Building Energy & Emissions Review 2020-21

In October/November **2021** the UK hosted the 26th Climate Change Conference (COP26) with renewed focus on reducing carbon emissions and climate change. Warwickshire County Council will embed climate change considerations into everything we do, making carbon reduction everyone's responsibility. Climate change will be considered as part of all council decision making including our capital investments and procurement processes. We will ensure we have the right information to enable us to prioritise our decision making based on understanding our own emissions and how this impacts on Warwickshire. We want to reduce the Council's carbon footprint to net zero by 2030 and want to work with all our partners and residents in Warwickshire to support the County to do the same no later than **2050**.

Warwickshire County Council declared a climate emergency in July 2019 and has been working hard to bring carbon emissions down.

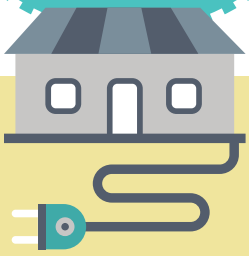
61%
REDUCTION
CO_2 emissions
FROM COUNCIL OPERATIONS
2015 - 2021

Effective building management systems, better property insulation and lighting systems, alongside the disposal of inefficient properties, have all played a part in bringing down WCC's carbon emissions each year since 2015.

One of the main sources of greenhouse gas emissions for Warwickshire County Council is its buildings.

WCC aim to make corporate buildings carbon neutral by
2030
or sooner

WCC aim to reduce total CO_2 emissions from the corporate property estate, per £million gross revenue expenditure, by at least
2.5%



A new contract for electricity which runs from **October 2020** to **September 2024** has allowed WCC to use

Pure Green Energy

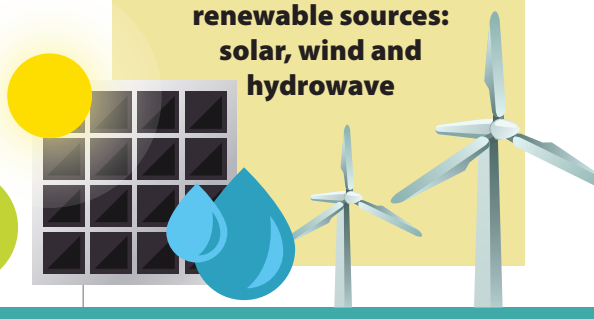
for electricity, which comes from

100%
renewable sources: solar, wind and hydrowave

Gas and electricity consumption down

In the past year, the amount of gas and electricity consumed by WCC buildings, was dramatically reduced, as staff mainly worked from home during the COVID-19 pandemic.

The reduction equates to a significant saving in emissions of between **460** and **490 tonnes** of CO_2.



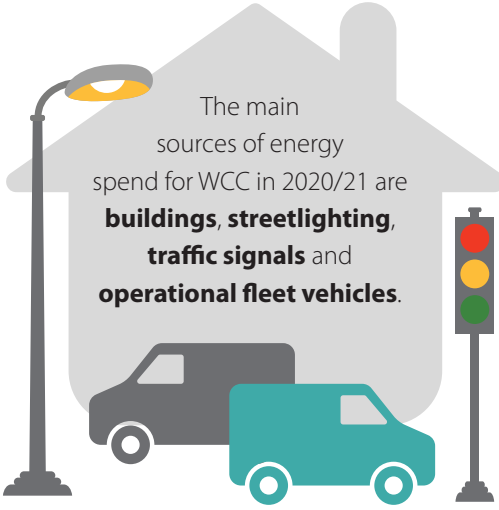
Total energy spend

2020/21 £1,747,419

2019/20 £1,748,193

2018/19 £1,635,004

Even though WCC uses more gas than electricity in its energy consumption, gas only accounts for **29%** of the cost for energy consumed. Electricity accounts for **71%** of the cost but only accounts for **37%** of energy consumption.



Renewable Energy

In 20/21, WCC's energy from renewable sources is equivalent to around **4%** of the total electricity consumption.

WCC will continue to work with partners to access available government funding and investigate financially viable renewable energy projects to invest further in renewable energy generation and low carbon heating.

Overview

DOWN **CO_2**
Total Carbon Emissions in tonnes (t CO_2)
Emissions in the production of electricity continue to fall as more electricity is produced through green technologies.

DOWN **ENERGY**
Total Energy Consumption (gas + electricity kWh)

DOWN **GAS**
Average cost per square metre (£/m²)

DOWN **ELECTRICITY**
Average cost per square metre (£/m²)

DOWN **WATER**
Average use in litres

UP **RENEWABLES**
Zero Carbon Generation (kWh)

CO_2 Emissions Data 2020/21 (Corporate buildings only)

From 1st October 2016 WCC buys Pure Green Tariff Electricity and has continued to do so.

Year	Fuel kWh	No of properties	GIA (m²)	Emissions (t CO_2)	Total Emissions (t CO_2)
2020/21	Gas	68	97,508	1,901	**3,043**
	Electricity	85	99,688	1,141	
2019/20	Gas	71	102,645	2,196	**3,761**
	Electricity	93	110,547	1,565	
2018/19	Gas	67	92,040	1,950	**4,019**
	Electricity	85	107,722	2,069	
2017/18	Gas	65	92,015	2,063	**4,598**
	Electricity	83	100,842	2,535	
2016/17	Gas	67	93,127	1,935	**5,073**
	Electricity	87	101,431	3,138	

Tonnes of carbon dioxide per £m of gross revenue expenditure

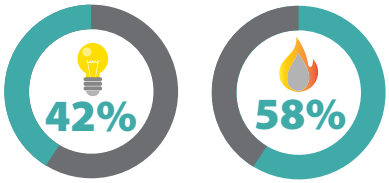
Year	Tonnes CO2/£million Gross Revenue Expenditure	% change since 2014/15	Year on Year Change
2020/21	5.07	-61%	-4%
2019/20	5.92	-55%	-8%
2018/19	6.98	-47%	-4%
2017/18	7.50	-43%	-8%
2016/17	8.52	-35%	-8%
2015/16	9.60	-27%	-27%
2014/15 Benchmark	13.21	0%	0%

There have been significant reductions in carbon dioxide per £million pounds of gross revenue expenditure since reporting began in **2014/15**. Year on year reductions in carbon have naturally slowed since the initial quick wins found through having effective building management systems put in place, better property insulation & lighting systems, and inefficient properties being disposed of through property rationalisation. Moving forward it will be more difficult to find carbon reductions without substantial investment in renewable energy generation and low carbon heating. Reducing our CO_2 emissions by **61%** from **2014/15** levels is a significant achievement. Energy surveys will be needed to identify further investment opportunities. WCC will continue to work with partners to access available government funding to enable further carbon reductions.

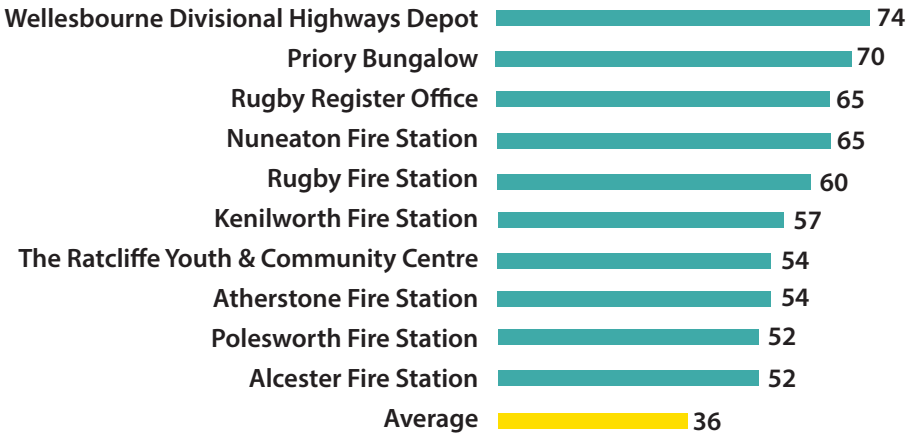
Tonnes of CO_2 Emissions by Year

2020/21	3,043
2019/20	3,761
2018/19	4,019
2017/18	4,598
2016/17	5,073

CO_2 Emissions



Top 10 CO_2 Emmiters per m2



To give context to these values, the average across ALL properties is shown at the bottom in yellow.

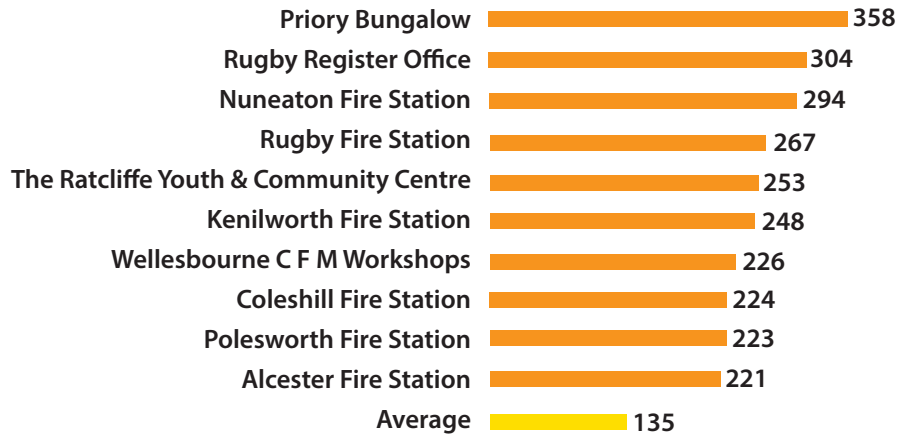
Gas Consumption Data 2020/21 (Corporate buildings only)

Year	No of properties	£/m²	GIA (m²)
2020/21	68	£3.74	97,508
2019/20	71	£4.51	102,645
2018/19	67	£4.43	92,040
2017/18	65	£2.78	94,622
2016/17	64	£3.45	90,062

kWh of Gas Consumption by Year

2020/21	10,379,711
2019/20	11,942,414
2018/19	10,621,311
2017/18	11,570,990
2016/17	10,698,020

Top 10 Consumers of Gas per m2



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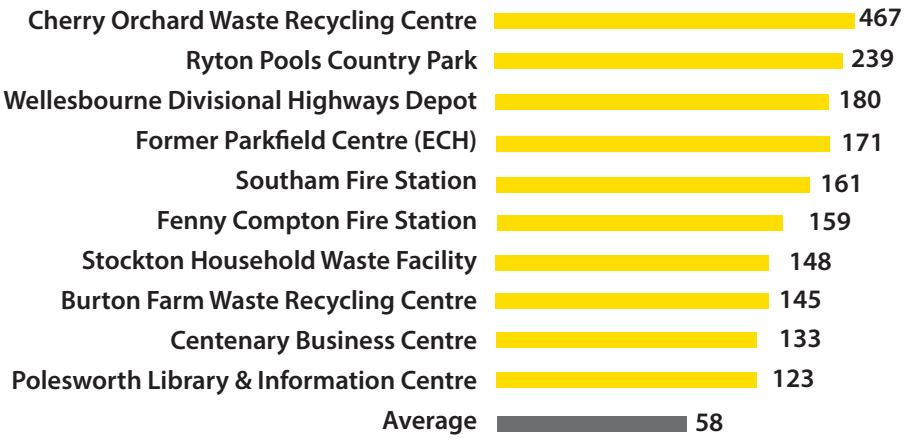
Electricity Consumption Data 2020/21 (Corporate buildings only)

Year	No of properties	Av £/m²	GIA (m²)
2020/21	85	£9.30	99,688
2019/20	93	£10.15	110,547
2018/19	85	£7.61	107,722
2017/18	83	£7.33	105,650
2016/17	87	£7.00	106,257

kWh of Electricity Consumption by Year

2020/21	5,377,929
2019/20	6,701,059
2018/19	6,786,313
2017/18	6,847,403
2016/17	7,303,922

Top 10 Consumers of kWh of Electricity per m2



To give context to these values, the average across ALL properties is shown at the bottom in grey.

Low & Zero Carbon Technologies

Renewable energy installations

Year	Total installed declared net capacity (kWp)	Generation (kWh)	Net on site consumption (kWh)
2020/21	284	229,556	140,137
2019/20	284	211,273	156,064
2018/19	284	251,833	181,251
2017/18	284	218,796	164,860

Total avoided carbon dioxide emissions (tonnes)

2020/21	**54**
2019/20	**54**
2018/19	**51**
2017/18	**58**

WCC's Electricity is **100%** RENEWABLE ENERGY from October 2016

The new contract with ESPO for electricity procurement runs from **1st October 2020** to end of **September 2024**. TotalEnergies (formally Total Gas & Energy) supplies electricity for this contract.

Through this contract WCC procured 'Pure Green Energy' for an extra **0.05p/kWh**. Next year the premium will increase to a minimum of **0.075p/kWh** and is subject to change annually. Pure Energy comes from **100%** renewable sources (solar, wind, and hydro/wave but doesn't include biomass).

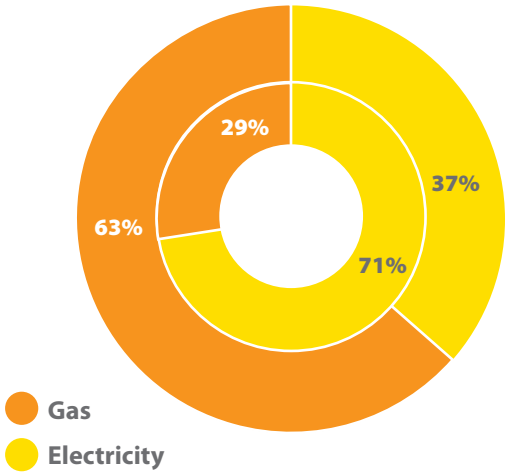
Water Consumption Data 2020/21
(Corporate buildings only)

m³ of Water Consumption by Year

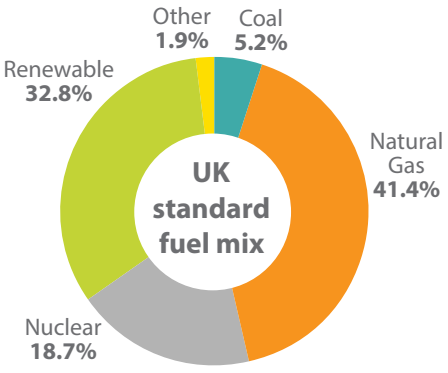
2020/21	**182,374**
2019/20	**204,140**
2018/19	**217,490**

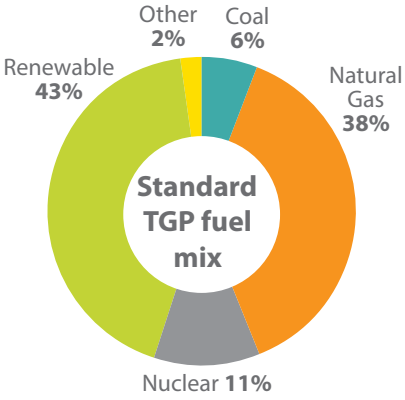
Consumption vs Cost

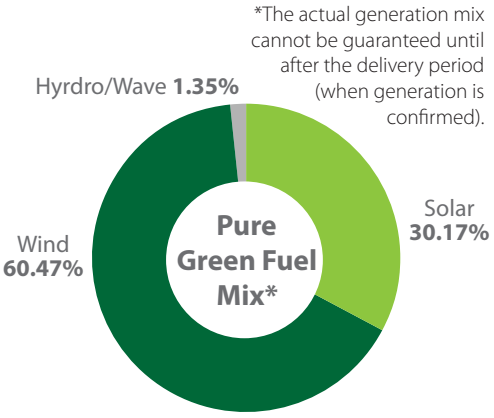
Inner Ring Cost (£)
Outer Ring Consumption (kWh)



Pure green generation mix compared to standard fuel mix







*The actual generation mix cannot be guaranteed until after the delivery period (when generation is confirmed).

Recommendations for further investigation

Gas investigation (G) Top Four Gas Consumers per m²	Electricity investigation (E) Top four Electricity Consumers per m²
Priory Bungalow	Cherry Orchard Household Waste Recycling Centre
Rugby Register Office	Ryton Pools
Nuneaton Fire Station	Wellesbourne Divisional Highways Depot
Rugby Fire Station	Former Parkfield Centre