

South Gloucestershire Council: Local Greenhouse Gas Report (2020/2021)

**Council-owned greenhouse gas emissions and renewable
energy generation**

(November 2021)

Executive Summary

- Our aim is to become a carbon neutral Council across our estate and all functions by 2030. This was set out in our Climate Emergency declaration of 2019, and the [revised UK100 pledge](#) that we have signed up to.
- The impact of the Covid-19 pandemic is reflected in the data presented in this report for 2020/21. For example, a 46% reduction in staff business mileage has occurred, which equates to about 577,000 miles less being driven by staff than the previous year. Energy use in our buildings decreased overall, but our fleet vehicle use increased as we introduced social distancing measures to keep staff safe. The impact of the pandemic will be felt in the coming years too.
- We monitor energy use (and associated greenhouse gas emissions) from all Council buildings, including SGC-run schools, street lighting, fleet vehicles and staff business mileage.
- We have actively reduced our carbon emissions since 2009, reflecting a long record of action on climate change. Total greenhouse gas (GHG) emissions in 2020/21 have decreased by 8.3% since the previous year, which equates to a reduction of 861 tonnes of carbon dioxide equivalent (CO₂e). GHG emissions have declined by 71% since the base year (2009/10).
- Total energy consumption has reduced year on year and in 2020/21 it was 6% lower than in the previous year. Our ongoing street lighting LED replacement programme continues to deliver significant reductions in electricity use. However, fleet vehicle energy use increased slightly (2%) this year but this was due to social distancing measures required in response to the Covid-19 pandemic and PPE distribution activity.
- Overall the data recorded demonstrates that the Council has made significant progress in reducing energy consumption and greenhouse gas emissions. An 8.3% reduction in GHG emissions is a significant achievement. Although we are just off our annual target of 10% emission reduction, we expect to regain ground next year as more projects that are planned through the public sector decarbonisation fund (PSDF) are delivered and will be reflected in the data. While no further rounds of the PSDF have currently been announced, any further opportunities will be pursued to further reduce energy consumption in our buildings, including schools. Furthermore, the renewable electricity exported to the national grid from our standalone solar farm at Moorend, directly saved 175 tonnes of carbon this year.

- The energy used in Council buildings (including SGC-run schools) accounts for two-thirds of the Council's total GHG emissions. We therefore need to rapidly accelerate action on reducing energy consumption in existing schools and Council buildings through retrofitting fabric improvements, energy control systems, technology upgrades, solar PV and phasing out fossil fuels as a heating source. We need to ensure we are not adding to the problem through our new build proposals. Working with Government we must ensure budgets are in place to at least reflect national target of Net Zero by 2050 so that new schools (and any other Council buildings) are designed and built to very high energy efficiency standards (such as Passivhaus), have renewable sources of heating and are resilient to a changing climate.
- Progress has stalled with reducing the amount of fossil fuel used in Council fleet vehicles mainly due to the limited availability in the market for larger electric vehicles. We need to accelerate the 'greening' the fleet where possible, and continue to invest in new technologies and more efficient ways of working. We are poised to take action as the market for larger electric vehicles develops and are also investigating the feasibility of alternative fuel sources.
- A total of 1,420,834 KWh (1,420 MWh) of renewable energy has been generated from solar PV schemes on our land and buildings. We continue to generate a substantial amount (75,000 KWh) of renewable heat energy from biomass sources too. In addition, the remaining electricity and gas we purchase is on a green energy tariff.
- The Council's standalone ground mounted solar scheme at Moorend supplies electricity directly into the national grid. The amount generated last year was the equivalent of 17% of the electricity purchased for use in all Council (non-school) buildings, and it directly saved 175 tonnes of carbon.
- There will likely be some residual emissions which require offsetting in order for us to be a carbon neutral council in 2030. We intend to do this through implementing and investing in carbon offsetting projects located within South Gloucestershire.

1. Purpose of report

This report monitors the Council's own greenhouse gas emissions and the renewable energy directly generated by the Council. In future years it will also include reference to carbon offsetting projects that the Council directly implements or invests in.

The data presented establishes the progress being made towards the aim of becoming a carbon neutral Council by 2030. This aim formed part of the Climate Emergency declaration made by the Council in July 2019.

Being carbon neutral means reducing carbon dioxide emissions as far as possible and then balancing out any remaining releases by, for example, creating new habitats to sequester carbon. Net zero is a similar term but relates to all greenhouse gas emissions.

2. Climate emergency

A changing climate is recognised as being the most significant threat to our society that we have faced. Nationally, the UK Government has set a target in law for all greenhouse gas emissions to be net zero by 2050. However, in order to pursue efforts to limit warming to 1.5C (as per the Paris Agreement in 2015) and avoid the severest impacts of climate change, it is important that the 'net zero' target is achieved much sooner. Consequently, many Councils have declared a Climate Emergency and set a 2030 target.

South Gloucestershire Council made a Climate Emergency declaration on 17th July 2019. This means that the council is saying that the global climate is in a state of breakdown and that this is an Emergency situation and that urgent steps need to be taken to address the situation by preparing for the local impacts of climate change and by reducing carbon emissions. In the declaration, the Council's committed to providing the leadership to enable the whole of South Gloucestershire to be carbon neutral by 2030. As part of this, it included the aim of the Council itself becoming carbon neutral by 2030, across all its functions.

In order to monitor progress towards this aim, and to help inform the identification of areas for action, it is important that we monitor the greenhouse gas emissions from the Council's own estate and activities. This is something we have been doing since 2009, and reflects the Council's long record of action on climate change.

3. Scope of emissions data

We have monitored annually, since 2009, all the Council's emissions that are known as Scope 1 and Scope 2 emissions. Some Scope 3 emissions (business mileage and electricity transmission / distribution losses) have also been monitored and are included in the reporting figures.

- **Scope 1** emissions are those that come directly from the burning of fuel e.g. gas boilers used in buildings, diesel used in vehicles.
- **Scope 2** are the emissions that come from the energy e.g. electricity that is purchased and used by the Council.
- **Scope 3** emissions are those that are a consequence of the Council's actions and occur at sources not owned or controlled by the Council e.g. through procurement activity.

Appendix 1 sets out a full definition of the 'scopes' and how our data fits into these.

In summary, the emissions data that we collate in this report comes from the following sources:

- emissions from energy consumption in buildings
- electricity consumption in street lighting
- fuel use in fleet vehicles, and
- business mileage

There are other emissions that result from the Council delivering its functions, such as outsourced services and the procurement of products and services (known as Scope 3), but the emissions are not easily measured and are not currently included in the data reported. However, in **Appendix 2**, we set out the key sources of these emissions alongside actions we are taking, or plan to take, as part of our [Climate Emergency](#) response.

Our [Carbon Emissions Baseline report](#) estimated that Council Scope 3 emissions from procurement activity could be 5 times higher than scopes 1 and 2. Therefore it is an important area to take action on, and we are working with the Local Government Association and Local Partnerships to help develop better carbon accounting of Scope 3 emissions across local authorities.

The Council has an **overall target to become carbon neutral by 2030**. This means that our emissions must be zero or as close to zero as possible with the residual emissions being balanced out, or offset, through carbon saving projects by 2030.

The purpose of this report is therefore to quantify GHG emissions from the Council's estate and activities listed in the bullet points above, and to analyse progress against this target. The relevant data is set out in **Appendix 3**, with key points highlighted in the Report.

The actions that are currently being taken and are planned to be taken over the next few years to reduce GHG emissions from the Council's estate and activities and services (which together form the Council's carbon management plan) are set out in the overarching [Climate Emergency Action Plan](#), with more specific opportunities and actions set out in other Council strategies and plans relevant to that particular service area. For example, the Strategic Property Asset Management Plan contains carbon management opportunities that relate to Council property, development and corporate estate.

4. Energy consumption

Energy consumption across the Council estate derives from:

- Energy consumption in buildings (this includes: local authority maintained schools, libraries, council offices, public toilets, the Bristol Bath Science Park. But it does not include academy schools and leisure centres);
- Electricity consumption in street lighting (including lighting for street furniture, signs, bollards, traffic signals, metrobus 'l points' etc.);
- Fuel use in council fleet vehicles - pool cars and Streetcare vehicles used for highways maintenance, litter bin collections, open spaces management etc (the household waste collection service is outsourced to Suez and so these waste vehicles are not included); and,
- Business mileage paid to staff and Members for business use of their own vehicles (this excludes commuter mileage).

Table 1 (Appendix 3) shows a breakdown of the Council's total energy consumption. This has fallen year on year since monitoring began. **Energy consumption¹ in 2020/21 was 42,875 MWh which was 6% lower than in the previous year and 54% lower than in 2010/11.** The impact of the COVID-19 pandemic is likely to have resulted in reduced energy consumption this year as buildings, such as offices, libraries and schools were used differently, for example operating within a smaller building footprint, for a substantial period of time. We need to be aware that the impact of this could have been to increase energy use in people's homes instead, as staff were working from home for example, – so rather than being reduced, the energy use has been transferred.

The key changes compared to the previous year are:

- **Energy consumption in our schools fell by 4%.** The reduction has mainly been driven by a reduction in electricity use (18%) which is likely to be a result of the using school buildings differently during the pandemic. Gas use also fell, but to a much lesser extent as buildings still needed to be kept 'ticking over', and also when pupils were in school the windows had to be kept open for ventilation purposes. No changes

¹ Energy consumption is calculated in MWh and covers gas, oil and electricity use in schools and non-school buildings, plus electricity used for street lighting, and fuel used for fleet vehicles. It does not include business mileage as this is not calculated in MWh.

in the school estate occurred this year. These figures are likely to be an anomaly due to the impact of the pandemic. We noted that last year, progress on helping schools to reduce energy consumption needed further action. This year a roof top solar PV scheme was installed at Watermore primary school and an additional 7 schools benefitted from our LED light replacement programme.

Scoping studies have already been completed to look at installing roof top solar PV on school buildings and retrofitting measures to reduce the heating requirements of the 1970s 'scola' school building stock. These need to be taken forward. For Manorbrook Primary school (Key stage 1 building), the retrofitting measures were due to be undertaken as part of planned works, however, this had to be postponed a year but the design work will commence soon.

We have been successful in achieving funding from the Public Sector decarbonisation fund to help with the delivery of projects and also to develop a heat decarbonisation plan for schools (as well as other Council buildings). This will help improve the fabric efficiency of school buildings and move them away from gas heating systems.

With regard to new school developments, the Council has pursued designs which ensure new schools are built to very high energy efficiency and sustainable building standards, for example, Passivhaus. Once renewable heat and power generation technology are incorporated, it is then possible to achieve a net zero carbon standard. The first schools to be designed to Passivhaus standards are Elm Park and Frenchay, and the schools at Lyde Green are also designed to meet this internationally recognised standard. However, this is an area where budgets are challenging and will need to be addressed to ensure net zero is achieved when the schools are built.

- An overall **decrease of 11% in energy consumption in non-school buildings**. This was mainly driven by a 19% decrease in the use of electricity and is likely due to the COVID-19 pandemic when workers were home based. There was a small reduction in gas use (3%) overall. Biomass as a fuel is included in the energy consumption figures this year. It helps shift our buildings away from fossil fuel based heating systems and reduces our GHG emissions. The only key change in the property estate this year was that the Innovation Hub was added to the Bristol Bath Science Park.

The power used by our IT equipment and server room was 293,638 KWh. This is incorporated into the overall buildings energy consumption figure for electricity. We will monitor energy usage by IT going forward, with a view to achieving greater energy efficiency.

- Almost **11% reduction in electricity use in street lighting** and other street / highways infrastructure. This is mainly a result of our ongoing street lighting LED replacement programme as consumption has increased in other areas due to increasing assets, for example the infrastructure to support Metrobus. The LED replacement programme will be completed in 2024/25, but after that, years 1, 2 and 3 of the programme will be revisited as technology has improved and further savings can be made.
- A small increase of **2% in fleet vehicle fuel use** (which is the equivalent of 7,810 litres of fuel) has occurred over the previous year. Variations occur year on year anyway due to the weather and the increased need for gritting lorries to be used, for example. However, this year, there was also an increased number of operational vehicles in use during the COVID 19 pandemic as fleet size was temporarily increased to allow for staff social distancing and for other functions such as PPE distribution.

A report by the Energy Savings Trust commissioned in 2020 recommended key areas for action, which continue to be implemented. Any fleet vehicles requiring replacement are replaced with an Electric Vehicle (EV), unless operationally this is not deemed viable or that suitable vehicles are available to purchase. EVs are predominantly smaller vehicles that are not always appropriate as replacements. The availability in the market place of suitable EV versions of vehicles larger than a van is currently limiting opportunities to 'green' our fleet further. Options will continue to be explored as the market develops. Another factor is that charging infrastructure also limits the growth of the EV fleet. Currently, there are 33 EVs in the fleet out of about 300 vehicles. We are also seeking to reduce the overall carbon impact of our Highways operations and to help with this have developed a carbon assessment tool which evaluates whole life carbon impacts of the delivery of highways schemes, including maintenance practices.

- A **46% reduction in business mileage** (a reduction of over 577,000 miles compared to the previous year) is hugely significant and is predominantly due to staff being

based at home during the COVID-19 pandemic and the transfer of practically all face to face meetings to online. The mileage may increase next year as things return to 'normal' and mileage related to site visits and meetings that cannot be done virtually are resumed. However, the shift to home working and online meetings in the long term may result on significant reductions to mileage being retained.

The figures do not cover commuter mileage, but this is an area where the Council has significant influence and will continue to encourage staff to choose sustainable transport options, preferably active travel modes. We are also exploring moving to a hybrid way of working following the Covid-19 pandemic. One of the key considerations will be how this can help reduce carbon emissions. Devon County Council commissioned research which shows that the significant emissions from an average commute by fossil fuel car far outweigh the increased dwelling emissions from home-working. Consequently, the reduction in emissions achieved through home working can be significant in certain circumstances. We have also launched a salary sacrifice scheme to help staff who still need to rely on a car to lease an Electric Vehicle instead of using a fossil fuel based car.

5. Greenhouse gas emissions

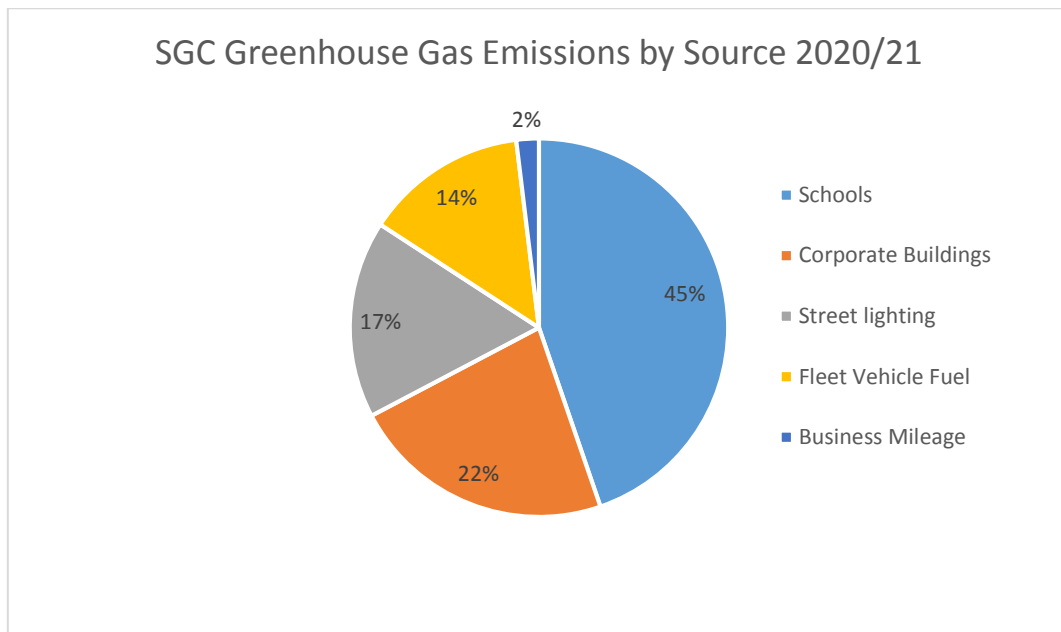
We convert fuel use to Greenhouse Gas Emissions using conversion factors published by the Government each year. Emissions from different fuel types vary over time, especially for electricity where the various forms of generation (coal, wind, gas, solar, etc) affect the emissions per unit of electricity generated. We therefore need to see a decreasing trend in both energy consumption and GHG emissions if we are to hit our GHG emissions targets.

Table 2 (Appendix 3) sets out GHG emissions data for each year since the base year 2009/10. **Total GHG emissions in 2020/21 have decreased by 8.3% since the previous year and by 71% since the base year (2009/10).**

However, it is important to remember that as the national electricity grid decarbonises (due to the move away nationally from Coal based power stations, and to an increase in renewable energy generation from primarily wind and solar) then this will also be reflected as a reduction in our greenhouse gas emissions too. In other words, if the Council's electricity consumption remained the same, then the greenhouse gas emissions would still reduce due to the progress being made to decarbonise the national grid.

Also, as we move forward to a carbon free future, we will need to continue to focus on minimising energy consumption because there will be more demand for electricity as we shift heating and transport over to electricity as a fuel source, and it will also save money too.

The following chart shows the GHG emissions from the Council estate and activities by source.



Some key points are described below:

- The energy used in Council buildings (including Council-run schools) accounts for **two-thirds of the Council's total emissions**. The Council's electricity consumption reduced significantly this year (as detailed above), and therefore, once the emissions factor has been applied, this has meant that **the total emissions from electricity use have reduced by nearly 16%** (but this also reflects the impact of the ongoing decarbonisation of the national grid). **There has been a decrease of nearly 4% in the emissions from gas** – but, as we have previously described, the impact of the COVID-19 pandemic will be reflected in these figures so they should be viewed with caution.
- Emissions from street lighting and highways infrastructure, through electricity consumption, have **fallen by almost 11% this year** (but this also reflects the decarbonisation of the national grid too). Also of benefit is the re-use of materials that has occurred through the street-lighting programme which has meant that the carbon footprint relating to the production of new and disposal of old materials has been reduced. Furthermore, approximately 300 tonnes of steel, aluminium and copper has been recycled as a result of the programme.
- Emissions from **business mileage has decreased by nearly 48%** due to the significant reduction in staff mileage being undertaken by private car predominantly as a result of the COVID-19 pandemic and the move to online

meetings and home based working. Whether these changes remain over the long term or whether there is a return to much higher rates of mileage will be indicated in the next couple of years data. Also, carried out before the pandemic our staff travel survey indicated that about 11% of staff said they normally used the Council's electric pool cars for business use, 11% used the train, and a further 10% usually car shared. However, for those that did use their private cars for business, 99% were petrol/diesel fuel type. The impact of the newly launched staff electric vehicle leasing scheme will be monitored over the next few years.

- **Progress on reducing the emissions from Fleet vehicles has stalled** this year. This is due to increased demands on our fleet due to the COVID-19 pandemic. For example, an increased number of operational fleet vehicles were used during the pandemic to allow teams to socially distance and to carry out extra COVID related functions (such as PPE delivery).

Improvements in Carbon Accounting

We continually strive to ensure accuracy in recording our Scope 1 and Scope 2 emissions. This year's data includes energy consumption from Biomass and Heating Oil for our buildings. We have also aligned the conversion factors we used this year with those used in the LGA / LP Accounting tool, which accords with the GHG Protocol. This means that for financial year reporting (which is what we do) the conversion factors for the previous calendar year should be used e.g. for 2020/21 the 2020 factors should be used.

We are working with the [LGA / Local Partnerships on carbon accounting](#) by participating in their standardised method of carbon accounting developed for local authorities. We made our first submission of data last year. This year we have included data for additional sources of emissions in our submission, including wood pellets (biomass); fugitive emissions; and water supply/treatment.

The LGA / Local Partnerships are also investigating how to measure further sources of Scope 3 emissions, for example staff commuter mileage and outsourced services such

as waste. We are working collaboratively with them and other authorities to enable us to tackle our Scope 3 emissions too.

The LGA/Local Partnerships team collate information from many local authorities in order to carry out appropriate benchmarking. This will be useful to see how well we perform compared to other similar authorities, and help us to improve our performance too. We hope to be able to include some benchmarking evaluation in this report in the coming years.

We are also pleased to be a part of the [Carbon Disclosure Project](#) (CDP), and made our first submission of South Gloucestershire area – wide (not just Council-own) data in 2021. CDP runs the global environmental disclosure system and each year thousands of companies, cities, states and regions are supported by CDP to measure and manage their risks and opportunities on climate change and a wide range of sustainability issues. CDP have created a system over the last two decades that has resulted in unparalleled engagement on environmental issues worldwide.

6. Renewable energy generation

Generating energy from renewable and low carbon sources is a positive and practical way that the Council can help to tackle climate change through the use of its own estate and activities. By increasing renewable energy generation we are supporting the transition of South Gloucestershire to a low carbon society and directly contributing to the decarbonisation of the national grid.

Electricity

The Council generates renewable energy from a range of sources. The prime source of renewable electricity generation are the two ground mounted solar systems (at Badminton Road, and Moorend). The Badminton Road scheme feeds renewable electricity directly into the Badminton Road office building, whilst the Moorend Solar farm generates electricity that is fed into the National Grid. In total, ground mounted solar PV schemes from the Council estate have generated **994,352 KWh** this year (see Table 3 in Appendix 3). An additional 5,111 KWh has been generated from the wind turbine at Marshfield Primary School.

Since the previous reporting year, there have been roof mounted solar PV installations completed at Watermore Primary School (30 kWp) and the Bristol Bath Science Park (BBSP) Innovation Hub (7.9 kWp). A further 10.4 kWp has been installed at the Electric Vehicle hub canopy at the BBSP. Building mounted solar PV supplies renewable electricity directly to the buildings, which means the energy consumption recorded is reduced.

The installations that feed directly into Council buildings are taken into account in the energy consumption figures for those buildings – i.e. they help to reduce the amount of energy purchased from the national grid.

The Council's standalone ground mounted solar scheme at Moorend supplies electricity directly into the national grid. Last year it generated 753 MWh of electricity. **If we expressed this as a percentage of the electricity purchased for use in all Council (non-school) buildings (4,501 MWh), it is 17%. It saved 175 tonnes of carbon too.**

Significantly increasing the amount of renewable energy generated by the Council has been identified as a focus for action in the Climate Emergency Action Plan.

Heat

The Council has also generated renewable heat energy this year from Biomass sources, totalling **75,154 KWh**. Our biomass fuel suppliers are registered on the Government's Biomass Suppliers List available at: <https://biomass-suppliers-list.service.gov.uk/> and therefore have to meet the sustainability criteria set out by the Renewable Heat Incentive (RHI) scheme. There are a total of six biomass boilers installed across the Council estate (in one office and five schools), as well as two ground source heat pumps, two air source heat pumps and four solar thermal arrays. The Bristol and Bath Science Park also has biomass installed. Two mini combined heat and power units are also installed, which are generating low carbon heat and electricity (though this is not considered to be renewable and is therefore not counted in Table 3 of Appendix 2, which sets out renewable energy generation for this year).

7. Offsetting residual emissions

The priority of the Council is to minimise energy consumption to reach as close to zero emissions as possible. However, we recognise that there will likely be some residual emissions which require offsetting in order for us to be a carbon neutral council. We intend to do this through implementing and investing in carbon insetting projects located within South Gloucestershire. In order to encourage others (residents, visitors, businesses, communities etc) to do this as well, we will develop opportunities for investment.

We intend to make reference to high level data from carbon offsetting projects in future reports, to help us evaluate progress against our 2030 target.

An immediate action that the Council took following its Climate Emergency declaration was to switch the purchased electricity and gas used in corporate buildings to a green energy tariff. Therefore from April 2020, all the energy purchased for our corporate buildings, and also some schools, was renewable. We are encouraging our remaining schools to switch to a green energy tariff too, and will assist them with this. While this is a useful mitigation there is some criticism that buying certified green energy doesn't lead to an increase in renewable supply and consequently is a questionable approach and should not be used as a means to achieve carbon neutrality in place of actions to reduce demand and self-generate.

The table below indicates the current situation regarding 'Green' energy tariffs:

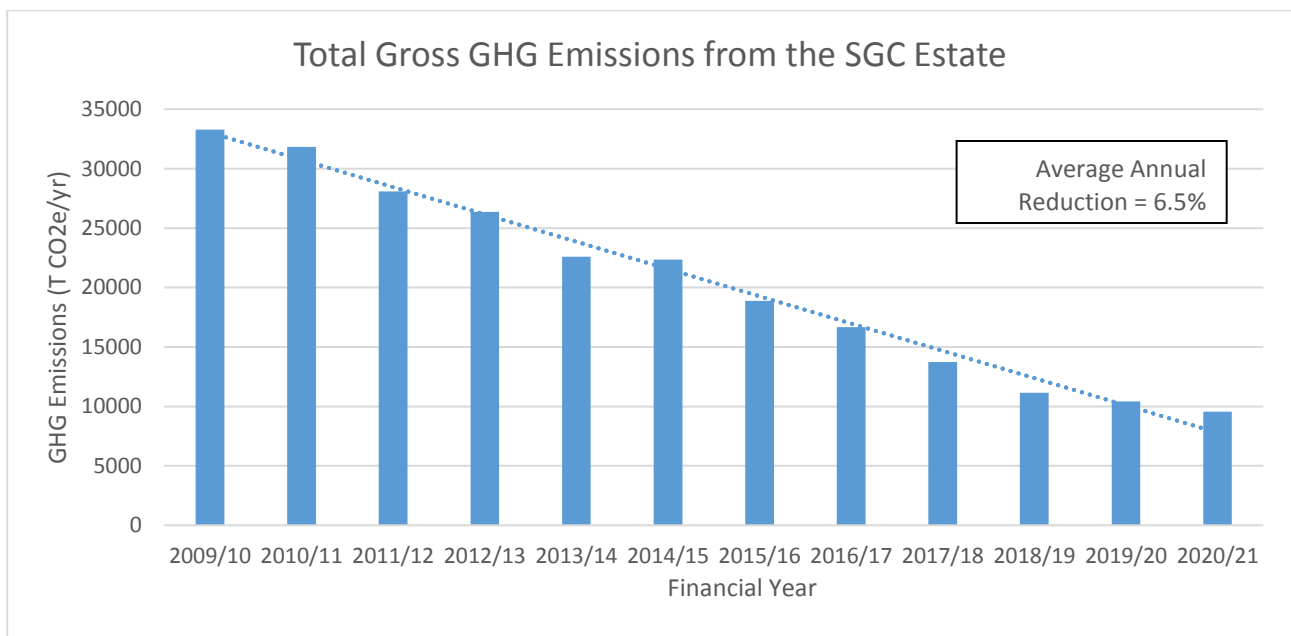
Amount of Energy purchased on a 'Green' Tariff	KWh	% of energy on a 'green tariff'
Schools (not including Academies)		
KWh gas Schools	161,177	1%
KWh electricity Schools	1,101,939	18%
Non Schools		
KWh gas Non Schools	5,488,619	99%
KWh electricity Non Schools	4,501,050	100%

8. Conclusion

The Council has a target to **reduce its GHG emissions to 'net zero' by 2030**, in line with the Climate Emergency declaration. To complement this aim, the Council also needs to minimise energy consumption as far as possible. There has been an absolute reduction in GHG emissions of **8.3%** since last year, which equates to **861 tonnes** of CO₂e.

However, this figure should be viewed with caution as it includes the impact of the COVID-19 pandemic and measures taken such as national lockdowns, and staff predominantly working from home. Reductions in energy consumption in our buildings (offices, libraries and schools etc) have occurred along with significant reductions in the amount of business mileage undertaken. Over the next year or so, we will see whether any longer term reductions in emissions have been secured through the changes made as a result of the COVID-19 pandemic.

The graph below demonstrates an **average annual reduction of 6.5%** since the baseline year of 2009/10.

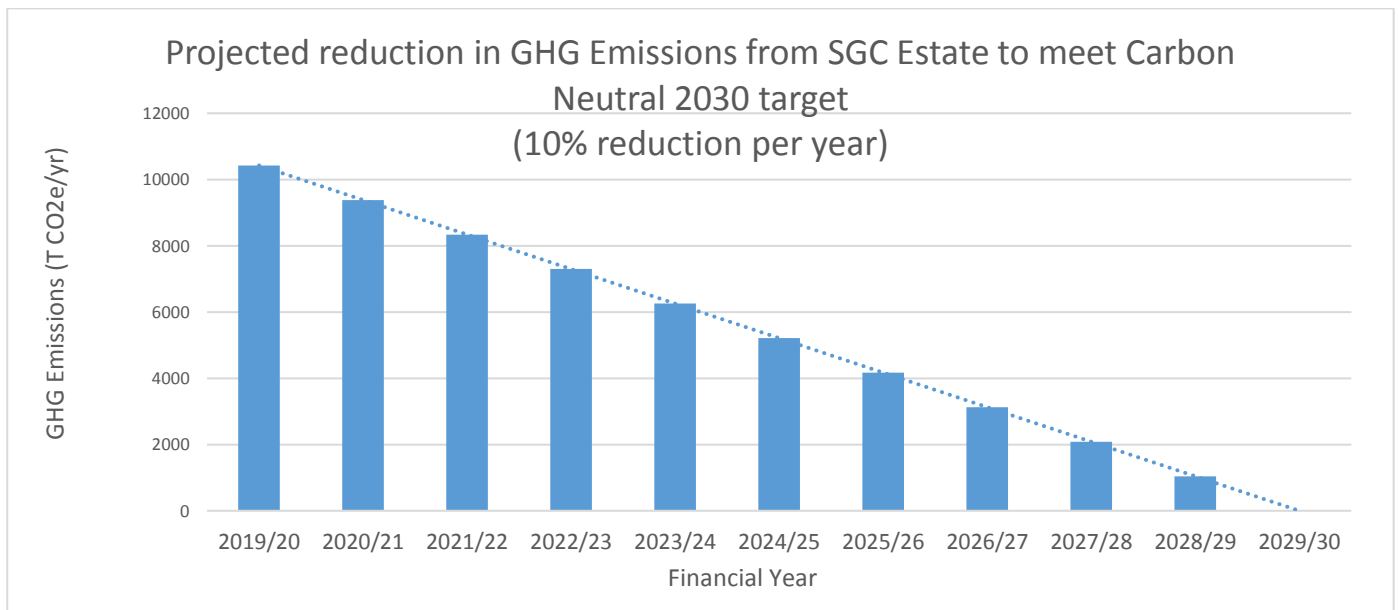


Total GHG emissions are now **71% lower** than in the baseline year, however, this has been skewed somewhat by the conversion of schools to academies (which have not been included for several years in the Council's emissions data), but on the other hand some new properties have been brought into the Council estate e.g. the Bristol & Bath Science Park Innovation Hub.

Overall the data recorded still demonstrates that the Council has made significant progress in its efforts to reduce energy consumption and greenhouse gas emissions in the past, but that the progress is now slowing down. We must redouble our efforts to minimise emissions from all sources if we are to reach the 2030 target of a carbon neutral Council.

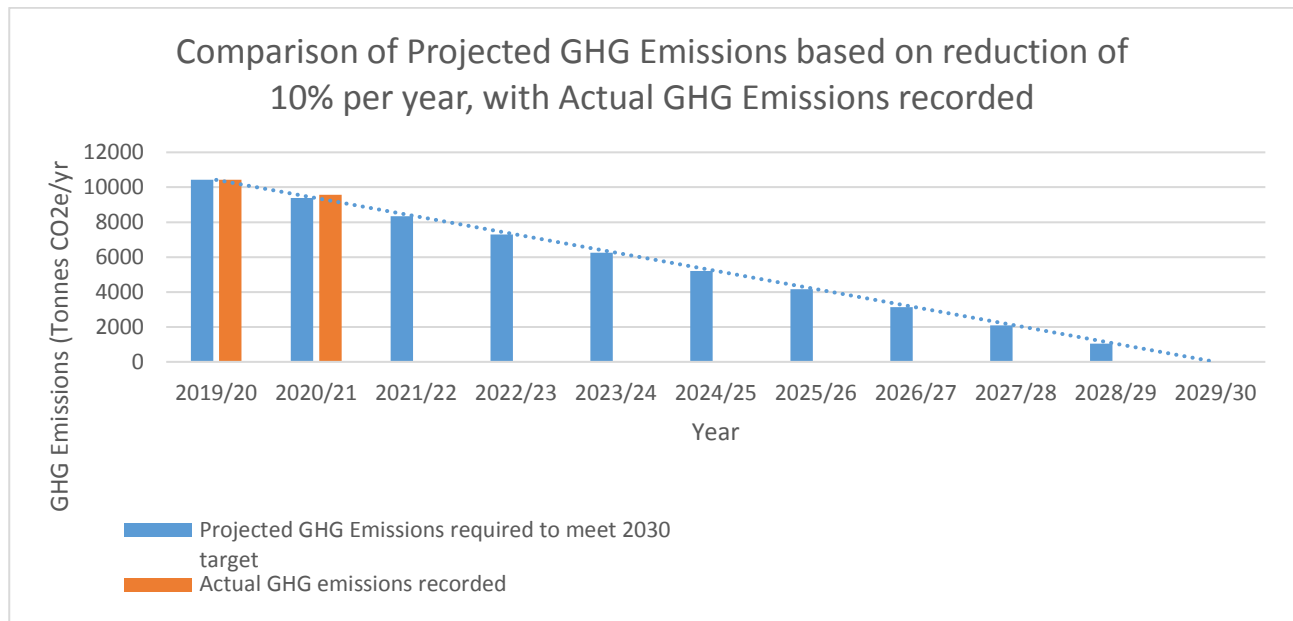
The following chart shows a linear trajectory to zero GHG emissions in 2030. This is based on the data that we collect now and assuming that we will continue to measure our GHG emissions in this way. This means all scope 1 and scope 2 emissions, plus some scope 3 emissions (business mileage and transmission/distribution of electricity).

In 2019/20 we calculated that a **10% annual reduction in GHG emissions** from these sources was required in order for the Council to be on track to achieve the carbon neutral target in end March 2030. In other words a saving of 1,042 tonnes of CO₂e per year is needed.



Therefore the **annual target for the Council was set as: to reduce GHG emissions by at least 10%** to put us on course to achieve our overall aim of being carbon neutral by 2030.

Although, the data presented in this report (and in the chart below) shows that we have just missed the 10% reduction target for this year, we have achieved an 8.3% emissions reduction. This is still a positive achievement, and we expect to achieve more next year as the projects that are planned through the public sector decarbonisation fund are delivered and will be reflected in the data.



By analysing our data, we can identify where we need to focus our efforts to ensure we are on track to achieving our 2030 target. For example -

- **The energy used in Council buildings (including SGC-run schools) accounts for two-thirds of the Council's total GHG emissions.**
 - We therefore need to rapidly accelerate action on reducing energy consumption in existing schools and Council buildings through retrofitting and solar PV schemes, and phasing out fossil fuels as a heating source. The public sector decarbonisation fund has provided opportunities to do this.
 - We need to ensure we are not adding to the problem through our new build proposals. Working with Government we must ensure budgets are in place to at least reflect national target of Net Zero by 2050 so that new schools (and any other Council buildings) are designed and built to very high energy

efficiency standards (such as Passivhaus), have renewable sources of heating and are resilient to a changing climate.

- **Progress has stalled with reducing the amount of fossil fuel used in Council fleet vehicles.**
 - Therefore we need to accelerate the 'greening' the fleet as the market for larger vehicles develops, and investing in new technologies and more efficient ways of working.

In terms of the Council's own emissions, we recognise that there will be a certain level of residual emissions that we won't be able to eliminate, and we also recognise that we will be reliant as a society in generating sufficient renewable energy to meet our needs.

Therefore action on carbon offsetting projects is a priority and also increasing renewable energy generation capacity in the area.

The Council has been proactive in the generation of renewable energy from its Estate in the past, although progress has stalled in recent years in bringing new schemes on board. However, this is now being revisited in response to the Climate Emergency, and the completion of the Renewable Energy Resource Assessment Study (RERAS) for South Gloucestershire.

We also recognise that more work needs to be done to define, track and reduce the Council's additional Scope 3 emissions. We will build on the information we have already gathered ([South Glos Carbon Baseline Report 2019 – Regen](#)) and the knowledge from other authorities to help inform a way of effectively monitoring these emissions and identifying the key actions the Council can take to influence each type of emission source. In our Carbon Baseline Report, Scope 3 emissions from the Council procurement of goods and services has been estimated equate to 65,000 tonnes of CO₂e, which is around 6% of the South Gloucestershire whole area-wide emissions. In addition, there are other scope 3 emissions associated with the generation of waste, school transport, staff commuting, pensions and investments, office management and implementing capital highways schemes. We have therefore committed to exploring this further in our Climate Emergency Action Plan, and we will measure and report progress in future reports.

In summary, this report demonstrates that the Council is leading by example to mitigate and adapt to climate change, and action needs to continue to be accelerated so that we meet our 2030 target. We are committed to revisiting our Climate Emergency response each year and implementing the actions identified in the overarching [Climate Emergency Action Plan](#) and the more specific strategies and plans relating to specific Council service areas and activities in order to achieve further reductions in energy consumption and carbon emissions, and to increase renewable energy generation and carbon offsetting.

Appendix 1: Technical background information

Greenhouse Gas Emissions - Definitions of Scope:

These definitions are set out by the Government ([source](#)) as follows:

<p>Scope 1 (direct emissions) emissions are those from activities owned or controlled by your organisation. Examples of Scope 1 emissions include emissions from combustion in owned or controlled boilers, furnaces and vehicles; and emissions from chemical production in owned or controlled process equipment.</p> <p>Scope 2 (energy indirect) emissions are those released into the atmosphere that are associated with your consumption of purchased electricity, heat, steam and cooling. These indirect emissions are a consequence of your organisation’s energy use, but occur at sources you do not own or control.</p> <p>Scope 3 (other indirect) emissions are a consequence of your actions that occur at sources you do not own or control and are not classed as Scope 2 emissions. Examples of Scope 3 emissions are business travel by means not owned or controlled by your organisation, waste disposal, materials or fuels your organisation purchases. Deciding if emissions from a vehicle, office or factory that you use are Scope 1 or Scope 3 may depend on how you define your operational boundaries. Scope 3 emissions can be from activities that are upstream or downstream of your organisation. More information on Scope 3 and other aspects of reporting can be found in the Greenhouse Gas Protocol Corporate Standard.</p>

The Council’s Emissions:

We have monitored annually, since 2009, all the Council’s Scope 1 and Scope 2 emissions. Some Scope 3 emissions have also been monitored and included in the reporting figures.

The sources of emissions monitored is set out according to ‘scope’ below:

Sources of Emissions included in monitoring	Detail
Scope 1 – direct emissions	
Fuel used in School Buildings (SGC only, not academies)	KWh gas Schools KWh oil Schools KWh biomass (wood pellets) Schools
Fuel used in SGC buildings (corporate buildings, Bristol Bath Science Park and others e.g. libraries, toilets etc.)	KWh gas Non Schools
Fuel use in SGC Fleet Vehicles (Streetcare). Litres Fleet Vehicles Petrol Litres Fleet Vehicles Diesel Litres Fleet Vehicles Gas Oil	Bulk Storage Fuel – used to fuel fleet vehicles on site (Broad lane depot). Data is total amount purchased in financial year, in litres.
	Fuel card system – amount of fuel used in fleet vehicles that fill up off site using fuel cards. Total amount in litres for the financial year.

	Note: this does not include vehicles operated by Suez (Waste Contractors)
Scope 2 – energy indirect emissions	
Electricity consumption in School Buildings	KWh electricity Schools (SGC only, not academies)
Electricity consumption in SGC buildings	KWh electricity Non Schools (this means corporate buildings, and other Council-owned and run buildings e.g. Bristol Bath Science Park, libraries, toilets etc.)
Electricity consumption in Street lighting, street furniture and highways structures.	KWh Electricity used (Note: Data includes metered and unmetered supplies for street lights, illuminated signs and bollards as well as traffic signals)
Scope 3 – other indirect emissions	
Business Mileage	Staff / Members / Schools business mileage – totals (not split by type of fuel used in the car. Does not include use of pool cars, that is captured in fleet vehicles information)
Transmission and Distribution Losses associated with purchased electricity	The total electricity consumed (KWh) in Buildings and Street lighting is multiplied by the Transmission and Distribution conversion factor (see below) to get the emissions impact (kgCO ₂ e) of the losses associated with the electricity purchased.

Conversion Factors:

Conversion factors are updated annually and published by the Government. For consistency, we use the conversion factors that are embedded in the LGA/LP GHG accounting tool.

This enables us to convert energy consumption (in the form of KWh for electricity and gas, Litres for diesel, petrol; Miles for business mileage etc) into the equivalent kg of CO₂ (kgCO₂e) to enable comparisons to be made.

Appendix 2: Scope 3 Emissions

There are a range of additional potential sources of Scope 3 emissions that the Council could have influence over that are currently not included in the reporting figures. Often they are difficult to quantify but we are already taking action to minimise these emissions too, in line with our Climate Emergency declaration.

The following potential sources of Scope 3 emissions have been identified so far, and we have taken some steps to reduce these emissions.

We will share knowledge and data with the carbon accounting team from the Local Government Association and Local Partnerships who are also doing further research into Scope 3 emissions.

Potential sources of Emissions to be explored further	Detail & Actions
Scope 3 – other indirect Council emissions	
Commuter mileage	Commuting to and from work in fossil fuel based vehicles by staff. Information is collected through the Travel to Work survey carried out annually. Also, staff are encouraged through various travel campaigns e.g. Access West to walk, cycle or use public transport. The salary sacrifice Electric Vehicle leasing scheme has been launched to staff in 2021.
Waste services (currently outsourced)	The Waste services are operated by Suez on behalf of the Council. Work is already being done to undertake a whole system review of emissions in relation to waste and how to achieve zero carbon.
Investments and Pensions	The finance team have commissioned advice to implement a green finance strategy to ensure the Council investments are aligned with our climate emergency aims. The Avon Pension Fund is committed to being a net zero investor by 2050 or earlier.
Procurement activity	This covers a wide range of goods and services. The Procurement strategy has been revised to incorporate the assessment of carbon impacts in the decision-making process. A series of meetings is being undertaken between procurement leads and commissioners to help commissioners incorporate climate emergency requirements into their contracts with suppliers and providers.
Facilities Management	Integra provide services, for example, the staff restaurant. Some of the related emissions will be included already in the Building data e.g. energy use.

	However, there may be other sources of emissions that need to be addressed.
Leisure services	The Circadian Trust operates the leisure centres in South Glos. There may be opportunities for the Council to work collaboratively with the Circadian Trust to help reduce energy consumption and carbon emissions.
Academies (schools not run by SGC)	There are cases where the Council leases buildings and land to academies. There may be potential to influence action taken to reduce emissions by working collaboratively with the academy chains.
Highways Operations	The delivery of highways schemes has implications for emissions from the construction process, materials used, and the maintenance practices required. The Council has developed a carbon assessment tool, with consultants – Metis - for assessing these whole life carbon impacts and will continue to explore how to use the tool to make decisions that minimise carbon impacts when delivering highways operations.

Appendix 3: Data tables

Table 1: Total energy consumption across the Council estate

Energy Consumption (MWh/year)	Base Year	Last Year	This Year	% Change	% Change
	2010/11	2019/20	2020/21	Since base year	since last year
School Buildings	52,272	21,633	20,672	-60%	-4%
MWh gas Schools	32342	14212	13,626	-58%	-4%
MWh oil Schools	3,906	-	925	-76%	
MWh electricity Schools	16025	7421	6,091	-62%	-18%
MWh Wood Pellets Biomass Schools	-	-	30		
MWh Wood Chip Biomass Schools	-	-	0		
Non-School Buildings	18,288	11,303	10,082	-45%	-11%
MWh gas Non Schools	10,403	5,727	5,536	-47%	-3%
MWh oil Non Schools	932	n/a	0	-100%	
MWh electricity Non Schools	6,952	5,576	4,501	-35%	-19%
MWh Wood Pellets Biomass	-	-	0		
MWh Wood Chip Biomass	-	-	45		
Street Lighting	14,609	7,148	6,382	-56%	-11%
Fleet Vehicle Fuels	8,300	5,645	5,739	-31%	+2%
Total (MWh/year)	93,469	45,728	42,875	-54%	-6%
Business Mileage (miles per year)	2,890,460	1,244,445	667,361	-77%	-46%

Table 2: GHG emissions across the Council estate (tonnes of carbon dioxide equivalent (tCO2e))

Emissions (tonnes of CO2e)	Base Year	Last Year	This Year 2020/21	Change in Tonnes of CO2e since last year	% Change	% Change
	2009/10	2019/20			since base year	since last year
School Buildings	15,261	4,343	4155	-188	-73%	-4%
Gas in Schools	6,073	2,613	2507	-106	-59%	-4%
Heating Oil in Schools	1,694	n/a	228		-87%	
Electricity in Schools	7,494	1,730	1419	-311	-81%	-18%
Wood Pellets Biomass Schools			0.45	0		
Wood Chip Biomass Schools			0	0		
Non-School buildings	6,018	2,353	2296	-57	-62%	-2%
Gas in all non-school buildings	2,177	1,053	1019	-34	-53%	-3%
Heating Oil in all non-school buildings	225	n/a	228		1%	
Electricity in all non-school buildings	3,615	1,300	1049	-251	-71%	-19%
Wood Pellets Biomass			0			
Wood Chip Biomass			0			
Street Lighting	7,296	1,666	1487	-179	-80%	-11%
Fleet vehicle fuel	2,113	1,304	1328	24	-37%	2%
Business Mileage Paid	1,140	352	184	-168	-84%	-48%
Electricity Transmission & Distribution losses	1,457	404	339	-65	-77%	-16%
Total GHG Emissions (t CO2e/yr)	33,284	10,423	9562	-861	-71%	-8.3%

Table 3: Renewable Energy Generation from the Council Estate for 1st April 2020 to 31st March 2021 in KWh

Type of Renewable Energy Installation	2020/2021
TOTAL KWh GENERATED	1,420,834 KWh
Total from SGC Ground mounted Solar PV schemes	994,352
<i>Badminton Road solar array</i>	241,663
<i>Moorend Solar farm</i>	752,689
Wind Turbine	5,111
Biomass	75,154