

# **Greenhouse Gas Emissions Inventory and Annual Streamlined Energy & Carbon Report**

Gloucestershire College  
Academic Year 2021 - 2022



**gloucestershire college**

The emissions outlined in this report cover the 21/22 academic year - reporting period 1<sup>st</sup> August 2021 to 31<sup>st</sup> July 2022. The 2020/21 academic year is also included for comparative purposes.

## INFORMATION ON EMISSIONS

The tables below refer to emissions independent of any GHG trades such as sales, purchases, transfers, or banking of allowances

Alongside the required Scope 1 and Scope 2 emissions outlined within this report, Gloucestershire College has selected to report the following Scope 3 emissions in this report:

Fuel from Transport – Grey Fleet  
Consumption - Waste  
Consumption – Water

### 2021/22 ACADEMIC YEAR

The energy consumption (kWh and fuel consumption) used to calculate scope 1 and 2 emissions set out below is **5,074,677**. This is comprised as follows:

|                                        |                  |
|----------------------------------------|------------------|
| Emissions scope 1 and 2 (kWh):         | <b>5,088,036</b> |
| Minus Market based Renewable Energy at | <b>-424,881</b>  |
| <b>Total</b>                           | <b>4,663,154</b> |
| Emissions scope 1 (fuel consumption):  | <b>7,904</b>     |
| <b>Total</b>                           | <b>4,649,029</b> |

| EMISSIONS                          | TOTAL<br>(TCO <sub>2</sub> e) |                                   |                             |                                            |                                 |
|------------------------------------|-------------------------------|-----------------------------------|-----------------------------|--------------------------------------------|---------------------------------|
| Scope 1<br>and 2                   | Emission Type                 | Emission Group                    | Emission sub-group          | Emission Sub-category                      | Annual TCO <sub>2</sub> e 21/22 |
|                                    | 1                             | Fuel                              | Gas                         | Natural Gas                                | 528                             |
|                                    |                               | Transport                         | Own Fleet                   | Diesel mini vans                           | 20                              |
|                                    | 2                             | Fuel                              | Electricity                 | Grid electricity                           | 468                             |
|                                    |                               |                                   |                             | Market based renewable energy certificates | -90                             |
|                                    |                               |                                   |                             | Self generated renewable electricity       | -5                              |
| Scope 3<br><br>(as outlined above) | Scope                         | Emission Type                     |                             | 2021/22                                    |                                 |
|                                    | 3                             | Grey Fleet Transport              |                             | 47                                         |                                 |
|                                    |                               | Waste                             |                             | 33                                         |                                 |
|                                    |                               | Water                             |                             | 5                                          |                                 |
|                                    | 3 Total                       |                                   |                             | 84                                         |                                 |
| Total – all scopes                 | Annual TCo2                   | Intensity Ratio (Staff Headcount) | Intensity Ratio (Staff FTE) |                                            |                                 |
|                                    | 1,005                         | 1.18                              | 1.56                        |                                            |                                 |

## 2020/21 ACADEMIC YEAR

The energy consumption (kWh and fuel consumption) used to calculate scope 1 and 2 emissions set out below is **5,074,677**. This is comprised as follows:

|                                        |                  |
|----------------------------------------|------------------|
| Emissions scope 1 and 2 (kWh):         | <b>5,539,715</b> |
| Minus Market based Renewable Energy at | <b>-469,446</b>  |
| <b>Total</b>                           | <b>5,070,231</b> |
| Emissions scope 1 (fuel consumption):  | <b>4,446</b>     |
| <b>Total</b>                           | <b>5,074,677</b> |

| EMISSIONS                             | TOTAL<br>(TCO <sub>2</sub> e) |                                      |                                |                                               |                              |
|---------------------------------------|-------------------------------|--------------------------------------|--------------------------------|-----------------------------------------------|------------------------------|
| Scope 1<br>and 2                      |                               |                                      |                                |                                               | Annual<br>TCo <sub>2</sub> e |
|                                       | Emission<br>Type              | Emission<br>Group                    | Emission<br>sub-<br>group      | Emission Sub-category                         | 2020/21                      |
|                                       | 1                             | Fuel                                 | Gas                            | Natural Gas                                   | 562                          |
|                                       |                               | Transport                            | Own<br>Fleet                   | Diesel mini vans                              | 11                           |
|                                       | 2                             | Fuel                                 | Electricity                    | Grid electricity                              | 579                          |
|                                       |                               |                                      |                                | Market based renewable<br>energy certificates | -109                         |
|                                       |                               |                                      |                                | Self generated renewable<br>electricity       | 0                            |
|                                       | Grand Total                   |                                      |                                |                                               | 1043                         |
| Scope 3<br><br>(as outlined<br>above) | Emission<br>Scope             | Emission Type                        |                                | 2020/21                                       |                              |
|                                       | 3                             | Grey Fleet Transport                 |                                | 31                                            |                              |
|                                       |                               | Waste                                |                                | 43                                            |                              |
|                                       |                               | Water                                |                                | 8                                             |                              |
|                                       | 3 Total                       |                                      |                                | 82                                            |                              |
| Total – all<br>scopes                 | Annual<br>TCo <sub>2</sub>    | Intensity Ratio<br>(Staff Headcount) | Intensity Ratio<br>(Staff FTE) |                                               |                              |
|                                       | 1,124                         | 1.46                                 | 2.14                           |                                               |                              |

## **METHODOLOGIES AND EMISSION FACTORS**

This report and methodologies used within have been produced in line with the 2020 Government Environmental Reporting Guidelines and GHG reporting protocols.

Emissions calculations are based on the UK Government conversion factors for the relevant year(s) as provided by the Department for Business, Energy and Industrial Strategy.

## **INTENSITY RATIOS**

The college has chosen to use TCO<sub>2</sub>e per staff member as the intensity ratio in the report to align with the recommended ratio for the sector. This is displayed as both headcount and FTE.

## **MEASURES TAKEN TO IMPROVE ENERGY EFFICIENCY**

The below provides a summary of key points relating to the measures that Gloucestershire College has taken to improve energy efficiency to date:

A significant carbon saving project commenced in November 2021 relating to the Gloucester and Cheltenham campuses. £2.5M funds were secured via the Public Sector Decarbonisation Scheme along with capital funding from the college. The project includes:

Drilling boreholes to connect to electric ground source heat pumps to generate heat into the college buildings and reduce reliance on gas. The heat pump system also includes thermal stores so high volumes of heat can be supplied when demand is high. To offset the electricity required for the heat pumps, solar panels were installed on large portions of roof space to generate electricity and this was linked with battery storage to capture any unused solar generated electricity. The batteries are being used to release stored electricity to the college when no solar electricity is being produced, to store cheaper off peak energy from the grid for use later or to sell stored electricity to the grid when the grid is under high demand.

To maximise efficiencies the building management systems (BMS) have all been upgraded

The solar panels have been generating electricity since July 2022, the batteries have been operational since December 2022. The ground source heat pumps and thermal stores are going through final commissioning for full operation from 1st April 2023

We have also continued with other projects listed below

| What have we done?                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Energy</b>                         | <ul style="list-style-type: none"> <li>✓ Move to thin client for PCs – less electricity usage</li> <li>✓ Lights replaced when end life with LED lighting</li> <li>✓ New Gas and Electricity contract implemented 1st October 2016 with additional half hourly metering implemented to more closely monitor and control usage</li> <li>✓ Introduced access card control on all Gloucester lifts which has reduced excessive use by non-essential users</li> <li>✓ All new project work has sensors installed, LED lighting running at 20% energy consumption of the former lighting.</li> <li>✓ Altered on/off timers and installed additional controllers to reduce the running speed of the heating and extraction systems in Glos.</li> <li>✓ Since 2016, the new energy contract is providing online reporting of all college sites.</li> <li>✓ Automated total campus heating on/off criteria introduced and published to all staff and now in operation</li> <li>✓ BMS systems implemented</li> </ul> |
| <b>Waste</b>                          | <ul style="list-style-type: none"> <li>✓ All sites use compactor and recycle off site</li> <li>✓ Reduced number of bins for more sustainable recycling</li> <li>✓ Print defaults to Black and White</li> <li>✓ Print usage and monitoring</li> <li>✓ Priority for unwanted furniture reuse to staff and community groups</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Water</b>                          | <ul style="list-style-type: none"> <li>✓ New taps – do not allow to leave tap running</li> <li>✓ Move to short/long flush boxes as upgrades made to toilets</li> <li>✓ All adjustable taps now adjusted to lower run times</li> <li>✓ Three toilets refurbished 18-19</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Catering</b>                       | <ul style="list-style-type: none"> <li>✓ Reduced single use plastics in catering service.</li> <li>✓ Reusable coffee cups</li> <li>✓ Paper straws</li> <li>✓ Wooden forks</li> <li>✓ Non-meat options - education</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Travel</b>                         | <ul style="list-style-type: none"> <li>✓ Bus travel subsidy schemes for students (stagecoach)</li> <li>✓ Agree stagecoach routes each year</li> <li>✓ Travel claims – additional premium where take extra passenger</li> <li>✓ Car park enforcement</li> <li>✓ Roll out of teams and virtual meetings</li> <li>✓ Consideration of minibus replacement to low carbon alternative</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Procurement<br/>(under review)</b> | <ul style="list-style-type: none"> <li>✓ Consider full life costs (source to end-of-life) when making purchasing decisions – aimed at reducing negative impacts on Co2 emissions, waste management and water consumption.</li> <li>✓ Avoid of use hazardous substances.</li> <li>✓ Encourage suppliers to commit to improving environmental performance.</li> <li>✓ Ensure sustainability is embedded within the design and construction process for building or refurbishments.</li> <li>✓ Consideration of packaging costs and removal.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |