

# South Gloucestershire's 2022 Net Zero Dashboard

Local leadership on reducing carbon emissions to net zero has the potential to transform our energy system and at the same time build a local green economy, bringing in skilled jobs, investment, and resilience. This report aims to engage and inspire people and organisations in South Gloucestershire by setting out how the area

is performing in the key net zero challenges of heat, power and transport: recognising what has been achieved and how far there is to go. Each year the Council reports on 3 overarching indicators covering renewable energy, area-wide carbon emissions and council-own carbon emissions.

## Indicator 1 renewable energy

In 2020, renewable energy generation made up **20%** of *electricity* consumption



and **4%** of *energy* consumption.

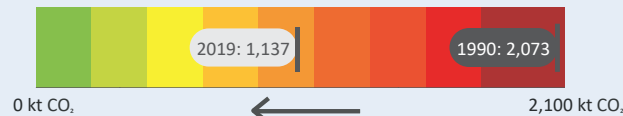


There is **153 MW** of renewable capacity, of which **1 MW** was installed in the past year.

## Indicator 2 area emissions



By 2019, carbon emissions (kt CO<sub>2</sub>) from all sectors had decreased by **45%** compared to 1990 levels.



Between 2018 and 2019, emissions decreased by:

**4.0%**

## Indicator 3 council own emissions

By 2020/21, council own emissions decreased by **71%** compared to 2009/10.



Between 2019/20 and 2020/21, emissions decreased by

**8.3%**

from **10,423** to **9,562** tCO<sub>2</sub>e.

The graphics in this publication summarise the most recent publically available national datasets and were put together by Regen.

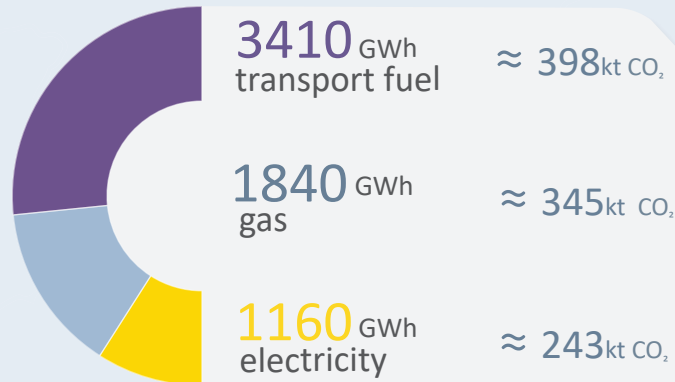
Full sources list and assumptions are available on page 7.

# Energy use and carbon emissions

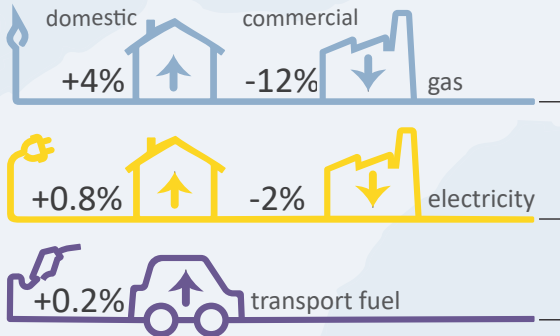
Significantly reducing the amount of energy we use for transport, heat and power is a key step on the path to net zero. This will reduce the amount of renewable and low carbon generation needed to achieve net zero.



In 2019, South Gloucestershire's energy use included:



From 2018 to 2019, total energy use<sup>3</sup> changed by:



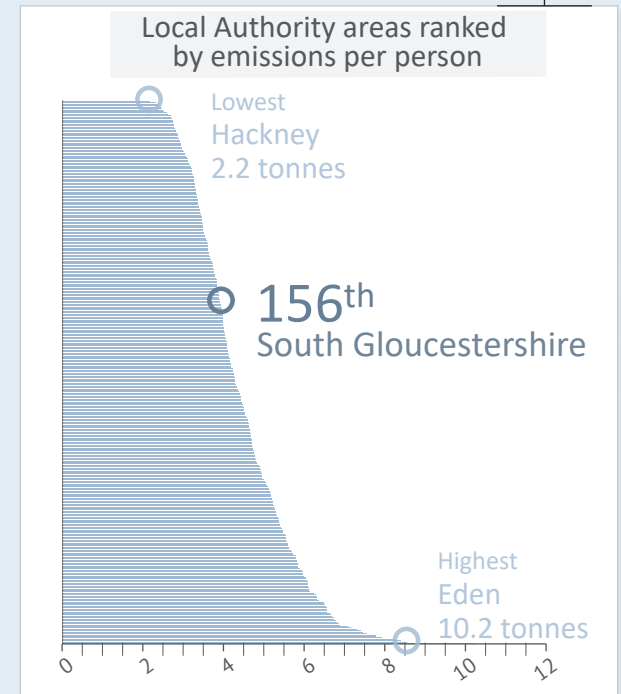
**8** % of households in fuel poverty<sup>1</sup> in 2019  
The UK average was 12.6%

**3.99** tonnes CO<sub>2</sub> per person  
The UK average was 4.64 tonnes

In 2019, area emissions totalled:

**1137** kt carbon emissions including other fuels and agriculture<sup>2</sup>

In the race to zero carbon, that places South Gloucestershire:



CO<sub>2</sub> **46** kt

Which equates to a carbon savings of:

1. Uses the Low Income Low Energy Efficiency (LILEE) metric of fuel poverty

2. Subset CO<sub>2</sub> dataset (excludes large industrial sites, railways, motorways and land-use)

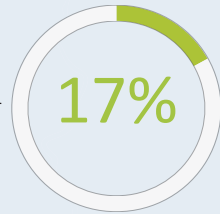
3. Total energy use excludes non-road transport and residual fuels

# Homes and other buildings

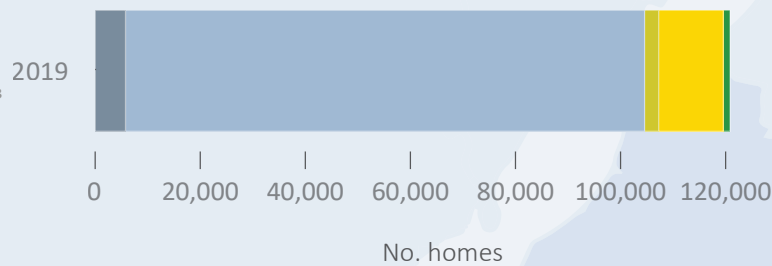
Achieving net zero will require upgrades to nearly every home and business: to keep heat in, to keep energy use low and to switch to low carbon heat sources. It is one of the greatest challenges of net zero, but also one of the greatest opportunities for green jobs.



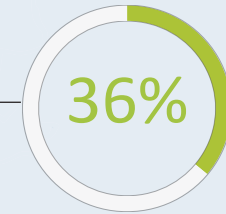
By 2021, the estimated number of homes using low carbon heating<sup>1</sup> in South Gloucestershire was:



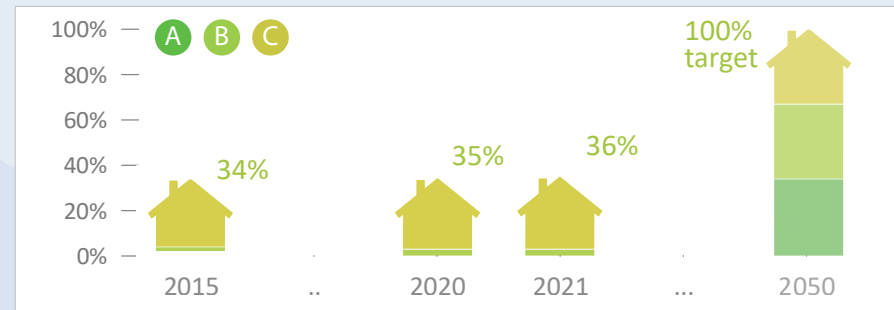
- heat pump
- electricity
- community heating<sup>3</sup>
- mains gas
- oil



The estimated percentage of existing homes<sup>2</sup> with an energy efficiency rating of A, B or C:



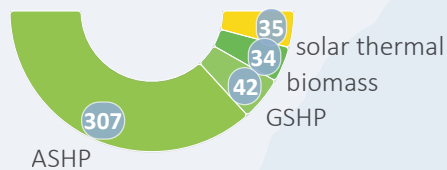
of c.122,000 homes



The number of Renewable Heat Incentive (RHI) installations since 2014 is:

418

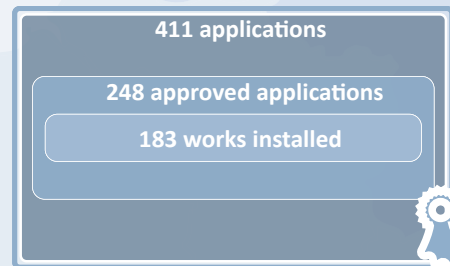
RHI installations



1. Heat pumps, electricity and community heating



Of homes eligible for Green Homes Grant Vouchers, there have been:

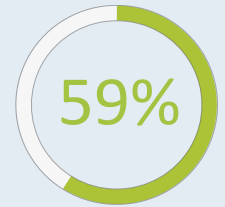


2. Excluding new build properties



Energy inefficient homes (D, E, F, G) use on average around 1.5 times the energy of energy efficient homes (A, B, C), which gives rise to higher bills and carbon emissions. Any EPC rating may still be heated by gas.

Of the 327 non-domestic buildings assessed in 2021, the number with an energy efficiency rating of A, B or C made up:



3. combined heat and power or renewable

# Renewable energy produced

According to the Committee on Climate Change, a UK net zero energy system will require at least 5.8 times more renewable generation than today. New renewable energy projects need to be installed across the UK, from rooftop solar to offshore wind.

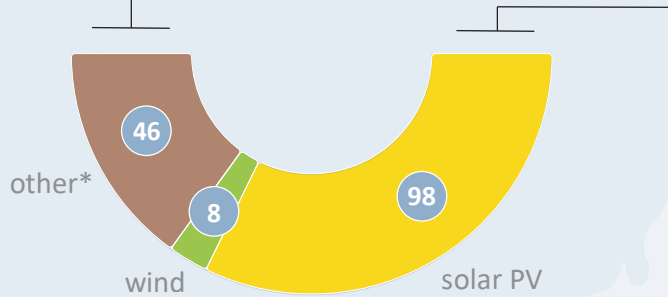


Currently, the local energy capacity in South Gloucestershire includes:

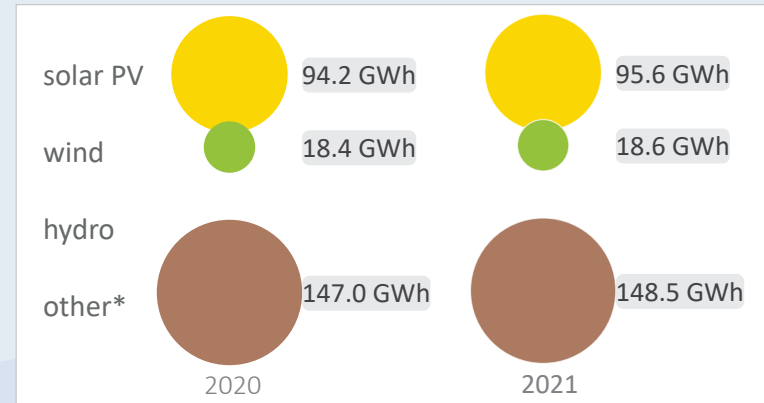
**153 MW** renewable energy capacity

In 2021, South Gloucestershire's local renewable sites generated:

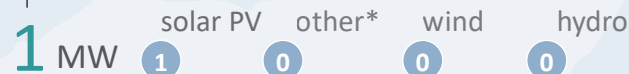
**263 GWh** renewable generation



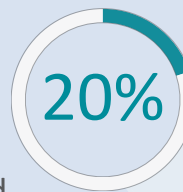
**81 MW**  
fossil fuel<sup>1</sup> capacity still online



In 2021, new renewable capacity installed in South Gloucestershire totalled:



Renewable energy generated in South Gloucestershire is equivalent to:

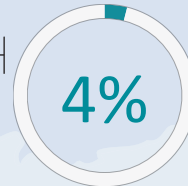


and in the planning system, there are:



**+ 45 MW** battery storage

and



Energy consumption may vary year on year due to external factors such as population growth, change in demand habits, etc.

Electricity consumption is expected to increase along with electrification of vehicles and heating over time.

1. Combined heat and power, diesel, open-cycle gas turbine and energy from waste

2. Excluding non-road transport and residual fuels

# Transport and mobility

A shift to electric vehicles is inevitable in the next decade, with the 2030 ban on new fossil fuel cars and market growth. We must also shift private vehicle use, to active travel and public transport to reduce energy use, tackle congestion and improve air quality and health.

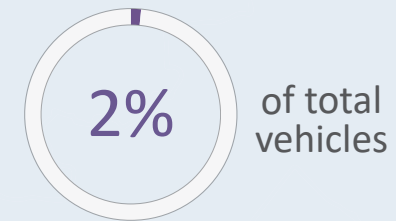
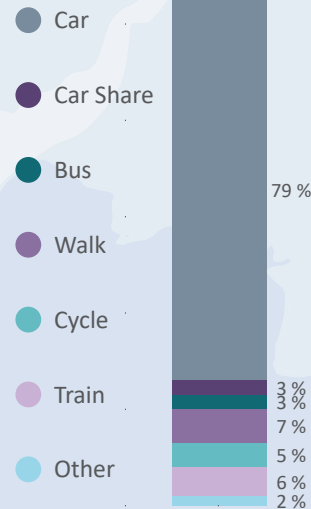
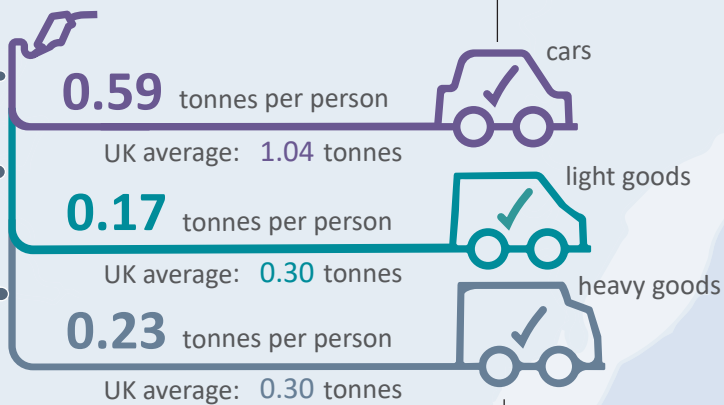


2019 fuel consumption in South Gloucestershire compared to the UK:

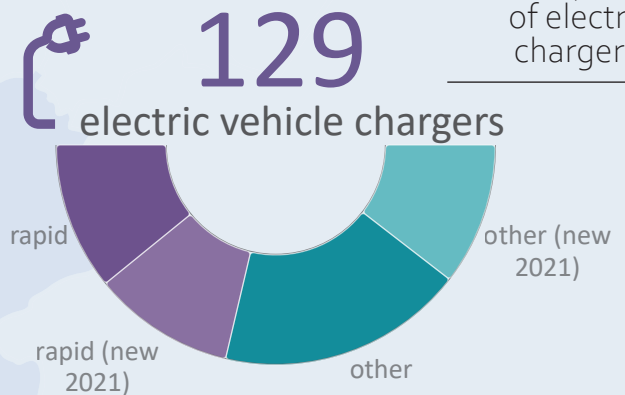
In 2021, mode of travel to work was:

Of South Gloucestershire's vehicles, electric vehicles make up:

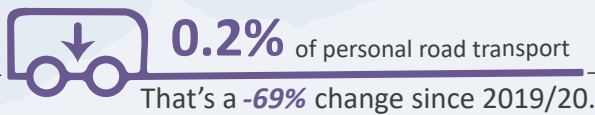
Fuel from cars, light goods, and heavy goods vehicles<sup>1</sup> account for **35%** of South Gloucestershire's total emissions.



In 2021, the number of electric vehicle chargers totalled:



2020/21 bus journey miles were



As a result, compared to the rest of the UK:

transport emissions are **lower** per person than the UK average

Which, when comparing chargers per person to other council areas, South Gloucestershire ranks:

**32<sup>nd</sup>** out of 374 UK councils

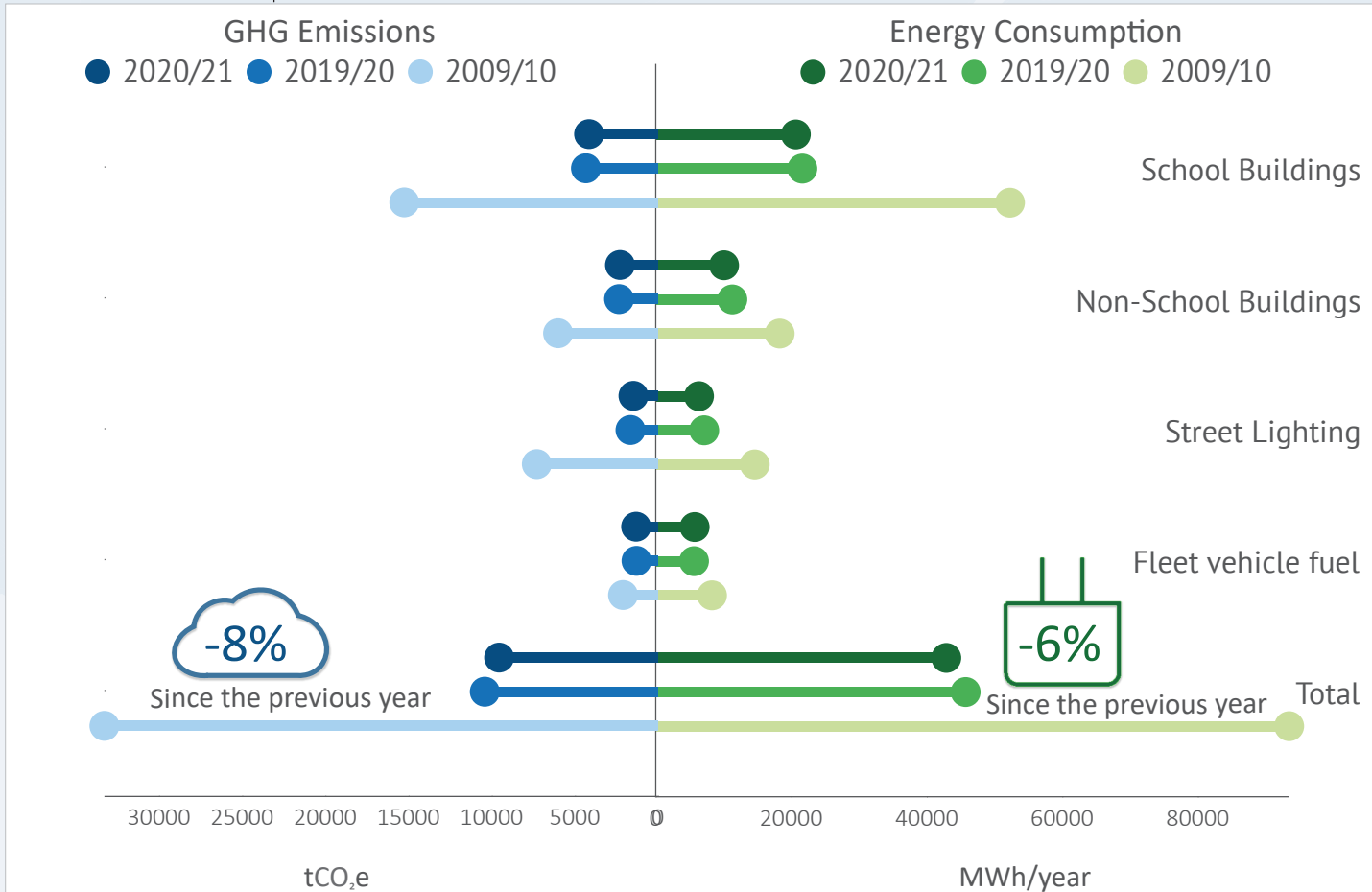
1. Excluding motorways

# Council-owned energy use and emissions

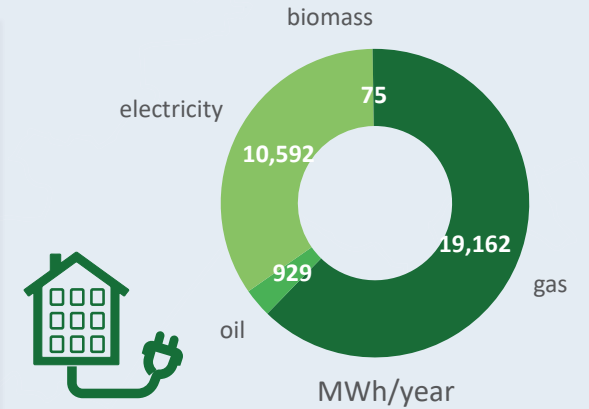
South Gloucestershire Council has set an ambition to become carbon neutral across all council functions by 2030, and joined many councils across the UK by declaring a Climate Emergency in 2019. Tracking council emissions and energy use is a crucial step towards meeting this target.



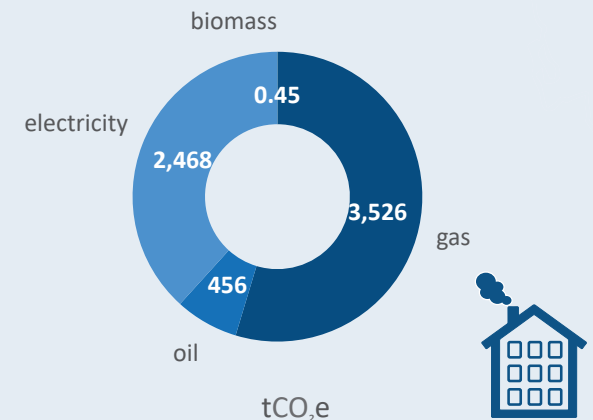
South Gloucestershire Council emissions from energy use in 2020/2021, 2019/2020 and 2009/10 were:



In 2020/2021, energy consumption from council buildings by fuel type was:



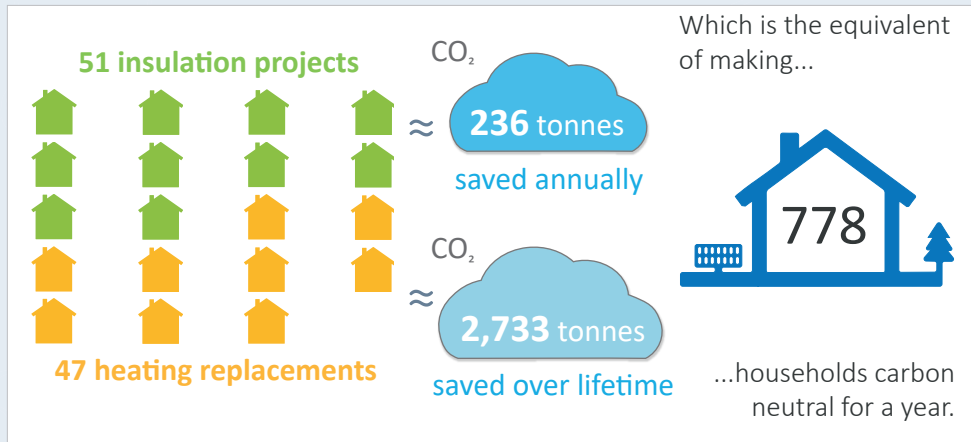
In the same year, resultant emissions from council buildings by fuel type were:



# Warm and Well installations

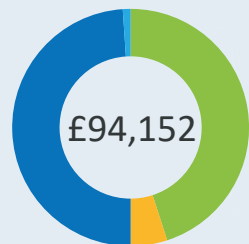
The Warm and Well Scheme has been offering energy efficiency advice since 2001, and has seen the installation of over 60,000 measures since its creation. Home installation projects through the scheme include: wall insulation, boilers, heating systems and solar PVs.

In 2020/2021, the Warm and Well Scheme has resulted in:



The Warm and Well Scheme administers grant funding on behalf of local authorities. In 2021, additional funding accessed came from:

- ECO
- Warm Homes Fund
- LAD
- Better Care Fund



So far in 2021/2022, there have been:



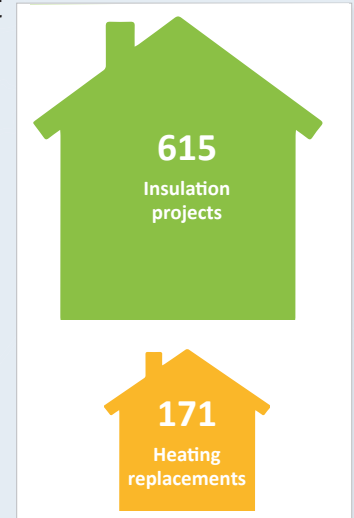
equalling:



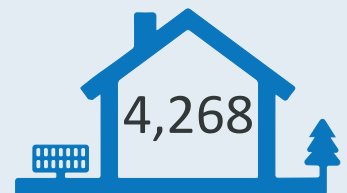
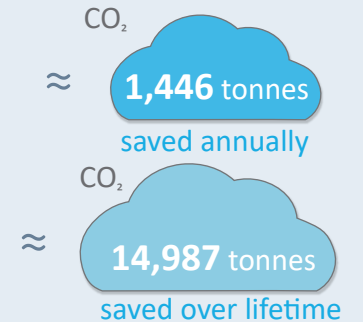
Which is the equivalent of:



Over the past five years there have been:



equalling:



The graphics on each page represent the following datasets, each of which have limitations and have not been validated by Regen. Please refer to the methodology documentation of each source. We welcome questions about the data, its uses and applications, as well as discussions around your data analysis

## About Regen

Regen is a not-for-profit centre of energy expertise and market insight whose mission is to transform the world's energy systems for a zero carbon future.

We believe that;

- the UK will not achieve its net zero ambition without the active engagement of the people and organisations living and working in each of the UK's nations, cities and regions.
- clever uses of data can provide solutions that will help us achieve net zero and support the green recovery in our local areas.

For more about local energy data innovation [click here](#) and for more about the role of local leadership in the energy transformation [click here](#).

This report was produced as part of Regen membership. For more information on membership [click here](#).



### 1

BEIS 2021, Subnational electricity consumption, Great Britain, 2005 - 2020  
 BEIS 2021, Subnational gas consumption, Great Britain, 2005 - 2020  
 BEIS 2021, Sub-national road transport fuel consumption in the United Kingdom, 2005 to 2019  
 BEIS 2021, UK local authority and regional carbon dioxide emissions national statistics: 2005-2019

### 2

Open Data Communities 2022, Energy Performance of Buildings Data: England and Wales  
 MoH 2022, Live tables on EPCs (non-domestic) 2008-2020  
*Assume EPCs recorded in quoted year are representative of region. The data is in reality weighted towards rental properties since they are more regularly assessed and new builds.*  
 National Energy Efficiency Data-Framework, 2018, Tables 27 and 28  
*Comparison of EPC ratings' consumption takes the average of electricity and gas*  
 BEIS 2022, Non-Domestic and Domestic Renewable Heat Incentive (RHI) monthly deployment data (Great Britain): December 2021  
 BEIS 2022, Green Homes Grant Vouchers (GHGV) Statistics

### 3

Sixth Carbon Budget, Committee on Climate Change, Figure 3.4.a.  
 Embedded Capacity Registers database, Jan 2021  
*Only includes distribution connected generation. Note that the dataset is known to have missing data. Weighted averages were taken for per capita CO<sub>2</sub> emissions estimates*  
 Ofgem 2021, FIT Installation report June 2021  
 Ofgem 2020, Microgeneration Certification Scheme 2019  
*attained exceptionally via Freedom of Information request, and valid up to 2019*  
 Ofgem 2020, RHI installation database  
*attained exceptionally via Freedom of Information request, and valid up to 2019*  
 ONS 2021, National Statistics Postcode Lookup Feb 2021  
*Capacity could only be included from Capacity Register where data entry provided a postcode.*  
 Ofgem, Renewables Obligation Register

### 4

Local Authority Population Estimates 2021, ONS  
 Road transport fuel consumption 2005-2019, DfT  
 Conversions factors 2020, BEIS  
*Vehicle emissions 2020 conversion factor: 3179.6 tonnes (Average of diesel and petrol)*  
 Ultra Low Emissions Vehicles Table VEH0132b 2020, DfT  
 Licensed vehicles by body type and local authority Table VEH0105 2020, DfT, Driver and Vehicle Licensing Agency  
*Hybrid vehicles disclosed. 'New' is the increase in registered vehicles, thereby including decommissioning.*  
 Electric vehicle charging device statistics January 2021, DfT  
 Mileage per vehicle type 2019, DfT  
*Assumption that all car miles are made of single commuters, and each bus trip is 4.62 miles (taken from average no. trips = 50, average distance = 231 miles)*  
 Travelwest 2021, Travel to Work Survey: South Gloucestershire Council

### 5

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

### 6

Severn Wye Energy Agency Ltd 2022, Warm and Well Scheme quarterly statistics  
*data provided by South Gloucestershire Council*



The methodology behind the calculations on each page are detailed and justified below. The calculation of certain figures and combination of data sources may be altered based upon bespoke requests. Please get in touch with Regen for any further details or data queries, or email [tionsdalesmith@regen.co.uk](mailto:tionsdalesmith@regen.co.uk)

- 1 Energy use** was derived from local electricity, gas and road transport consumption datasets published by BEIS, excluding residual fuels. This was then compared to the energy use for each dataset in the previous year to calculate the energy use change from the previous year in both domestic and commercial residences. The Latest available data for transport consumption is 2019 compared to 2020 for gas and electricity datasets, and so the year 2019 is taken for all three to allow for comparison. Residual fuels were excluded, as these refer largely to non-road transport and industrial applications that are less likely to be under the sphere of local authority influence.

**Local Authority Emissions** were taken from the subset CO<sub>2</sub> dataset, rather than the full dataset, to exclude emissions deemed to be outside the sphere of local authority influence, such as large industrial sites, railways motorways and land-use. These do not correspond perfectly to the energy use dataset, as some energy consuming activities may not have been included in the CO<sub>2</sub> subset data. Furthermore, the total CO<sub>2</sub> emissions figure will not always total the corresponding energy figures, as the total includes some non-energy related emissions sources, such as agriculture. Per capita CO<sub>2</sub> emissions were also derived from the subset dataset, with large outliers removed. It should be noted that areas have been ranked together regardless of type, urban/rural split, etc.
- 2 Domestic Heat Sources and EPC Ratings** were derived through analysis of EPC data. Duplicate EPC certificates were removed, keeping only the most recent EPC assessment for any given property. For the A, B and C rated homes, certificates issued to new build properties were removed from the analysis to shift the focus to decarbonisation of existing building stock.

**Non-domestic EPC Ratings** were derived from the MoH subnational dataset, and include new build as well as existing building stock.

**RHI and Green Homes Grant Vouchers** were lifted from the respective subnational datasets published by BEIS.
- 3 Renewable Energy Capacity** was calculated based on the previous methodology used for the *South Gloucestershire Renewable Energy Progress Report 2019-20*. This methodology combines capacity data for small-scale installations (thermal and electric) from multiple sources such as the RHI installations report, Microgeneration Certification Scheme (MCS), and the FiT Installations reports. Due to the nature of combining datasets, there may be small variation based on revisions of the datasets and identification of duplicates on a year-by-year basis. Access to RHI and MCS installation data is subject to GDPR restrictions and not guaranteed for future iterations of this report. Large-scale capacity data is retrieved from DFES data, REPD data, and Embedded Capacity Registers, as well as desk research. This is then compared to and checked against the BEIS Subnational renewable electricity dataset.

**Renewable Energy Generation** is derived from the renewable energy capacity totals based on annual average capacity factors for each technology type. Capacity factors are updated annually from BEIS and DUKES. This information is then compared to the average annual energy and electricity consumption respectively for the past three years of available data.
- 4 Tonnes of vehicle fuel consumption per capita** figures were sourced from the road transport fuel consumption dataset from BEIS, coupled with mid-year population estimates from ONS to estimate the amount of emissions per person.

**Road transport emissions** as a percent of total emissions are derived from the CO<sub>2</sub> subset dataset, and exclude motorways and non-road transport.

Bus journey miles were calculated under the assumption that all car miles are made of single commuters and that each bus trip is 4.62 miles on average, taken from average UK bus distance per person per year (231 miles) divided by average number of trips per person per year (50). UK Bus statistics were derived from the National Travel Survey.

**Average transport emissions** were calculated based on the BEIS CO<sub>2</sub> subset dataset, and compared against the local authority average to determine if local authority emissions are higher or lower than the UK average.

**Electric vehicle** statistics as a proportion of vehicles were derived by taking the number of total EVs as a percentage of total cars licenced in the local authority.

**Business travel mileage** and **mode of travel to work** data was provided to Regen by South Gloucestershire Council.

**EV charge point** data from DfT was ranked and analysed to determine the split of rapid and non-rapid devices at the end of the last quarter of the previous year. The proportion of new chargers was also calculated and visualised to give an idea of recent uptake levels compared to historic EV charger capacity. Authorities were then ranked from highest to lowest.
- 5 South Gloucestershire Council** emissions and consumption data can be retrieved from the *South Gloucestershire Council: Local Greenhouse Gas Report (2020/2021)* report.
- 6 Warm and Well** data provided to Regen by South Gloucestershire Council.