was the area of forest needed to sequester York’s emissions; other components in decreasing order were the area of forests needed for products including paper, cropland, grazing land, built-up land, and fishing grounds. These metrics were derived by combining York emissions and procurement data with data developed by York’s Ecological Footprint Initiative to derive its world-renowned National Ecological Footprint and Biocapacity Accounts.

**Figure 4:** York’s Ecological Footprint in 2020 sized relative to Biocapacity on York’s campuses (logo).



Additional details can be derived from an emissions and footprint database, which was developed to integrate a broad scope of tabular data and parameters. The database also incorporates data-cleaning and verification algorithms which were developed. Data from York included all non-salary expense accounts, all concur-reimbursed expense reports of airfare with their accompanying information about origin and departure and class, counts by forward-sortation-area postal code of faculty and staff and graduate students and undergraduate students by courseload, counts of the same codes of all York parking permit holders, and York’s metered consumption of fuels and electricity and water. This data can be queried to inform specific York teams about emissions related to their activities and the services that they provide to York and beyond. Data can also be used to inform future emission scenarios.