GOTHAM 360
Innovative Energy Solutions

Barnard College 2016 Carbon Footprint Summary

Fiscal Year 2015 (July 2014 – June 2015)

Climate change and environmental degradation represent one of the most severe challenges facing humanity today. Part of the challenge lies in the fact that many of our basic systems of life and work here in the west contribute directly to the emission of greenhouse gases. As institutions and individuals strive to formulate a response and an action plan to the dangers faced by climate change, a thoughtful assessment of institutional factors that contribute to the problem is necessary.

In 2016 Barnard College launched a comprehensive assessment of our greenhouse gas (GHG) emissions. The Greenhouse Gas Protocol sets the standards for this reporting and divides emissions into three groups, called scopes.

- **Scope 1** - direct emissions from owned or controlled sources, such as onsite fuel combustion for heating & cooling or from campus fleet vehicles
- **Scope 2** - indirect emissions from the generation of purchased electricity
- **Scope 3** - all other indirect emissions, such as those released in daily commutes to and from campus, school-sponsored travel, trash disposal, the production of office paper and other purchased goods, and more

In reporting their GHG emissions, many universities only focus on emissions from Scopes 1 & 2, because utility data is easy to collect and assess. Some consider certain Scope 3 emissions as well, but by and large these assessments are limited to emissions from commuting and trash disposal.

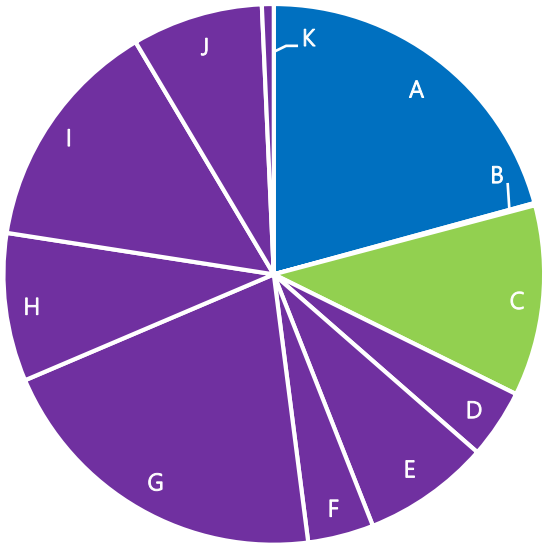
Barnard chose to take more comprehensive, 360-degree view of *all* of the activities that contribute to our community's carbon footprint. This includes travel by students, faculty and staff. This includes the computers and furniture that we buy, the food we eat, the disposable cups we discard.

Barnard's comprehensive approach is unique in that it acknowledges that sustainability is not solely the province of building managers and engineers. We are all complicit in the problem, and any successful response will be equally comprehensive.

This report will allow the Barnard community, first and foremost, to *know* how the ways in which we live and work impact the world around us. Only with this shared understanding can we begin to build shared – and bold – solutions.

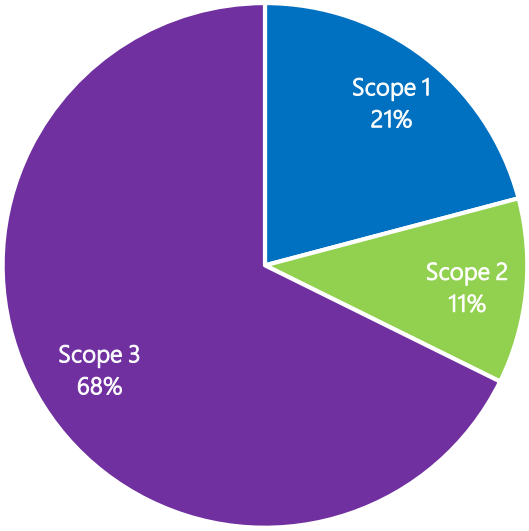
The following table and charts show the breakdown of the results.

Fiscal Year 2015			eCO2 Metric Tonnes	Percent of Total
Scope 1	A	Stationary Combustion	4,594.6	21%
	B	Fleet Vehicles	29.7	<1%
Scope 2	C	Purchased Electricity	2,529.3	11%
Scope 3	D	Commuting	913.7	4%
	E	Directly-financed Travel	1,681.9	8%
	F	Study Abroad Air Travel	872.3	4%
	G	Student Travel to/from Home	4,568.3	21%
	H	Solid Waste	1,962.2	9%
	I	Food	3,101.3	14%
	J	Stuff	1,734.9	8%
	K	Scope 2 Line Losses	156.3	1%
Totals		Scope 1	4,624.3	21%
		Scope 2	2,529.3	11%
		Scope 3	14,990.9	68%
		All Scopes	22,144.6	



Barnard's emissions for fiscal year 2015 amounted to 22,144.6 metric tonnes of carbon dioxide equivalent (MT eCO_2), which is roughly the same as the annual emissions of 4,712 cars. Compared to the Greenhouse Gas (GHG) reports of 7 selected colleges and universities, Barnard was slightly above average for MT eCO_2 per full-time enrollment, and farther above average for MT eCO_2 per 1,000 square feet. However, great significance should not be placed on these comparisons due to the different data collection methods and accounting techniques employed by each school. This is particularly true in the case of Scope 3 emissions, since there is no standardization for what subcategories must be reported on.

EMISSIONS BY SCOPE



As predicted, the majority of Barnard's greenhouse gas emissions fall under the Scope 3 category. The largest contributor to this, at 21% of total emissions, is student travel to/from home, due to the large number of international students and students from across the United States. Next in Scope 3 is consumption of food and goods (stuff), totaling 22%. Solid waste, which is of course closely related to food and goods purchased, was also a large contributor to Scope 3 at 8%. The impact of food and goods consumed considers the GHG emissions from the production and distribution of the items, while the solid waste figure considers the methane gas emissions from landfill. We have separated these figures to highlight the importance of considering "top of pipe" impacts from consumption, which can be addressed through purchasing policies, food sourcing, etc., and "end of pipe" impacts, which can be addressed through better recycling, re-use, composting, and other waste reduction measures. It is important to consider that both of these factors have an impact on our overall emissions, and both can be targeted by different means.

It is clear that certain portions of our total emissions will be easier to address than others. It is unlikely, however, that student travel to and from home can be greatly reduced, especially as Barnard recruits more international students. However, without awareness of its impact, it is unlikely that any changes will be possible. And in other areas, there are concrete steps we can take to reduce our impact (see Action Points, page 5).

Aside from student travel to/from home and food, Scope 1, on-campus stationary combustion and Scope 2, purchased electricity contribute more than any individual Scope 3 sub-category. These two categories are large contributors at all institutions, because

operating a campus is very energy intensive. Barnard has already made significant strides in reducing emissions in these two categories through their participation in the NYC Carbon Challenge, by reaching their initial 30% reduction goal in under 10 years. Energy efficiency efforts will continue as Barnard works towards the extended 50% reduction goal, and implements further actions on Scopes 1 and 2.

Overall, the results of the report indicate that Barnard is already taking steps to reduce their carbon footprint, but that there is opportunity to take action on many levels. Continued reporting and communication of these results will raise awareness on campus – the first step in creating change within our campus community and operations. Few other campuses have reported their emissions with this kind of 360-degree analysis; this step can serve as a springboard for a climate action plan that sets an equally comprehensive and unique standard.

ACTION POINTS BY CATEGORY

The following list is by no means exhaustive, and many suggestions may not be feasible or in alignment with the overall mission of the college.

A Stationary Combustion

Continue to invest in efficient boilers and other energy efficient technologies.
Educate and encourage students to reduce energy consumption through behavioral campaigns.

B Fleet Vehicles

Consider hybrid and/or electric vehicles for fleet replacements or additions.

C Purchased Electricity

Continue to invest in efficient boilers and other energy efficient technologies.
Educate and encourage students to reduce energy consumption through behavioral campaigns.
Offset carbon emissions of purchased electricity through the purchasing of Renewable Energy Certificates (RECs).

D Commuting

Create a carpooling or rideshare program/platform.
Offer incentives for carpooling and use of public transportation.
Create a bike share program.

E Directly-financed Travel

Reduce number of conferences or meetings attended and/or encourage telecommuting.
Encourage staff/faculty to offset their carbon emissions through their airline – an option now offered by most carriers.

F Study Abroad Air Travel

Encourage students to offset their carbon emissions through their airline – an option now offered by most carriers.

G Student Travel to/from Home

Create a carpooling program/platform/website/facebook group.

H Solid Waste

Require waste vendor to provide tonnage data for trash and recyclables.
Increase composting efforts.

I Food

Hold fewer meetings during lunch hours, reducing the need for catering.
Set a catering standard that reuses plates and silverware to reduce amounts going directly to landfills.

J Stuff

Have more swap events like Give-and-Go-Green take place throughout the year.
Find faculty, staff, or students with various skills who are willing to participate in a fix-it-up day.

K Scope 2 Line Losses

Emissions reductions in group C will lead to reductions in this category as well.

GENERAL ACTION POINTS

1. Create a Climate Action Plan to consolidate tracking of current energy and carbon reduction projects and plan for future initiatives.

2. Join the Climate Leadership Network and sign the Carbon Commitment (formerly known as the ACUPCC).
   Over 600 higher education institutions nationwide are a part of this network. Participation requires yearly GHG reporting, and occasional submission of Climate Action Plans.

3. Join the U.S. Department of Energy's Better Buildings Challenge
   The program requires the college to make a 20% energy use intensity reduction commitment and share basic energy use data in exchange for a platform of innovative solutions, program support, and access to technology accelerator programs. It also provides a good platform to display the college's successes through showcase projects.