

NTSU carbon reporting process

NTSU's carbon footprint is calculated on an annual basis capturing data from 1st August to 31st July. This process guide will go through step-by-step how the carbon footprint needs to be calculated.

For our reporting processes, we adhere closely to the Environmental Association for Universities and Colleges (EAUC) reporting framework. EAUC has three levels of data hierarchy for the calculation for each scope sub-section: **EAUC advanced level**; **EAUC Intermediate level**; **EAUC basic level**. The level to which we calculate our emissions depends on the data available.

Data needs to be requested from people in different departments within NTSU and NTU, or external to the students' union. The contact details of these people are listed in the contacts table (Appendix A).

Carbon footprint is expressed in tonnes of CO₂ equivalent (tCO₂e). This is calculated by multiplying activity data by a specified conversion factor. Conversion factors are typically expressed in kg of CO₂ equivalent, so always divide by 1000 to convert to tonnage.

$$tCO_2e = \frac{\text{activity data} \times \text{conversion factor}}{1000}$$

Carbon conversion factors are published annually by the [UK Government GHG Conversion Factors for Company Reporting](#). Download the conversion factors for the most recent year applicable to your reporting (so i.e., if you're reporting on the 2023/24 academic year, download the 2024 conversion factors, unless they've not yet been made available).

Each new reporting year, create a new folder and copy over the 'NTSU carbon footprint' template document. Ensure all conversion factors are updated within it before you start adding activity content.

Scope 1 & 2

Included within NTSU scope 1 and 2 emissions are:

Fuel

Calculated in litres filled up for our vehicle fleet. Data for the last 6 months is stored online on the [Allstar portal](#); it is recommended to download data at 6-month intervals to avoid missed entries. Filter results for the academic year being calculated and record the data in the footprint calculator. To request access to the portal, contact Colin Hutchinson. For data further than 6 months back, contact Allstar directly.

As NTU also uses our fleet vehicles for their sports clubs, you need to deduct the mileage used by them. Contact Colin Hutchinson for this information.

Refrigerants

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Refrigerants are calculated by amount of top-up required. NTSU has two contributions to our refrigerant. The first is the fridges used in NTSU shops, the second is our air conditioning units.

Data for NTSU shops is found within invoices from Heronridge. Request these from finance for the academic year being calculated and sift through them to find any instances of refrigerant top-up. The invoices should be explicit in indicating refrigerant top-up – you will need the data on refrigerant type, and amount. A screenshot from a 2021-22 invoice is attached below to highlight the data required. 1 unit is equivalent to 1kg within these invoices.

Invoice To Nottingham Trent Student Union Students' Union Building Shakespeare Street Nottingham NG1 4QH	Delivered To NTSU - Student Shop Clifton Campus Nottingham Nottingham		
Job Description NTSU Shop. Main freezer not maintaining temperature			
Items	Quantity	Unit Price	Total (Ex VAT)
Call-out	1.00	£80.00	£80.00
Labour	3.50	£40.00	£140.00
R410a (Refrigerants)	8.10	£35.39	£285.93
OPN 30R (Refrigerants)	1.00	£39.59	£39.59
Overtime Alex Lee	2.50	£55.00	£137.50
Overtime Steve Grove	2.50	£55.00	£137.50

UPP control our air conditioning as part of our tenancy and should be contacted to collect this data. Granular level detail is not currently available for refrigerant top-up in UPP units, so UPP assume a 10% refrigerant top-up rate in their footprint. The following units are counted for NTSUs air conditioning and should be quoted when contacting UPP.

Block	Equipment Location IN door unit	Serial number(s)
Byron House – System 1	Comms Room	E001280 E001369 E001309 E001286
Byron House – System 3	NODE Room*	E001646 E001616
Byron House – System 6	Mezz Bar	J003095 J003095 J003164 J003146

*The NODE rooms power the whole building, so NTSU only assume a x% split of the refrigerant.

Energy and heat

Energy and heat data are typically counted within scope 1 and 2 data, however because NTSU buildings are leased by NTU and UPP and thus we do not have operational control, this carbon footprint data is counted under 'upstream leased assets'. Further reporting information is available under scope 3 breakdown.

Scope 3

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Business travel

Business travel is any transport taken for work-purposes (excluding standard commuting). Most business travel is reported through expense claims, however contact finance and request all business travel to ensure none is missed.

To calculate business travel, collect data on the following:

- Transport type (see list below)
- Milage (we aim to calculate all business travel emissions according to milage, as it is the most accurate data available (EAUC advanced)).
- Price (in case milage data is unavailable, price can be used as a proxy for calculating emissions (EAUC basic)).

It is also good practice to record the mach-from entry number, and any other additional details in case you need to refer back to it.

NTSU reports on all transport types, including:

- EAUC mandatory:
 - o Air
 - o Rail
 - o Company car
 - o Hire car
 - o 'Grey fleet' (employees reimbursed for using their own car)
 - o Motorcycles
 - o Vans
 - o Leased buses/coaches.
- EAUC optional:
 - o Public bus
 - o Underground
 - o Tram
 - o Taxi
 - o Coach
 - o Ferry

Hotel Stays

Hotel stay data counts any overnight accommodation used for business purposes. This data can be requested from NTSU finance. Information required for each stay includes price, location (city), number of rooms, and number of nights. The conversion factor applied is the same for all UK-based locations excluding London.

If any entries are missing the number of rooms or night stayed, input the data into the HESCET tool, proc code 'TA'. The footprint won't be included in the final supply chain footprint, but the breakdown can be found in the 'DEFRA categories' tab under 'Holidays in the UK/Abroad'. Use the total footprint for these categories combined, and divide the tCO2e according to cost for any remaining entries.

Upstream leased assets (Energy and heat)

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Energy and heat data should be requested from the NTU Energy team. They have the data for all NTSU buildings. Request that they send data for all buildings for:

- Electricity
- Gas
- District heat
- Biomass
- Water – this is counted separately to leased assets, but request it at the same time from NTU as they hold all the data.

This data will be sent in raw form (kWh, m², m³) and converted to tCO₂e, so you just need to plug the data into the master spreadsheet without further calculations.

Our energy contributions are calculated as a percentage of the space we occupy within each of our buildings (see below). The NTU energy team have the space breakdown, but it is good practice to share the below table with them when requesting the emissions data.

<i>Building Name</i>	<i>Campus</i>	<i>Building total area (m2)</i>	<i>SU space (m2)</i>	<i>SU occupancy (%)</i>
Benenson	Clifton	1841.9	1397.45	76
Brackenhurst Main Hall	Brackenhurst	2028.72	359.18	18
DH Lawrence	Clifton	951.7	323.94	34
Byron	City	6095.5	3050.99	50

Staff commuting

NTSU gathers information on staff commuting through bi-annual staff travel surveys. The last staff travel survey was released in [May 2023](#).

Staff travel surveys need to collect the following information:

- Days in office.
 - o Capture this data as a total, and as a breakdown down of days at each campus. Staff may commute through different methods depending on which campus they're travelling to.
- Primary method of transportation (see list under business travel).
- Secondary method of transportation. I.e. if a staff drives to a park and ride, then gets the tram to the office.
- Whether their motorised vehicle is petrol, diesel or electric.
- Length of daily commute in miles (collect this for both primary and secondary mode of transport).

The 2023 survey can be used as a template but be sure to emphasise commute in **miles** (some staff provided data in minutes which cannot be used for carbon footprint calculations).

Data collected should be entered into the template document to scale up the mileage to a full working year (minus AL). Travel data from surveys can be used for 2

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consecutive reporting years, but the data must be scaled up from the number of respondents to the total number of career staff employed. This is accounted for in the template (see 2021/22 screenshotted below).

	Car (diesel)	Car (petrol)	Bus or coach	Train	Tram	Bike	By foot	Other			Staff numbers 21/22	61
Per week	836.40	352.40	646.40	1,228.00	231.40	0.00	126.80	0.00			Survey answers	43
Per year	39,310.80	16,562.80	30,380.80	57,716.00	10,875.80	0.00	5,959.60	0.00			Uplift	1.42
Per year (minus AL)	36,802.77	15,506.09	28,442.50	54,033.72	10,181.92	0.00	5,579.38	0.00				
Km	59,228.17	24,954.58	45,773.66	86,958.63	16,386.18	0.00	8,979.12	0.00				
FT km with staff uplift	84,021.36	35,400.68	64,934.73	123,359.91	23,245.51	0.00	12,737.81	0.00				
Conversion Factor	0.17	0.17	0.10	0.04	0.03	0.00	0.00	0.09				
tCO ₂ e	14.35	6.04	6.27	4.38	0.67	0.00	0.00	0.00	Total	31.70		

Supply Chain

Our supply chain emissions are calculated using the HESCET tool – this involves inputting amount spent for each procurement code into the system. It will automatically calculate emission for you off the back of this.

Supply chain data should be requested from finance in the format of the full data list, with sub-categories split according to those listed on the profit and loss report. Each sub-category has a list of relevant procurement codes which will correlate to transactions within the full data list. Match the proc codes with individual purchases. Once this has been done, create a pivot table (Lisa can help if you need) which will summarise the amount of spend for each proc code and category.

Using the data within the pivot table, go through category by category and input the financial data into copies of HESCET. This will automatically calculate carbon for you.

Because HESCET is a beast of a tool, NTU have previously supported us by picking out the procurement codes that are relevant to us. These have already been divided into our spend categories to make life even easier. The template is available [here](#).

Water

NTSUs water data is circulated by the NTU energy team alongside the energy and heat data. Our use is also calculated based on our percentage occupation of our spaces. The data will come in raw format (m³) and ready converted into tCO₂e.

Waste

Waste data is provided by our waste contractors, Enva. Contact them and request our '*full waste report*' for the academic year being reported. They will send across a breakdown of different waste types. This will be split into:

- Sum (tonnes) of waste
- Sum (tonnes) of waste recycled internally.
- Sum (tonnes) of waste recycled externally.
- Percentage diverted from landfill.

Use the data to calculate the sum (tonnes) of waste sent to landfill for each category. and include the sum amount (tonnes) of waste for each category. You may find that the conversion factor categories don't match directly with the categories in the waste

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report from Enva. Refer to the table below for the closest fit for conversion factors that should be applied.

Waste category (Enva)	GHG conversion category	Conversion factor type
Biodegradable Municipal Kitchen / Canteen Waste (Cat 3 Not For Human Consumption)	Refuse: Organic food and drink waste	Landfill, combustions and/or anaerobic digestion
Food Waste (Cat 3 Not For Human Consumption)	Refuse: Organic food and drink waste	Landfill, combustions and/or anaerobic digestion
Glass Bins	Other: Glass	Closed-loop, landfill
Mixed Construction and Demolition Waste	Construction: average construction	Open-loop, combustion and/or anaerobic digestion* (*used in absence of ghg C factor)
Mixed Industrial & Commercial Waste	Refuse: commercial and industrial waste	Landfill, combustion and/or anaerobic digestion
Mixed Recycling	Paper: mixed paper & board	Closed loop, landfill
Municipal Glass	Other: Glass	Closed-loop, landfill
Grade A Construction & Demolition wood	Construction: wood	Open loop, landfill

Working elsewhere

Working elsewhere data covers emissions associated with the use of operating equipment, heating, and cooling when a staff member works from home.

This data is collected as part of the staff travel survey when asking staff how many days a week they travel to work. I.e. if a staff member works from the office 4-days a week, they are assumed to wfh for 1 day. Calculate the average number of days worked from home according to respondents, scale it to the full number staff, and input into the master spreadsheet to apply the conversion factor.

WTT & Distribution (Energy)

WTT stands for Well to Tank. This is an average of all the GHG emissions released into the atmosphere from the production, processing and delivery of a fuel or energy vector. Distribution then covers the emissions released in transporting fuel to the user (aka, us!).

Well to Tank must be calculated for the following:

- Electricity
- Gas
- District Heat
- Biomass

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- Business travel
- Staff commuting

The calculations are the same for both energy and travel data, but you swap in kWh and km depending on what you're working with.

$$energy = \frac{unit \times conversion\ factor}{1000}$$

$$travel = \frac{km \times conversion\ factor}{1000}$$

The spreadsheet is set up to automatically retrieve the raw energy data, but you'll need to set this up for travel (it was a recent addition and I haven't had time to update the template).