Appendix 1

Wiltshire Climate Strategy Discussion Document

Executive summary

This document is a precursor to a new Wiltshire Climate Strategy. It is not a strategy in itself but provides an overview of the scale of the challenge and the opportunities ahead, as a basis for discussion.

The council has declared a climate emergency, committed to becoming carbon neutral as an organisation by 2030, and to seeking to make the whole of Wiltshire carbon neutral too. This will enable the county to seize the opportunities of a green economic recovery, generating thousands of new jobs (Figure 7.14) and bringing significant health and financial co-benefits to residents.

Globally the planet is one degree warmer than before the industrial revolution and this is already causing significant climate impacts. While we try to reduce the effects and impacts of climate change, Wiltshire Council also needs to adapt to a changed climate.

Government has pledged to reduce national emissions by 68% by 2030 and for the UK to become carbon neutral by 2050.

Government data (Figure 5.1) shows that the key sources of CO_2 emissions in Wiltshire are: transport (45%); industry, commercial and agriculture (29%); and homes (26%). Electricity has been a key focus for decarbonisation nationally, with continued decarbonisation needed. However, electricity accounts for only 19% of energy use (Figure 5.4), and more than a quarter of Wiltshire's energy consumption is for heating using natural gas, with heating oil also widely used in rural areas. Decarbonisation of heat and transport is therefore key.

Wiltshire's existing renewable energy installations, of which 85% are solar photovoltaics (PV), have the capacity to supply around one third of the county's electricity requirements. Wiltshire Council directly accounts for only 0.5% of the county's emissions but it can use different levers of influence (Figure 4.1) to effect change across a much larger proportion of the county's emissions, e.g. through supply chains, planning, employee travel, council housing and working with schools and residents.

Section 5 sets out Wiltshire's carbon budget and trajectories (Figure 5.5) and Section 6 explains how we have listened to your views to date and commits to further engagement and consultation on this agenda.

Section 7 sets out the challenges and opportunities in relation to carbon reduction and climate resilience ahead against six delivery themes:

- Transport and travel
- Built environment
- Energy generation, storage and distribution
- Green and circular economy
- Natural environment, land use and farming
- Carbon neutral council

For each theme, we have listed the types of action the council could take using its levers of influence, as a starting point for discussion. Figure 7.19 shows that by last year the council's emissions had more than halved, from 23,758 t CO_2e in 2014/15 to 11,641 t CO_2e in 2019/20. Projected emissions in 2020/21 are 79% lower than 2014/15.

Finally, we set out the council's governance arrangements, risks to the climate programme and next steps, calling for you to send us your feedback on this document.

Contents

1. Aims of this document

1. This document is a precursor to a new Wiltshire Climate Strategy. It is not a strategy in itself, but provides an overview of the scale of the challenge and the opportunities ahead, as a basis for discussion. It will be published on the council's website, and feedback on this document will shape the draft strategy before it is formally consulted on later this year.

2. The document is based on initial findings from the available evidence base and articulates what **carbon neutral** and **climate resilience** looks like for Wiltshire.

3. Since Wiltshire Council has made a firm commitment to becoming a carbon neutral council by 2030, there is a focus on reducing carbon emissions from its operations and property. However, the council also has an ambition for the county of Wiltshire to become carbon neutral. This will require coordinated action by the public sector, businesses, voluntary sector and residents working together towards a shared goal.

4. This discussion paper therefore aims to stimulate conversations with all stakeholders about the priorities and resources required to achieve a carbon neutral Wiltshire as well as the role the council should play.

2. Climate impacts and adapting to climate change

5. Climate change due to human influences is acknowledged as a threat to life. Globally the planet is one degree warmer than before the industrial revolution and this is already causing significant climate impacts. UK Climate Projections (UKCP) from the Met Office suggest that without any action we are heading for a 4°C rise in global mean surface temperature. This high emissions scenario (following current levels of emissions growth) is projected to cause disruptive changes to our weather patterns and sea levels in the UK (Figure 2.1), with more serious consequences internationally.

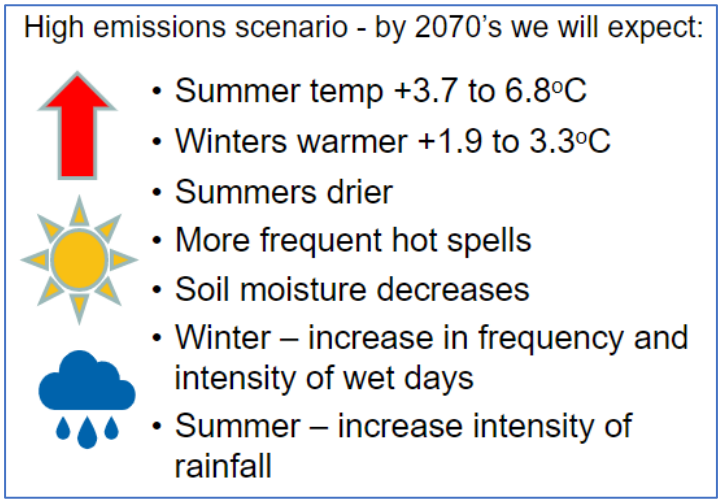

Figure 2.1. Predicted changes in the UK. Data source: UKCP Global – Low Emissions Scenario (RCP2.6) and UKCP Headline Findings (2019)

6. The United Nations Paris Agreement commits signatories to limiting global average temperature increase to 2°C goal, whilst striving to achieve a 1.5°C limit. A 2°C increase is acknowledged as the level which we must not overshoot. The latest Intergovernmental Panel on Climate Change special report on the impacts of global warming show that even the effects of a 2°C rise are significantly worse than a 1.5°C rise.

7. The UK Government legal target (incorporated in the Climate Change Act 2008) to become carbon neutral by 2050 is designed to keep us below 2°C, and ideally we would reduce our carbon emissions sooner, so that we can keep below a 1.5°C rise (for more information, refer to the Met Office).

8. While we try to reduce the effects and impacts of climate change, Wiltshire Council also needs to adapt to a changed climate. Our new Climate Strategy and an updated Climate Change Adaptation Plan will include objectives to help us cope with a scenario based on a 2°C temperature rise.

9. The existing Climate Change Adaptation Plan assessed the implications of climate change in Wiltshire and put in place measures to protect residents and businesses from its impacts. Many of the actions are ongoing and involve a range of partners. The plan is due to be reviewed and engagement on the Climate Strategy will help to guide and inform the review.

3. Towards carbon neutral: Our overall challenge

10. In February 2019, the council declared a climate emergency and committed to seek to make the county of Wiltshire carbon neutral by 2030. To this end, in July 2019, Wiltshire Council pledged to become carbon neutral by 2030. The pledge relates to the council's carbon emissions (or 'carbon footprint') that are within its direct control, i.e. those from its operations and buildings. In order to fulfil this commitment, the council's carbon footprint will be drastically reduced compared with its current footprint and any residual emissions will be offset.

3.1 Defining carbon neutral and net zero

11. 'Net zero carbon emissions' or 'net zero carbon' is conceptually the same as **carbon neutral**, though there are some different technical specifications in use. Carbon neutral means to result in no net release of carbon dioxide (CO_2) into the atmosphere and should take into account schemes which offset carbon production.

12. When we talk about 'carbon' emissions this means the full range of greenhouse gases unless stated, and these emissions are measured as carbon dioxide equivalents (CO_2e).

3.2 National policy

13. According to the most recent report from the UK Committee on Climate Change (CCC Sixth Carbon Budget Report, December 2020) we still have the opportunity to turn the situation around and it is achievable, and affordable.

14. This report and other studies show that many of the solutions we need are already developed. We therefore need to base our immediate action on existing technology and solutions, while innovating for the longer-term solutions. The UK Government's Ten Point Plan for a Green Industrial Revolution sets out intentions for the economic recovery post Covid-19, and puts supporting green jobs and the net zero carbon goal at its centre.

15. Many of these measures will deliver 'co-benefits', for example the reduction in fossil fuel use will decrease air pollution as well as carbon emissions. While trees are absorbing carbon dioxide from the air, the woodlands created will also boost wildlife and provide accessible green spaces which is of proven benefit to health and wellbeing.

16. National policy is changing rapidly in the run up to the COP26 to be held in Glasgow in 2021, when the commitments from all countries who have signed up to the Paris Agreement will be reviewed. As the host nation, the UK is seeking to provide ambitious leadership.

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dioxide from the air, the woodlands created will also boost wildlife and provide accessible green spaces which is of proven benefit to health and wellbeing.

National direction of travel

The 10 Point Plan and the Sixth Carbon Budget report indicate that the national route towards carbon neutral is likely to include:

- Vehicles will be electric, though mileage is not predicted to fall significantly, with potential savings of £8bn / year to consumers by 2035
- Journeys by public transport, walking and cycling will need to increase.
- Growth in air travel and related infrastructure is curbed by 6%, but could increase again as low-carbon planes become viable
- Emissions from flights will be offset by tree-planting – funded by airlines, making flights more expensive
- Energy will be renewable, with a significant amount from offshore wind. Hydrogen and nuclear will also be part of the mix nationally.
- Electricity use will increase as transport and heat are electrified, and grid infrastructure will be updated to enable decentralised and smart energy generation and storage technologies
- Homes will be more energy efficient, costs being offset by energy savings. Gas boilers will be phased out and new homes will be required to have low-carbon heating such as heat pumps
- Low carbon industries, such as those building renewable energy installation or retrofitting homes with new technology, will create thousands of jobs throughout the UK
- Supply chains will help to decrease the carbon produced directly and indirectly by what we buy and consume
- Research and innovation will focus on developing clean solutions to shipping and aviation, and carbon capture, usage and storage technology
- Consumption of meat and dairy will need to decrease by about 20% by 2030 rather than a complete move to meatless diets, as long as reduction in emissions in other areas is achieved
- The UK will have a 40% increase in woodland areas. Some will be accessible, some will be commercial forest, some will be protected for nature
- Food production will need to be increased and more efficient, while farms will be supported to help fight climate change and increase biodiversity
- Nature recovery initiatives and the Environmental Land Management scheme help to sequester carbon, reduce flood risk and provide green places for people and wildlife

4. Climate Strategy - Our approach

18. Since Wiltshire Council acknowledged the climate emergency in February 2019, a Councillor Task Group was set up and provided recommendations on ways to reduce carbon emissions, while individual council services started looking at their role. A new Climate team was formed in 2020.

19. Our new strategy will be a basis for county-wide efforts towards achieving carbon neutrality. It will provide a steer and help to prioritise the big wins for carbon emissions reduction and climate resilience. It will not be a delivery plan but will inform further detailed plans and projects.

20. While preparing the strategy, Wiltshire Council will also be working to reduce its emissions as an organisation. In addition, we will be seizing opportunities to implement wider initiatives in areas that we already know will be significant for our pathway towards carbon neutral. These are 'no regrets' initiatives, that can be started as soon as resources allow. Even though we still need to refine our understanding of emissions, impacts and possible solutions, we will not wait to start work on delivery.

21. Information on what the council is already doing to combat carbon emissions and become resilient to climate change can be found in our twice-yearly updates to Wiltshire Council's Cabinet and Full Council.

22. The council will reduce emissions within its direct control and will also use a range of 'levers of influence' – from regulatory powers, to influencing and working in partnership - to have a much wider impact, as Figure 4.1 shows.

Figure 4.1 Local authority levers of influence

4.1 Principles

23. Wiltshire Council's Climate Strategy will:
    - Be evidence based – using the best available science and analysis, while working to increase knowledge in areas where there are gaps
    - Follow the Greenhouse Gas Hierarchy, using offsetting as a last resort – see Figure 4.2
    - Be equitable – ensuring the transition to low carbon, climate resilient future is fair
    - Embed climate considerations in decision-making
    - Deliver co-benefits – valuing and making the most of the win-wins

24. A central part of the strategy will be to set out the baseline of carbon emissions and articulate the scale of the challenges and opportunities.

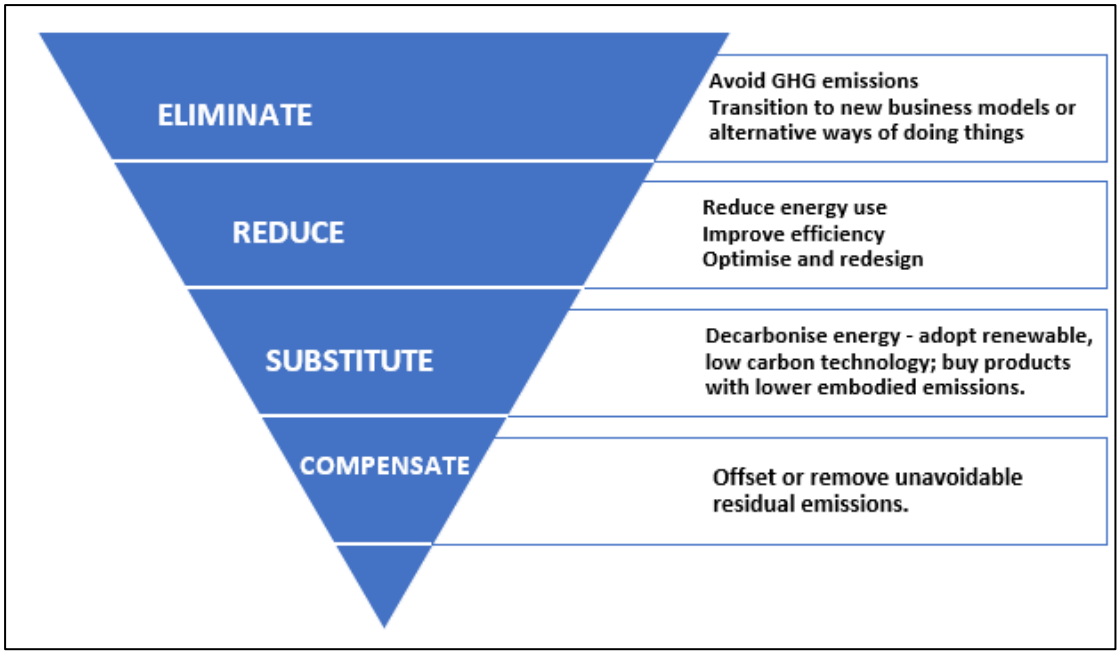


Figure 4.2 The Greenhouse Gas (GHG) Hierarchy

5. Understanding Wiltshire's emissions

5.1 Where we are now?

25. To reduce emissions and work towards making Wiltshire carbon neutral, we first need to understand where those emissions come from and their extent.

26. Figure 5.1 provides an overview of the main sources of emissions, with transport taking up the largest share at 45%. Industry and homes make up the remainder. Wiltshire's total carbon emissions in 2018 totalled 2,694 $ktCO_2$. Wiltshire Council's emissions in 2019 amounted to 13 $ktCO_2$ – equivalent to approximately 0.5% of the county's 2018 emissions.

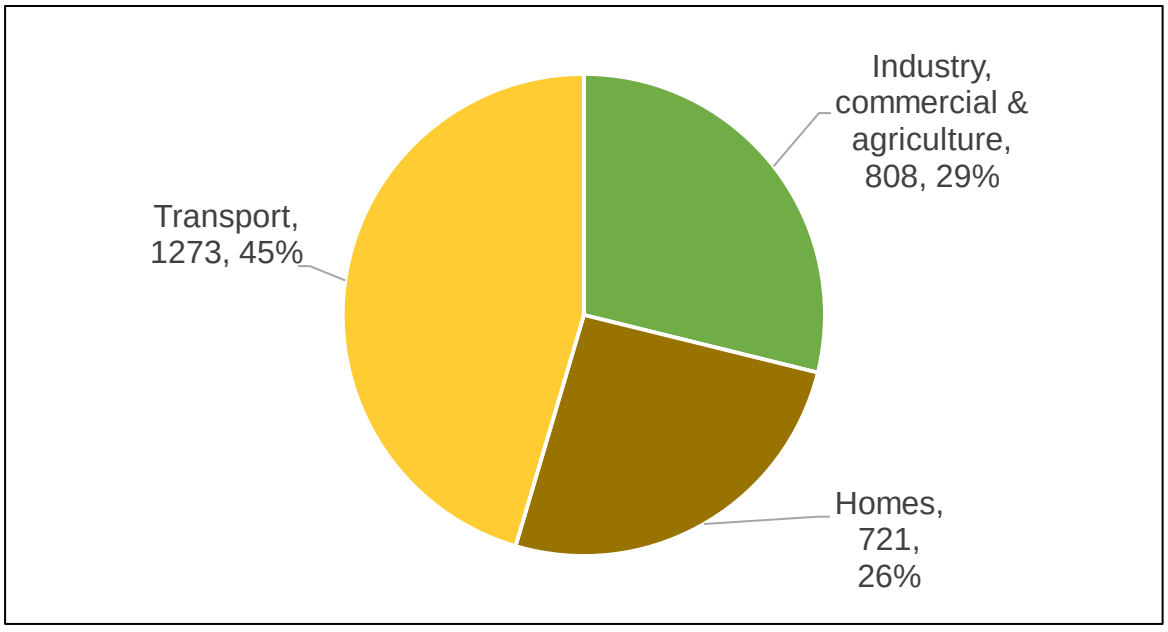


Figure 5.1 Wiltshire emissions by source (ktCO2, BEIS LA data)

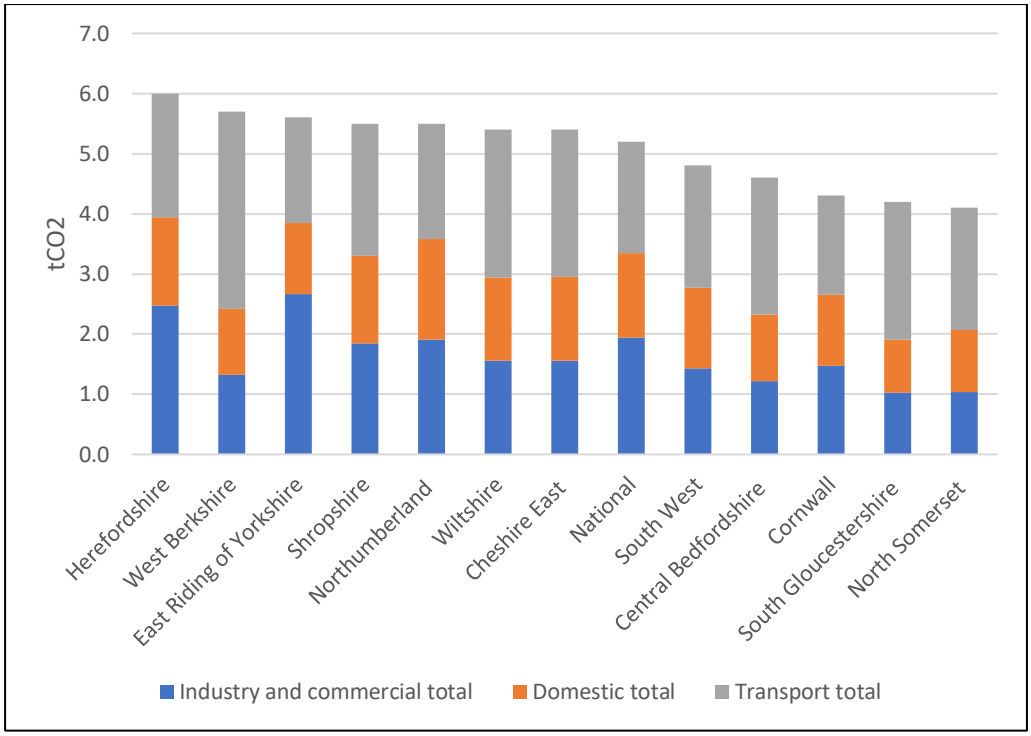


Figure 5.2 Per capita emissions split by sector (BEIS, LA data 2018)

27. Figure 5.2 shows Wiltshire's emissions per person per year for 2018 and gives an idea of our position compared with the regional/national averages and with similar local authorities (CIPFA statistical neighbours), and Figure 5.3 shows the changes in emissions per person per year in Wiltshire compared to the South West and nationally.

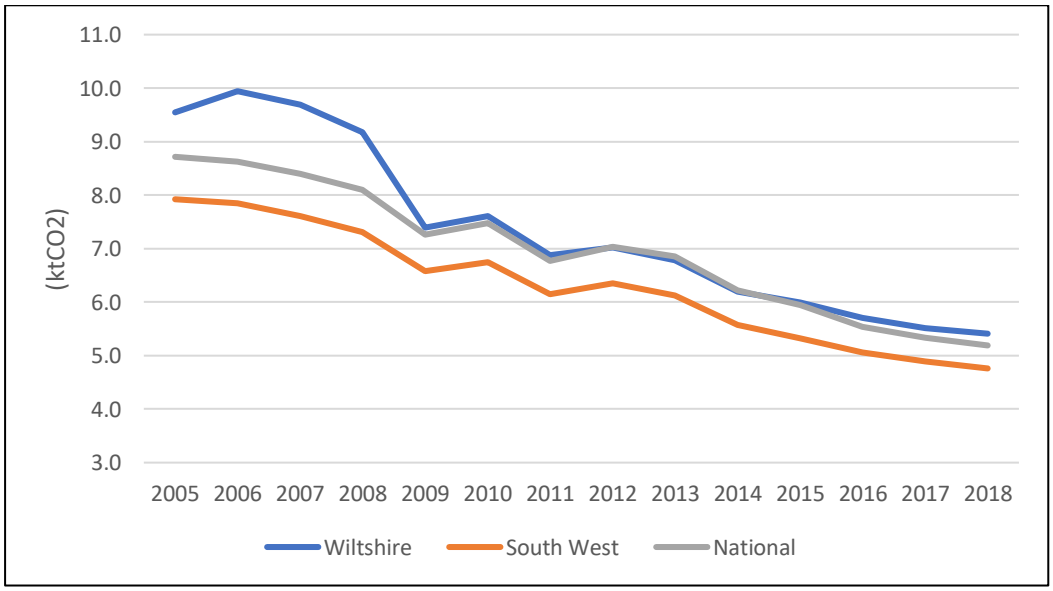


Figure 5.3 Wiltshire, South West and National emissions per capita

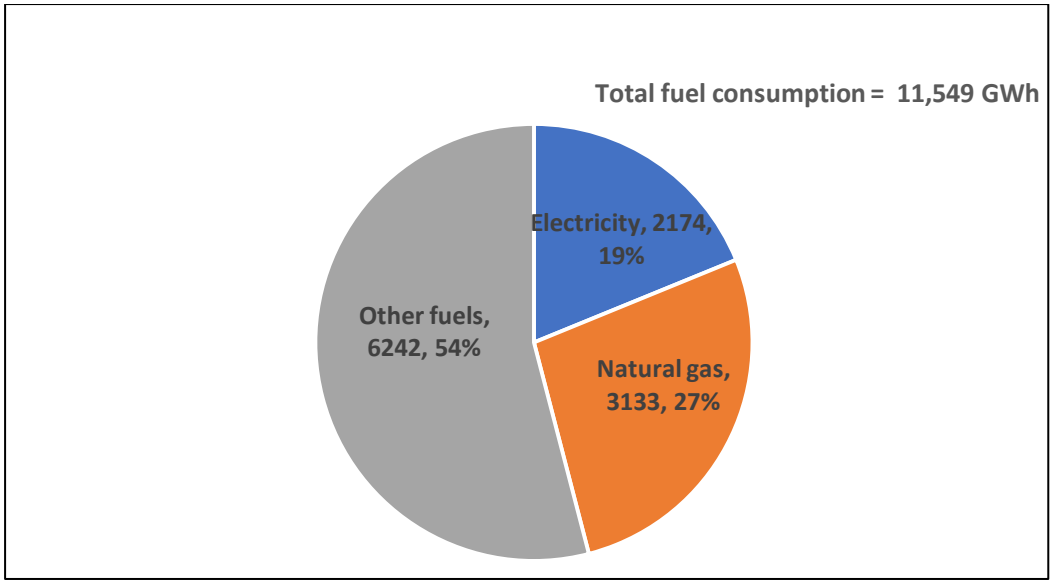


Figure 5.4 Wiltshire energy consumption in GWh (2018) Source: Total final energy consumption at regional and local authority level: 2005 to 2018 - GOV.UK (www.gov.uk)

28. Figure 5.4 shows Wiltshire's energy consumption in 2018. Over half of energy consumption is for "other", encompassing coal, biomass, manufactured and liquid fuels - of which transport accounts for the largest proportion. 27% is natural gas, mainly used for heat. While electricity has been a key focus for decarbonisation, it currently accounts for only 19% of energy use. This proportion is expected to grow as transport and heat are electrified.

29. Figure 5.5 shows that in 2019, Wiltshire's renewable electricity generation accounted for 680 GWh, supplying just under one third of the county's electricity demand (2172 GWh). This is equivalent to approximately 6% of our total energy demand[1].

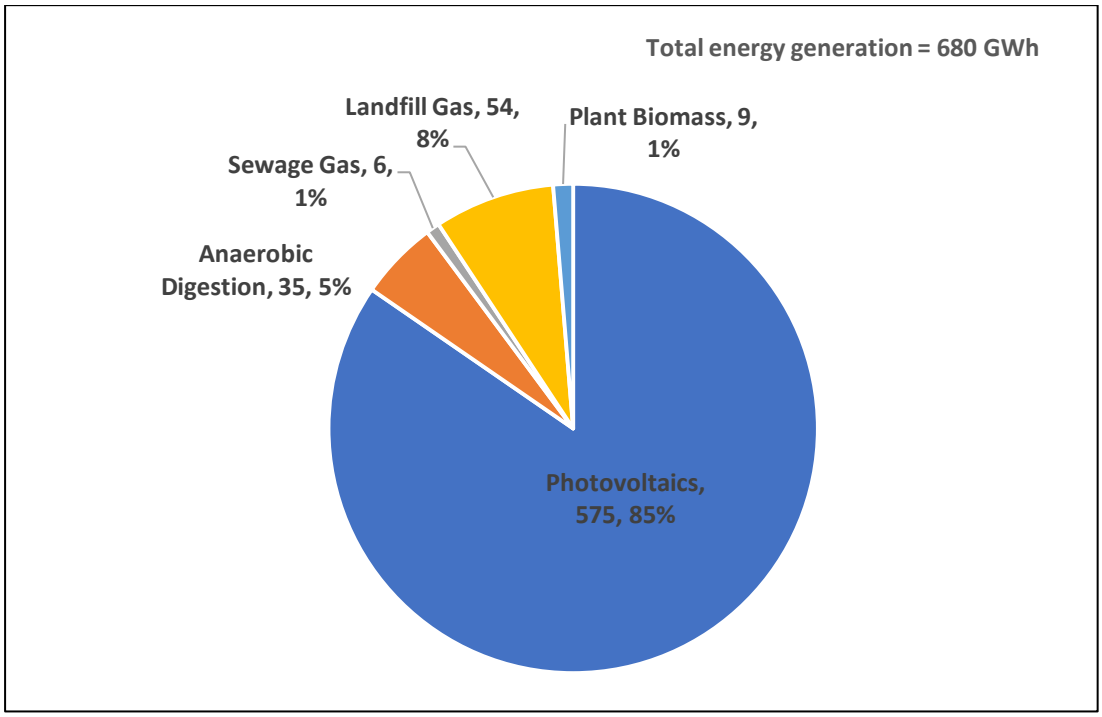


Figure 5.5 Wiltshire renewable energy generation in GWh (2019) Regional Renewable Statistics – GOV.UK

[1] Based on 2018 consumption as 2019 data is only available for electricity

5.2 Our baseline, carbon budget and trajectory

30. Wiltshire's emissions will be measured against a 2005 baseline, as this was the first reporting year by the Government's Department for Business, Energy and Industrial Strategy (BEIS). The orange line in Figure 5.6 shows that significant reductions have been achieved since 2005, in line with the national trend. Key factors driving these reductions have been improvements in energy efficiency and steady decarbonisation of the electricity grid, as renewables account for an ever-increasing proportion of all generation.

31. The Tyndall Centre trajectory in grey relates to reductions based on a science-based target and carbon budget - with the aim to limit global temperature increase to well below 2°C above pre-industrial levels. There is only a finite amount of carbon dioxide that can be emitted if we are to avoid irreversible and very damaging climate change, and we must use that allowance in the best way possible. The key issue is to minimise the total amount of carbon dioxide and other greenhouse gases released into in the atmosphere (represented by the area under the graph on Figure 5.6), so a steeper reduction in emissions (the grey or yellow line) results in fewer total emissions than a slower reduction (light blue line).

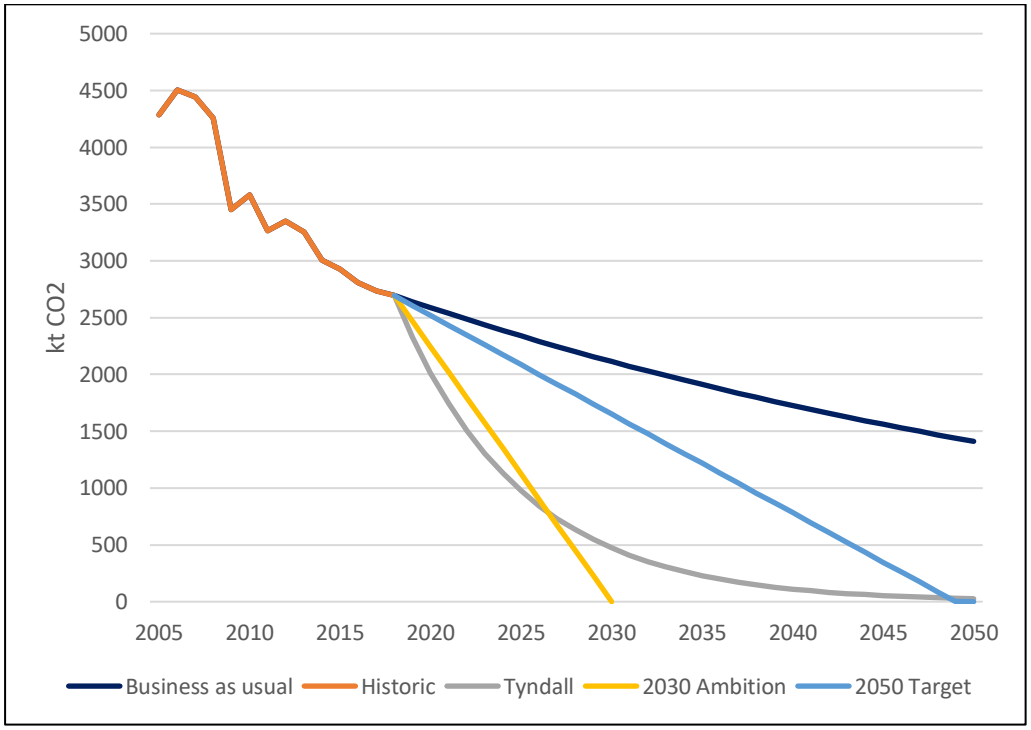


Figure 5.6 Carbon reduction pathways for Wiltshire county, 2005-2050

32. On the 4th December 2020 a new plan was announced by the government setting the UK on the path to net zero by 2050. The plan aims for at least a 68% reduction in greenhouse gas emissions by 2030, compared to 1990 levels. The Wiltshire trajectory indicated in Figure 5.6 would align with this.

33. As the graphs show, and as we are constantly reminded through the media, there is a need for significant and radical cuts in carbon emissions to be sure we can reach the target. This will take considerable efforts by Wiltshire Council, residents and all businesses and organisations operating in the county, as well as central government. We have already started to have conversations with organisations and the next section sets out what we are hearing so far.

6. Listening to your views

34. It is crucial for the council to engage widely in order to be able to deliver on the climate agenda. Some engagement has already taken place:

- The council's Global Warming and Climate Emergency Scrutiny Task Group has gathered the views of a wide range of stakeholders since June 2019.
- The Climate team has held initial engagement meetings with stakeholders August - December 2020: environmental groups; public sector partners including town and parish councils; Swindon and Wiltshire Local Enterprise Partnership; Covid recovery partnership groups.
- A survey of more than 6000 residents was carried out in autumn 2019 and showed that environmental priorities featured high for their area as did antisocial behaviour and highway maintenance – see Figure 6.1

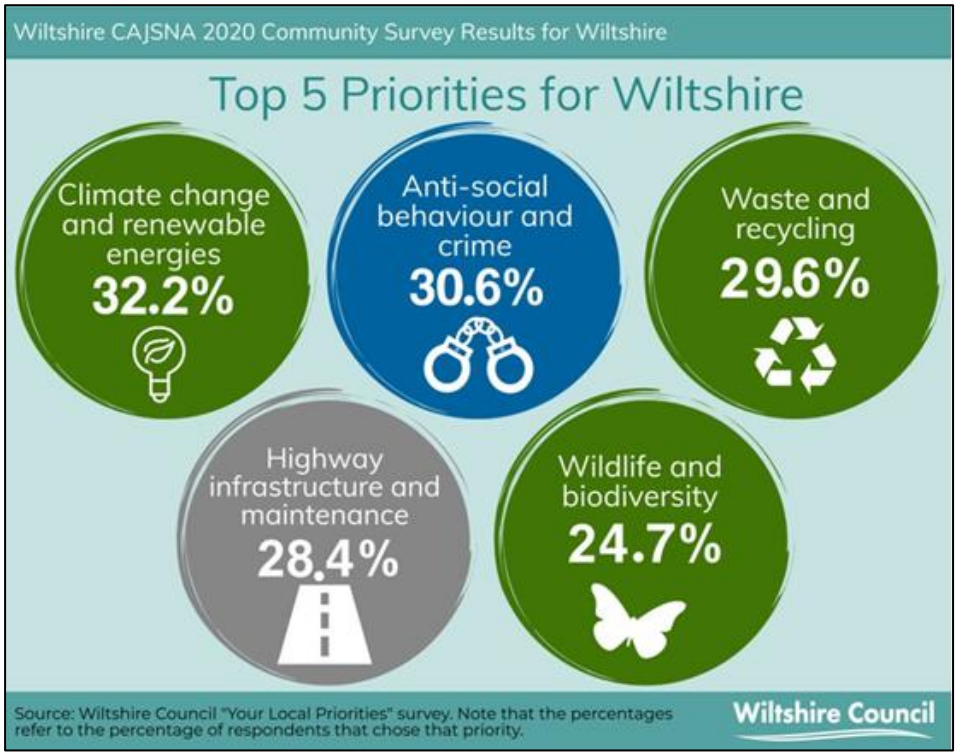


Figure 6.1 Wiltshire Community Area Joint Strategic Assessment 2020

35. The council can also draw on the recent report from the national Climate Assembly. Their report, *The Path to Net Zero*, shows how a representative sample of the population believe the UK should meet its net zero emissions commitment. There are many detailed recommendations across ten areas including: how we travel; what we eat and how we use the land; what we buy; heat and energy use in the home; how we generate our electricity; and greenhouse gas removals.

36. The report conveys assembly members' agreement on themes that recurred throughout their discussions, on the need for:

- improved information and education for all on climate change;
- fairness, including across sectors, geographies, incomes and health;
- freedom and choice for individuals and local areas;
- support for protecting and restoring nature;
- realising the value of 'co-benefits' to tackling climate change

37. Figure 6.2 shows a snapshot of some of the detailed recommendations.

Figure 6.2 Summary of recommendations from the national Climate Assembly

38. Further engagement and consultation with stakeholders throughout Wiltshire is planned June-October 2021 to develop the climate strategy, and a new 'Climate and Environment Forum' will enable continuous engagement and sharing of knowledge and experience in the journey towards net zero in Wiltshire (see Section 8).

7. Delivery Themes

39. The following sections set out our thinking so far in relation to the 'Delivery Themes', which are:
    1. Transport and travel
    2. Built Environment
    3. Energy generation, storage and distribution
    4. Green and circular economy
    5. Natural environment, land use[2] and farming
    6. Carbon neutral council

[2] Refers to activity, vegetation or habitats on the land surface, rather than development use classes

7.1 Transport and Travel

Where we are now?

40. According to the government's Department for Transport (DfT), in 2016 transport became the largest emitting sector of greenhouse gases in the UK. This also applies to Wiltshire where 45% of GHG emissions are transport related (Figure 5.1).

41. DfT's analysis shows that road traffic is the biggest source of emissions within domestic UK transport, providing 91% of the total transport emissions. Wiltshire is a rural county, so car use is even more prevalent for most residents. 87% of personal trips in rural areas are made by car or van; 78% in urban areas (DfT). The county has over one third of a million vehicles (290,000 cars and 50,000 vans) for a population of half a million (DfT data 2020). However, balanced against this the 2011 Census evidenced that 15% of Wiltshire households did not have access to a car or van.

42. Almost 4 billion miles were driven on Wiltshire roads in 2019 (Figure 7.1), contributing to this national figure.

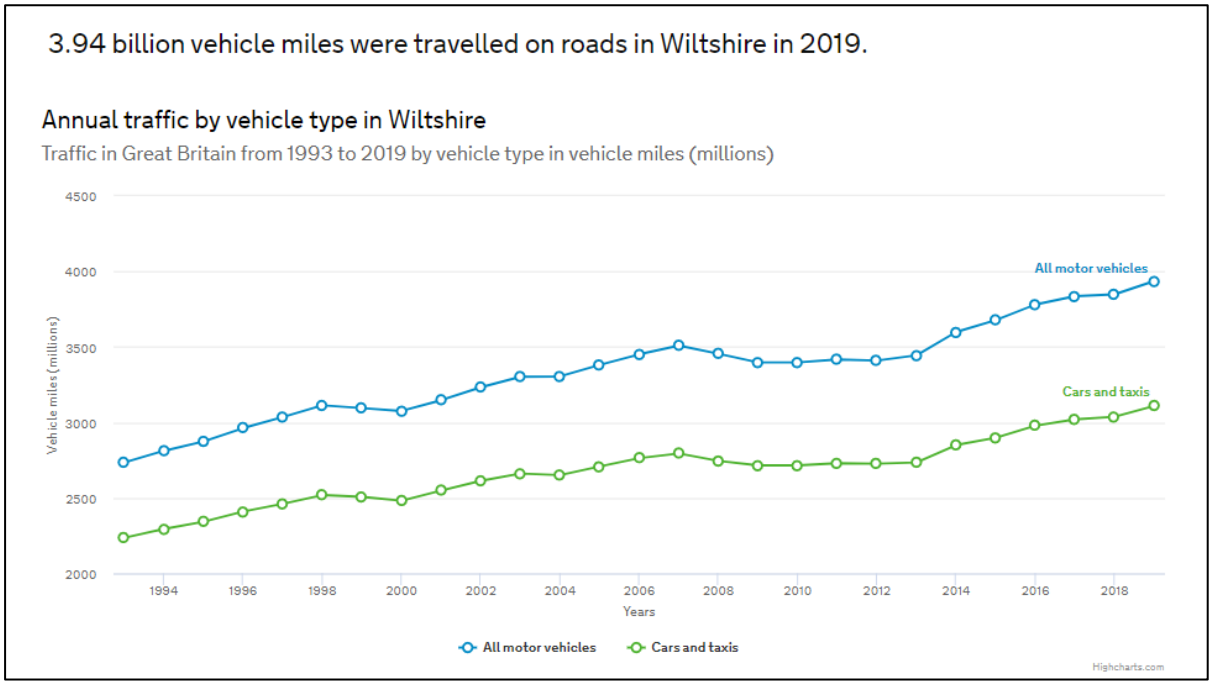


Figure 7.1 Annual traffic by vehicle type in Wiltshire, 2019 (Source: DfT road traffic data)

43. Figure 7.2 shows that each person in England on average completed 602 car trips per year in 2018, and Figure 7.3 shows that cars are by far the most common mode of transport regardless of journey purpose, accounting for 61% of trips. Walking contributes just over a quarter of total trips. Buses and rail equate to 7% of trips (50% of national bus trips take place in London).

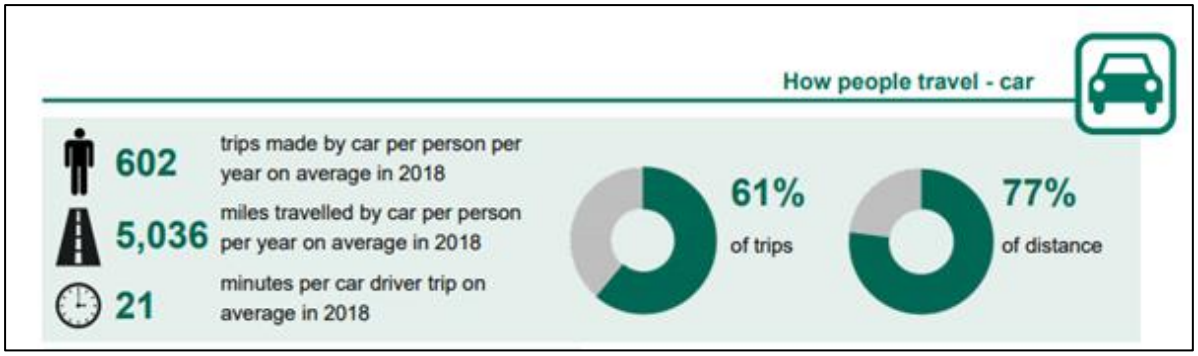


Figure 7.2 Average number of car trips, per person England, 2018 (Source: National Travel Survey 2018)

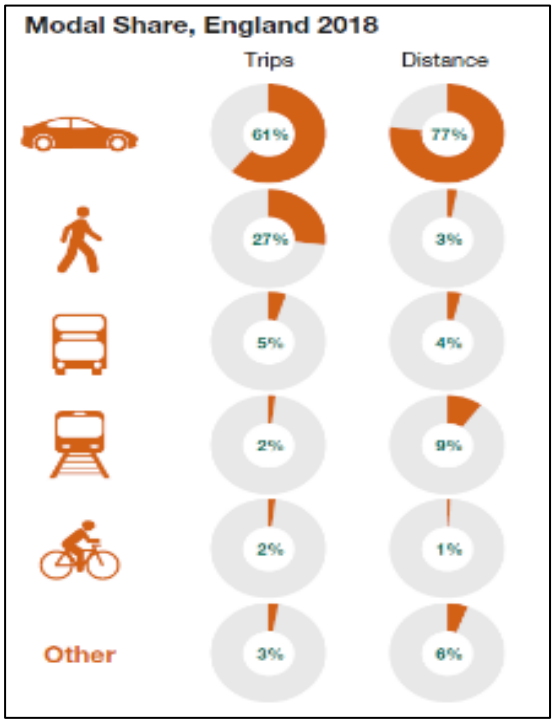


Figure 7.3 How we travelled, 2018 (Source: National Travel Survey2018))

44. Figure 7.4 breaks down car trips further and shows that approximately 50% of journeys made by car in England were for leisure or shopping purposes.

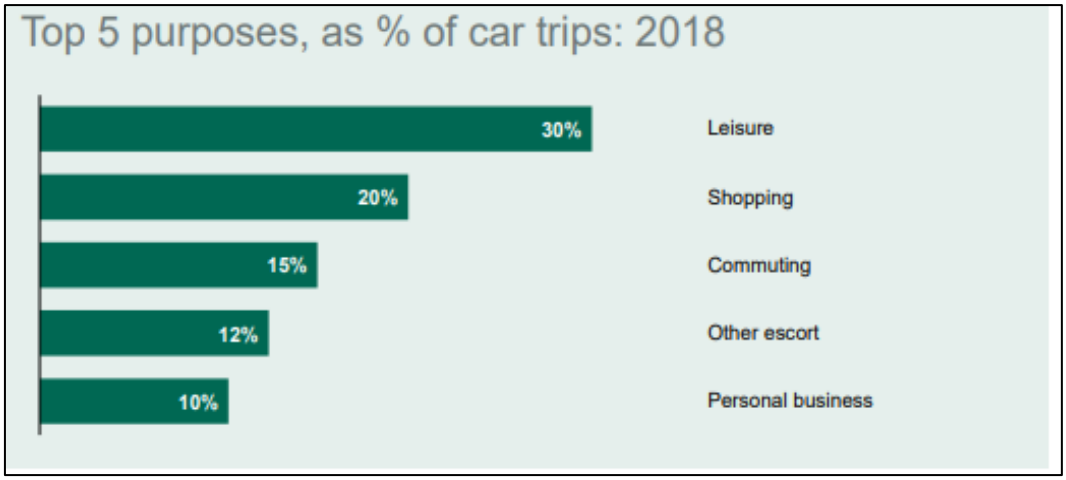


Figure 7.4 Top 5 purposes, as % of car trips: 2018 (Source National Travel Survey 2018)

45. Figure 7.5 shows the distance travelled and total number of trips using all modes for households with and without access to a car in England. 94% of car journeys are under 25 miles, with 58% under five miles in 2018.

Figure 7.5 National Travel Survey 2018

46. Cars today have lower emissions, with the average car in 2018 emitting just over 20% less CO_2 for the same mileage than the average car in 1990. However, average CO_2 emissions per mile for new cars have risen since 2016. This is mainly due to the increasing weight of vehicles.

47. Government recently brought forward the deadline for ending the sale of new petrol and diesel cars/vans to 2030. The current age of cars at scrappage in the UK is 14.5 years, and vans 12 years. Based on these figures the Wiltshire car and van fleet would not be entirely zero emission until 2045.

48. How goods are moved in, out and around Wiltshire is changing. Van traffic nationally has increased by 104% since 1990, with van emissions increasing since 1990 by 67%. Much of this change is attributed to service vehicles and 'last mile' internet delivery services. In 2018, Heavy goods vehicles (HGVs) accounted for 17% of domestic UK Transport emissions, with HGV traffic increasing by 10% between 2012 and 2018.

49. Air quality in Wiltshire is generally very good. Wiltshire does, however, have eight Air Quality Management Areas (AQMA's) where air quality is failing to meet national standards: Bradford on Avon, Calne, Devizes, Marlborough, Westbury and three in Salisbury. Pollutants of most concern are Nitrogen Dioxide (NO_2) and Particulate Matter. Decarbonising the transport system will improve air quality and health: in the UK approximately 40,000 deaths per year are linked to air pollution.

What does a climate resilient and carbon neutral Wiltshire look like?

- Transport in Wiltshire has become fossil fuel free.
- Active travel is the mode of choice for short journeys, for example by 2030, 50% of journeys in towns to be by bicycle or walking, in line with DfT Walking and Cycling Plan.
- Cycling infrastructure further developed to support increased utility cycling (cycling to work/school/shops etc rather than for leisure).
- Vehicle weight reduces significantly to circa 1000kg (currently average car weighs 1,400kg).
- Wiltshire has no air quality management areas.
- Community car clubs, car sharing and demand responsive transport help to reduce emissions and social/economic exclusion.
- Wiltshire embraces new forms of transport such as automated vehicles, drone deliveries and cargo bikes.
- Broadband infrastructure enables high connection speeds, reducing the need to travel.

What will make this happen?

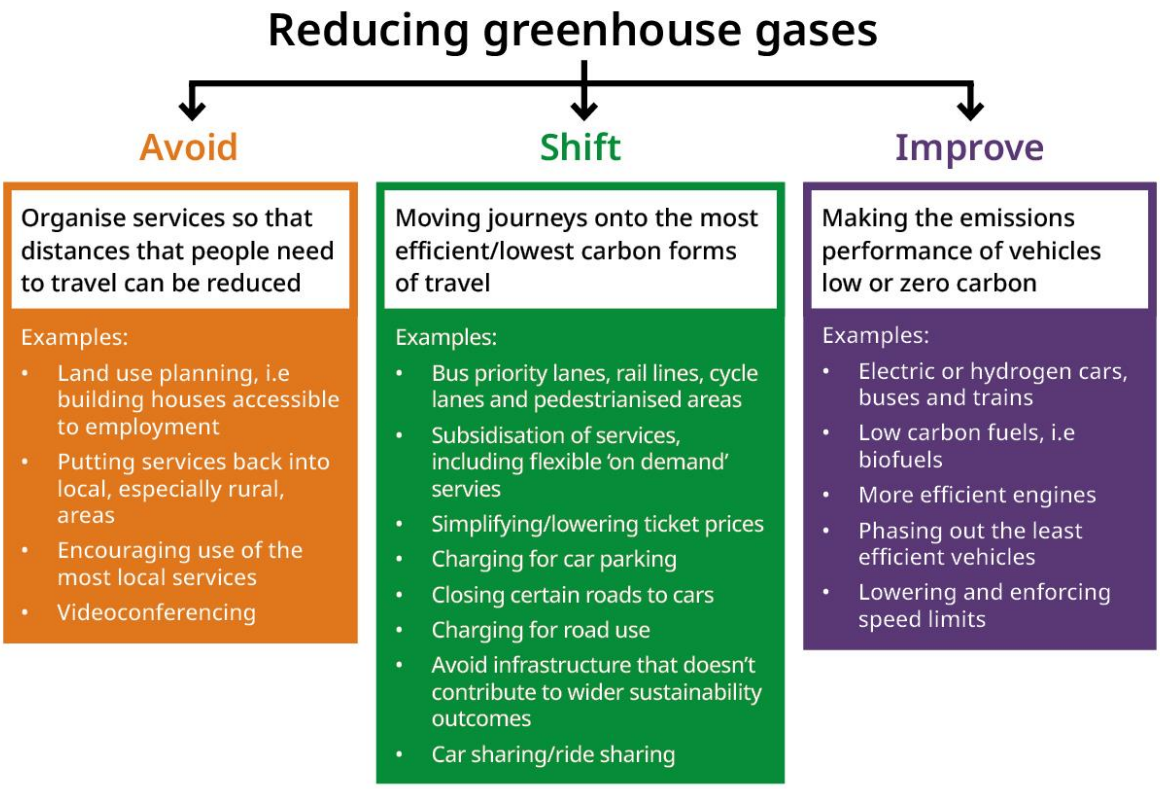
50. National policy will be critical in determining a roadmap for how the nation moves to carbon neutrality and also the responsibilities of local authorities in supporting this goal. The forthcoming DfT decarbonisation plan (complementing the existing Cycling and Walking Plan for England), anticipated to be published in spring 2021, will support the council in understanding its role in supporting the DfT's vision for the UK, particularly within our context as a rural county.

51. Identified national funding will be required to support the development of a carbon neutral network. The provision of a charging network for EV's will need significant investment as will conversion to low emission buses/trains and enhancing our cycling/walking infrastructure. The DfT's Active Travel Fund is enabling the council to make short-term improvements to cycling infrastructure but much more funding is needed.

52. As the county's vehicle fleet moves to electric, new skills will be required to support in the vehicular maintenance field and to help the roll out of a network of charging points.

53. National policy decisions relating to planning will also impact on our EV charging network. Policy will determine whether new housing developments will be required to provide the necessary infrastructure to support an EV charging point.

54. Structuring our response to reducing transport related GHG using a whole system approach will be more fruitful than focusing on active travel or migration to EV on their own. Figure 7.6 below proposes the adoption of an Avoid, Shift and Improve model to realise this opportunity. The examples included are measures that are often considered in this context.



Adapted from LGA Decarbonisation workshop February 2020

Figure 7.6 Reducing greenhouse gases, avoid, shift, improve

What Wiltshire Council can do

- Lead by example and migrate to a low carbon fleet through its Fleet Strategy
- Work with commercial transport operators to help them migrate to low emission solutions, such as Salisbury electric buses
- Working with partners, for example to assist in the creation of new jobs, skills and supply chains to support migration to an EV network
- Look to strengthen policy, key ones being the review of the Local Transport Plan and the Local Plan which will set the vision at a county level for a sustainable transport system
- Ensure that new developments are located and designed to reduce the need to travel, and enable sustainable travel options
- Highlight examples of best practice, such as community energy projects being used to power EV infrastructure
- Lobby government - for example in relation to national policy barriers and funding for e.g. active travel infrastructure improvements and electrification of Wiltshire rail
- Work with government to provide active travel infrastructure to encourage modal shift to cycling and walking

7.2 Built Environment

Where we are now? Existing buildings

55. More than two thirds of domestic emissions come from the burning of fossil fuels in the form of gas, heating oil and other fuels (Figure 7.7) and this will need to be changed in a net zero carbon future.

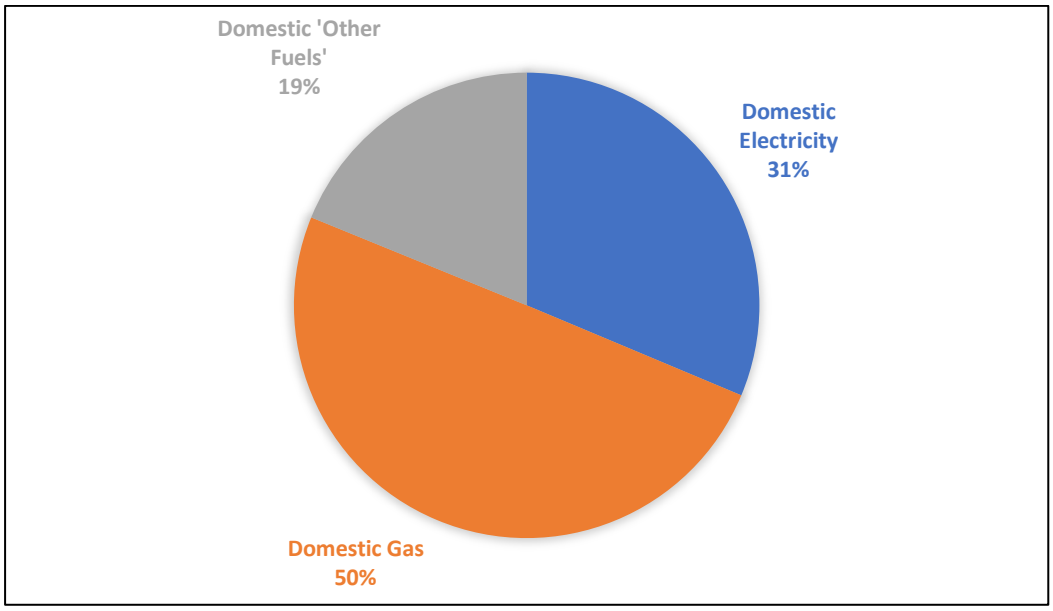


Figure 7.7 Wiltshire domestic emissions by source (BEIS data)[3]

56. Energy Performance Certificates (EPC) show how energy efficient a domestic property is, and almost all of Wiltshire's 201,991 dwellings have ratings B-F (Figure 7.8). Energy inefficient housing can lead to fuel poverty (where households are unable to keep their homes warm for a reasonable cost) and this is a major problem for many households and can result in poor health. Warm and Safe Wiltshire provides home energy efficiency advice and grants to full-poor households.

57. The data for non-domestic buildings also shows low levels of energy efficiency (see Figure 7.8) and high levels of greenhouse gas emissions from the use of fossil fuels. Within the emissions for non-domestic buildings, in particular for industry, there will be significant emissions from processes, product use and machinery rather than solely from the buildings.

58. New national funding streams for retrofitting buildings were launched in 2020: the Green Homes Grant aims to stimulate energy efficiency and the demand for technologies such as air source heat pumps in homes, and the Public Sector Decarbonisation Scheme is focused on decarbonising heat in public buildings.

[3] Domestic 'Other Fuels' is a range of fuels that includes heating oil and coal

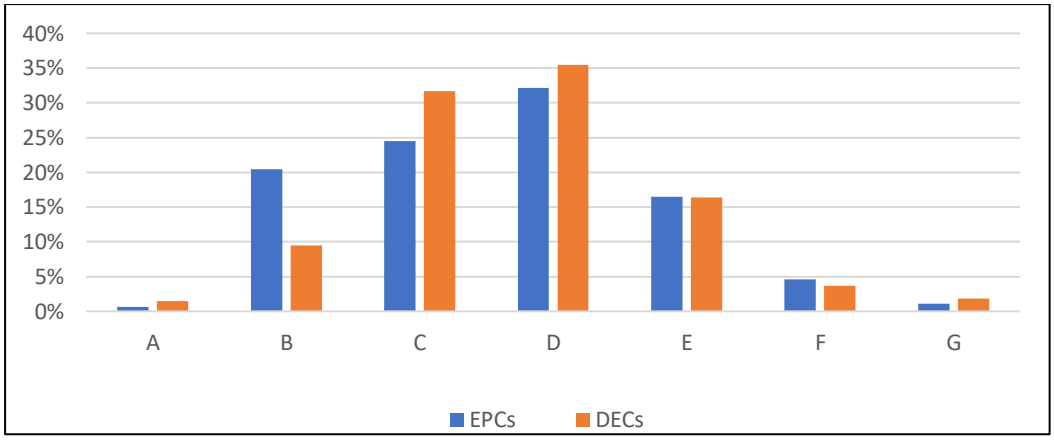


Figure 7.8 Wiltshire registered EPCs and DECS 2016-2020[4]. (BEIS data)

Where we are now? New buildings

59. New dwellings and buildings are being built to higher standards due to more stringent requirements within building regulations, but currently new buildings within Wiltshire are not required to be zero carbon or to include renewable energy generation or storage technologies. Higher standard individual developments (incorporating for example high levels of energy efficiency, renewable energy technologies and layouts that take advantage of natural solar gain and shading) do sometimes come forward.

60. Housing forecasts undertaken for the emerging Local Plan predict Wiltshire will need between 40,840 and 45,630 additional dwellings over the period of 2016 to 2036. Even when taking the higher figure, 60% of this number have already been granted permission or allocated in the existing local plan and as such offer limited opportunity for zero carbon standards and future retrofitting will be required. New allocations in the emerging Local Plan, which can be required built in accordance to the emerging Local Plan policies, will offer the greatest opportunity to implement higher standards

What does a climate resilient and carbon neutral Wiltshire look like?

61. In order for Wiltshire to achieve our 2030 ambition, all existing and new buildings would need to be net zero carbon. This would mean retrofitting approximately 400 homes per week for the next 10 years. Some housing types are likely to be more challenging and expensive than others to retrofit, such as listed buildings or older properties that have solid walls.

62. There are national aims to decarbonise electricity coming from the grid. However as shown above, a bigger part of the challenge is how to decarbonise heating as this is essential for net zero carbon. Alternative forms of space heating will be preferred, replacing gas - whether this is technologies such as individual heat pumps or electric heating, wider area schemes such as district heating networks, or new technologies such as hydrogen. To help store energy generated at the property and to help with demand management (see the energy section) buildings and domestic properties may also require heat and electricity storage, such as using batteries from electric vehicles.

[4] The Registers do not hold data for every domestic and non-domestic building or every building occupied by public authorities in England and Wales. Buildings only require an EPC when, sold, let or constructed. DEC are only required where a building is frequently visited and over 250 square metres. Not all public buildings would meet those criteria. These statistics should, therefore, not be interpreted as a true representation of the whole of the building stock in England and Wales, but viewed as part of a wider package of Government's provision of information on the energy efficiency of buildings.

63. To ensure maximum energy reduction, the users of all buildings will need to understand how to use them efficiently and policy will need to be in place to ensure fuel poverty is being tackled.

64. Existing properties are only one part of the residential mix; new buildings will need to be built to a zero carbon standard (or if this is not possible within the current regulatory framework, they will also need to be retrofitted relatively soon after construction).

65. Furthermore, both existing and new buildings and places will need to incorporate a range of measures to ensure they are resilient and adaptable to climate change - see Figure 7.9.

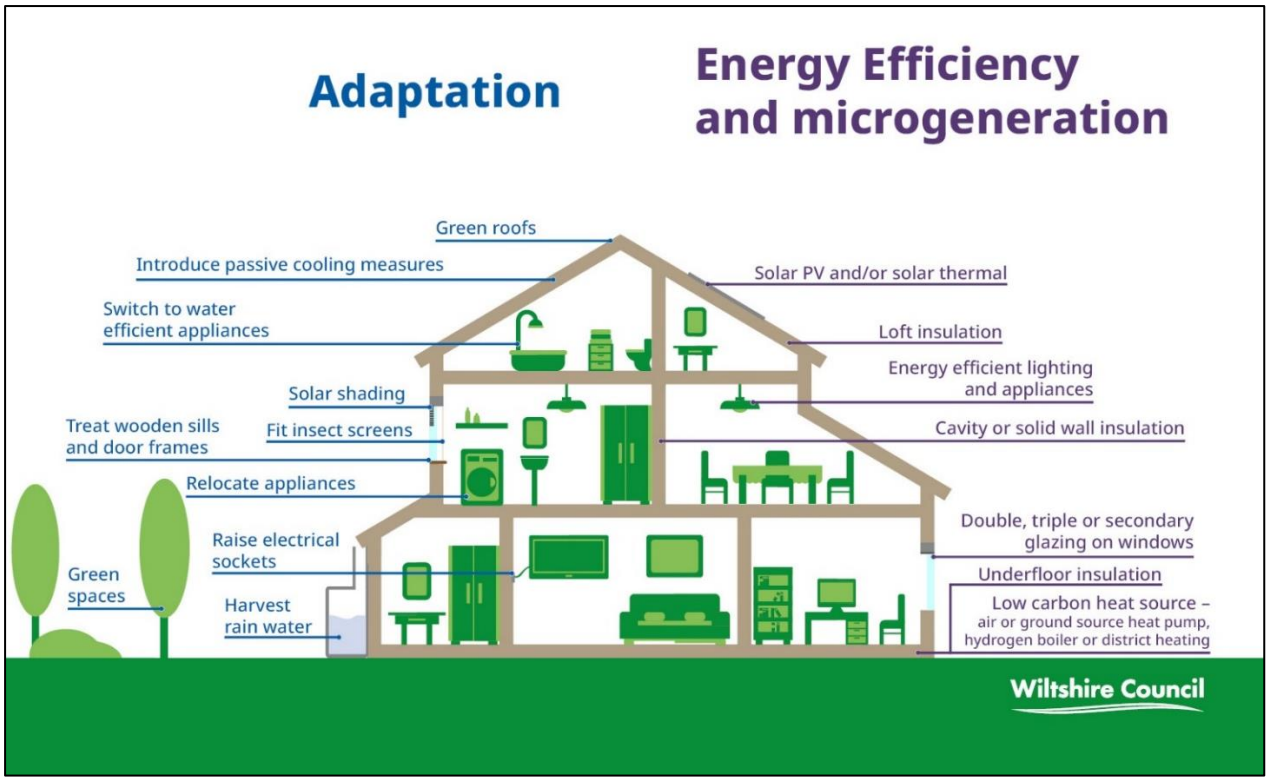


Figure 7.9 Domestic dwelling showing adaptation and energy efficiency and microgeneration.

What will make this happen?

66. A skilled workforce and strong supply chains will be needed to deliver the scale of retrofitting needed (see Green Economy theme). Alongside that householders and businesses will need to implement measures at a significant pace. Funding will be important, in particular to stimulate the uptake of new technologies, and to ensure those in, or at risk, of fuel poverty or on low incomes can access the measures.

67. National policy and funding will have an important role in driving change (via for example the Green Homes Grants mentioned previously or new standards such as the minimum energy efficiency standards (MEES) in domestic rented property). National policy needs to avoid being a barrier to the implementation of higher local standards, for example, limits on the measures that can be put forward via planning policy. Significant funding will need to be allocated for retrofitting schemes, building on the Green Homes Grant and Public Sector Decarbonisation Scheme.

68. The Government's Energy White Paper (December 2020) aims to:

- increase voluntary installation of heat pumps from 30,000 a year to 600,000 a year by 2028 – with a planned Clean Heat Grant to support installations from 2022.
- phase out installations of gas boilers by mid-2030s – with all newly installed heating systems from this date being low-carbon or able to be converted to use clean fuel.
- ensure new homes built from 2025 onwards are zero-carbon ready – including consulting on whether it's feasible and appropriate to end the connection of new-build homes to the gas grid.

69. The Committee on Climate Change has also recommended phasing out sales of oil boilers by 2028 and making new gas boilers hydrogen-ready by 2025.

70. Further to the steer to phase out gas boilers, national government will need to provide leadership on which technology is pursued – hydrogen or electric - and until we have this decision efforts will need to focus on solutions that are compatible with each scenario.

What Wiltshire Council can do

- The council can drive forward and build upon its own initiatives such as new zero carbon council homes, retrofitting council homes, Warm and Safe Wiltshire, and access as many funding streams as possible, for example Salix 0% loans
- Partnership working and engagement with organisations within Wiltshire will be key to raise awareness of the scale of the challenge and how everyone can take action
- Work with partners, for example to assist in the creation of new jobs, skills and supply chains
- Look to strengthen policy, a key one being within the review of the Local Plan
- Highlight examples of best practice
- Lobby government - for example in relation to national policy barriers and funding for retrofitting hard to treat properties

7.3 Energy generation, storage and distribution

Where we are now?

71. Electricity is largely provided through a central grid with the majority of participants as passive users. Grid electricity has been significantly decarbonised with almost half of electricity coming from renewable sources and further measures are ongoing. The burning of fossil fuels for heat (both domestic and industrial) and transport make up 80% of current energy use in Wiltshire and therefore this energy use will need to be decarbonised.

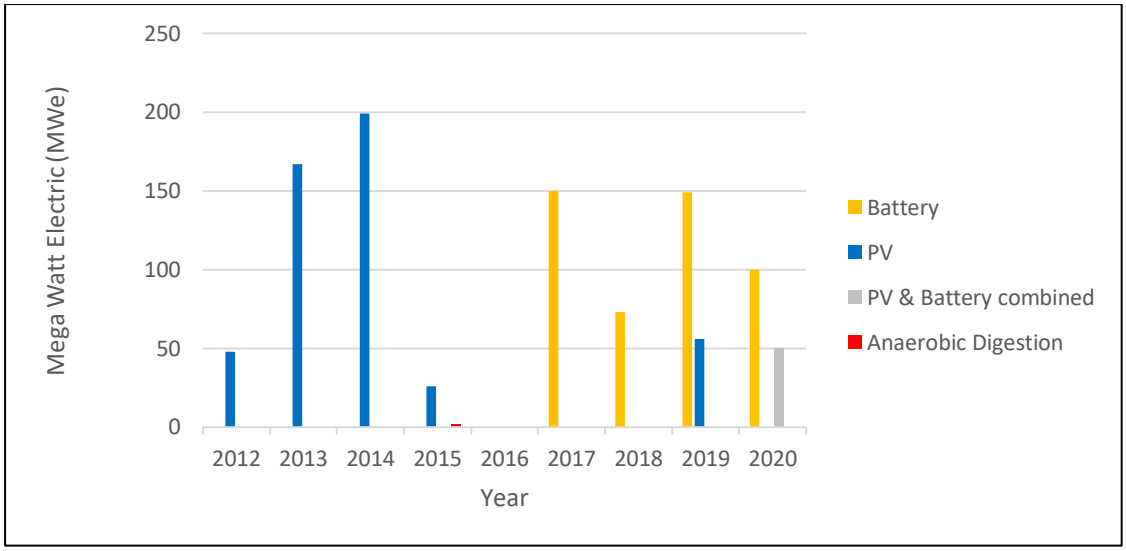


Figure 7.10 Planning applications submitted (and subsequently approved) larger than 1 MWe (BEIS Renewable Energy Planning Database)

72. Wiltshire currently generates only a small proportion of its total energy use from renewable sources (6%) and this is predominantly from solar photovoltaic installations (Figure 5.5). Additional renewable generation will be impacted by grid capacity which has existing constraints. Technology is beginning to change, for example planning applications within Wiltshire show battery storage starting to come forward at scale (Figure 7.10).

What does a climate resilient and carbon neutral Wiltshire look like?

73. The energy we require has been reduced as far as possible through energy efficiency measures. The energy we then use for heat and power has been decarbonised (see section below). The current grid system has been transformed so that all buildings (including homes) interact with the grid. Demand is better managed as buildings can generate, export and store electricity, including from electric vehicles (Figure 7.11). There is access and participation for all. Grid resilience measures (for example in relation to extreme weather and its effects, such as flooding) continue to be implemented.

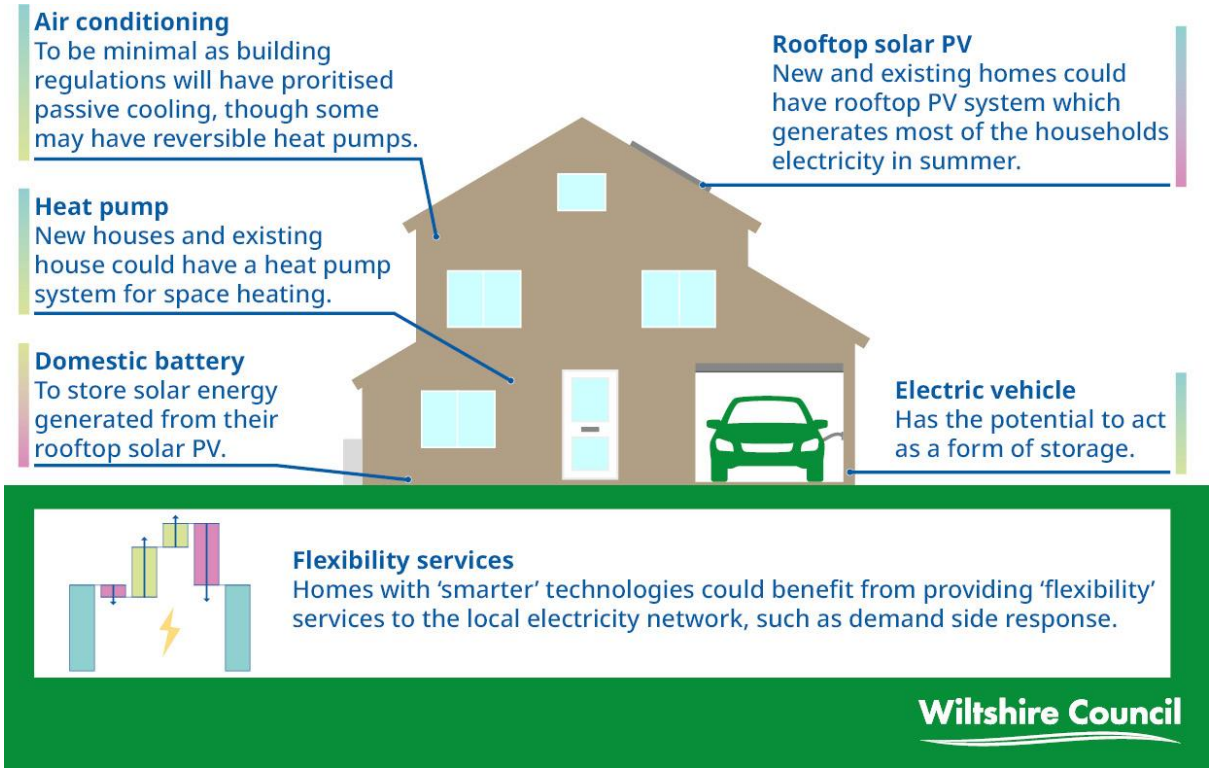


Figure 7.11 Domestic property with smart functionality

What will make this happen?

74. As outlined above the grid will need to transform to a smarter more interactive system whilst ensuring fair access to smart technologies as well as the grid itself. There are various ways to get to net zero carbon and these are modelled by the National Grid under Future Energy Scenarios. The scenarios set out overall national assumptions, including how energy generation is to be decarbonised at a larger scale, including for industry. For example, hydrogen is stated as an important energy generation technology for replacing fossil fuels such as natural gas in various sectors as well as for its role as a storage technology. Bioenergy[5] is seen as necessary however its provision raises considerations in terms of supply and land use. Whilst it is not known what the exact future mix of technologies will be to reach zero carbon, the scenarios show different pathways to get to the same goal. It is therefore important to focus on what can be done now.

75. Energy efficiency and energy reduction measures will be an important starting point to manage demand and to enable decarbonisation of all sectors including commercial and industry.

76. A considerable increase in renewables and storage will be needed. Grid capacity will be an important consideration for large-scale renewables, major development sites, and potentially for smaller scale generation where there are already grid constraints (particularly until a smarter system is in place). The change to electric vehicles and the decarbonisation of heat are also likely to have significant impacts on electricity requirements and therefore also the grid.

    The grid is managed by the local District Network Operator (DNO), soon to be renamed a District Systems Operator (DSO) to reflect the smarter grid we are moving to. In Wiltshire our DNO is Scottish and Southern Electricity Networks and they are a key organisation to

[5] Bioenergy is produced when organic feedstocks like energy crops, forestry and agricultural waste and biological materials are used to produce energy

facilitate the required changes to the grid along with other national organisations such as OFGEM and central government. There are Smart-Grid trials running through the country such as Project Leo. For those buildings not connected to the grid, alternative net zero carbon solutions for heating may need to be investigated.

77. Not all renewable energy or low carbon generation will be undertaken within Wiltshire, so national policy is key for setting out the way forward for future technologies. For example, the government has committed to increasing offshore wind capacity to 40GW by 2030, which would be enough to power every home in the country based on current electricity usage. The UK currently has the largest installed capacity of offshore wind in the world, with around 10GW in operation.

78. Many organisations and businesses within Wiltshire, including community energy groups, have been taking forward renewable energy and other innovative schemes and these can be built upon.

What Wiltshire Council can do

- Use the council's own green electricity tariff to raise awareness of the benefits of these for zero carbon
- Invest in renewable energy generation in suitable locations through the council capital programme and Stone Circle Energy Company
- Continue to deliver Warm and Safe Wiltshire to ensure fairness for all
- Use the Local Plan review to increase renewable energy capacity, to consider the role of off-grid solutions (such as district heating) and other opportunities to use energy most efficiently. The council will commission research to assess projected energy demands and opportunities for energy generation in the county to inform the Local Plan
- Engage with organisations such as Scottish and Southern Electricity Networks to investigate Smart-grid, battery storage and grid capacity (including and linking to Electric Vehicles) and the opportunities and barriers within Wiltshire
- Work with partners to encourage local innovation using new technologies and develop a skilled local workforce
- Explore the role of community energy in increasing renewable energy generation and supporting uptake of micro-generation, car clubs and other local initiatives

7.4 Green and circular economy

Where we are now?

79. Our economy in Wiltshire is noted for its innovation and entrepreneurialism and its good quality of life is a draw to businesses and employees. Wiltshire's rich historic environment and landscapes, including three areas of outstanding natural beauty, mean that tourism will be an ongoing part of the economy. The farming industry in Wiltshire is a significant contributor to food production in the South West and nationally and forms the working environment and landscape that we are familiar with.

80. This context represents opportunities and challenges in relation to carbon reduction and climate resilience.

81. In 2020 there were 22,200 Wiltshire businesses, of which 90% were micro businesses (with 9 employees or fewer) and only 75 were large (250+ employees). In 2019 Wiltshire had a total of 207,000 jobs. Figure 7.12 shows that the dominant employment sectors that year were retail, health and social care, professional services and public administration. In 2018,1800 jobs in Wiltshire could be classified as green jobs. The current economic downturn is likely to impact more on some sectors than others, so the proportions in Figure 7.12 are likely to change.

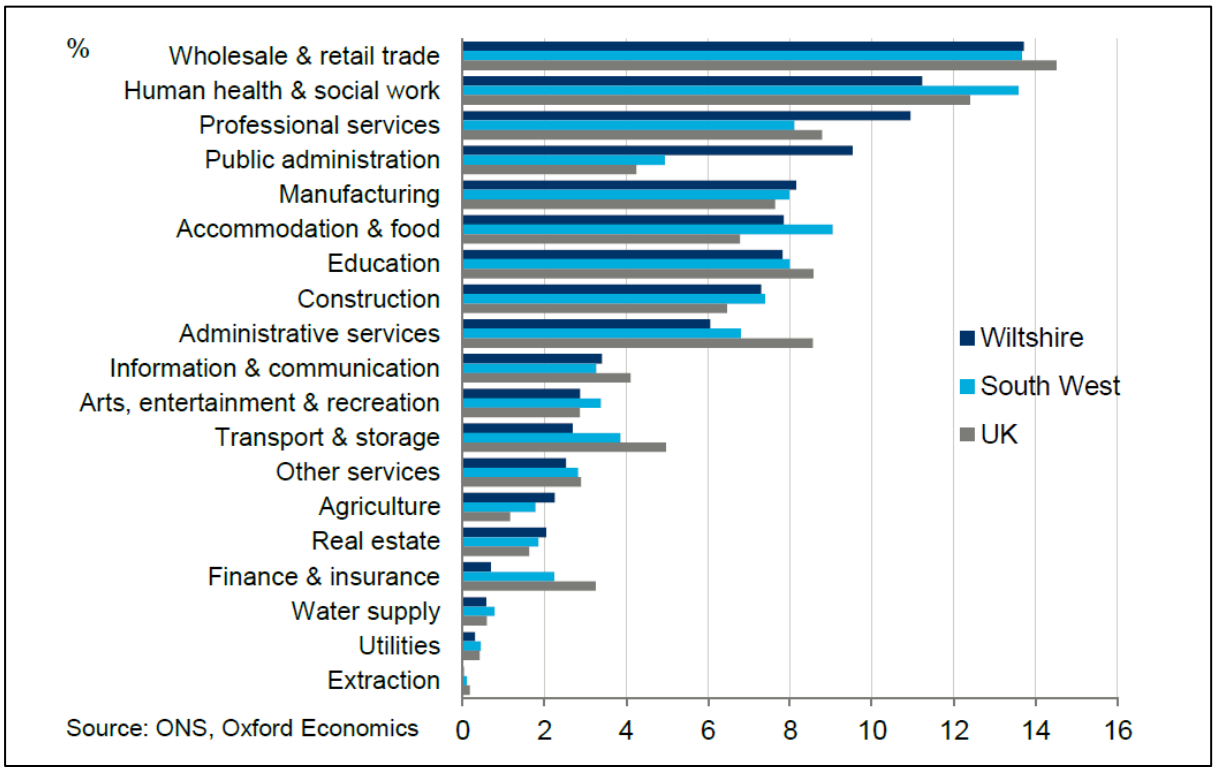


Figure 7.12 Wiltshire share of jobs by sector. Office for National Statistics, 2019

82. The Government's "10-point Plan for a Green Industrial Revolution" indicates the importance placed on supporting the green economy, for its capability to support the carbon neutral ambition, as well as the opportunity to provide employment and skills to support economic recovery. As set out in the built environment theme, financial grants are already being offered to support decarbonisation of public sector buildings, and to help individuals make energy efficiency improvements to their homes.

83. The Swindon and Wiltshire Local Enterprise Partnership produced a Local Energy Strategy in 2018 which focuses on four key priorities for the area:

- Smart grids and mitigating constraints
- Hydrogen technology innovation and deployment
- The transition to new energy vehicles
- Low carbon growth

84. The Target 2030 programme provides advice and funding to SMEs to save on their energy bills.

What does a climate resilient and carbon neutral Wiltshire look like?

85. Our market towns are effective service, employment and retail hubs which reduce the need to travel for work, shopping, etc.

86. Wiltshire businesses are carbon neutral and climate resilient, and Wiltshire has a strong, green economy. To be 'green' our economic activity must avoid environmental degradation, be efficient, resilient and fair. It includes investing in sectors that can support a transition to carbon neutrality alongside economic recovery.

87. This means strengthening sectors such as renewable energy, sustainable construction, water management and sustainable transport.

88. For Wiltshire businesses this means putting in place systems and measures to monitor and reduce emissions. Businesses will also need to assess and be prepared for the risks associated with climate change, for example the need to plan for overheating which can affect buildings, infrastructure and operations, as well as having implications for staff productivity and the need to adjust working patterns or protective measures. The challenge for small and medium sized enterprises (SMEs) to implement the necessary measures with limited resources and expertise is recognised.

89. At the heart of a resilient, carbon neutral economy is the concept of **circular economy**. This means that resources are used as efficiently as possible and changes what was traditionally a linear process – using things and then throwing them away - to a circular process where value is retained and recovered within the system, as shown in Figure 7.13.

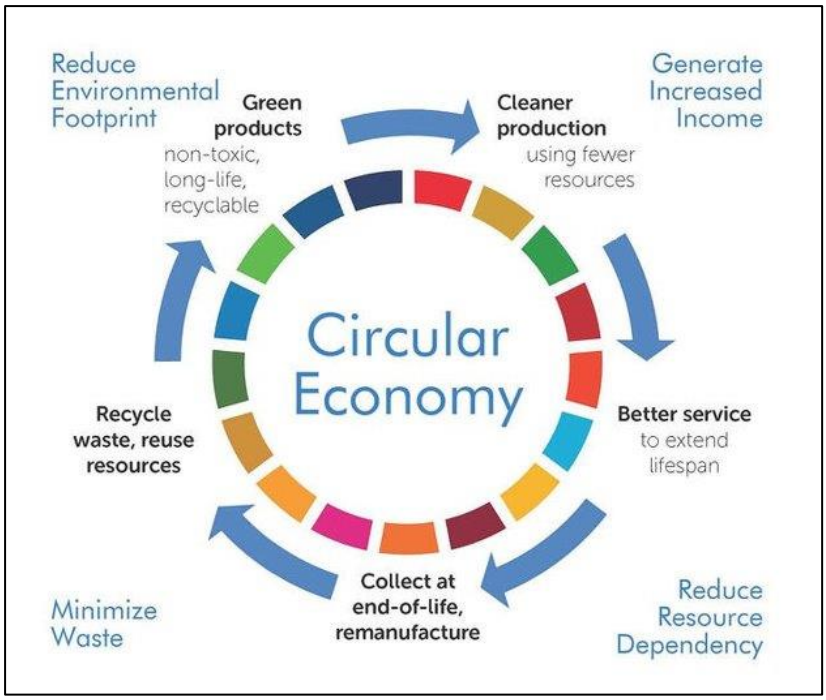


Figure 7.13 Illustration of a circular economy

What will make this happen?

90. The Local Plan provides a framework to support the sustainable development of our market towns.

91. We will need to seize all available opportunities to create jobs that support the transition to a carbon neutral Wiltshire as these will also support economic recovery following the pandemic. Estimates by the Local Government Association show Wiltshire's potential for jobs in the low-carbon and renewable energy sector as illustrated in Figure 7.14. This shows that 6,856 green jobs will be required by 2030, and 13,040 (6% of the current total) are projected to be green jobs by 2050. Given Wiltshire's current position of 1800 green jobs, this gives a compound annual growth rate of approximately 12% to 2030 and 3% to 2050.

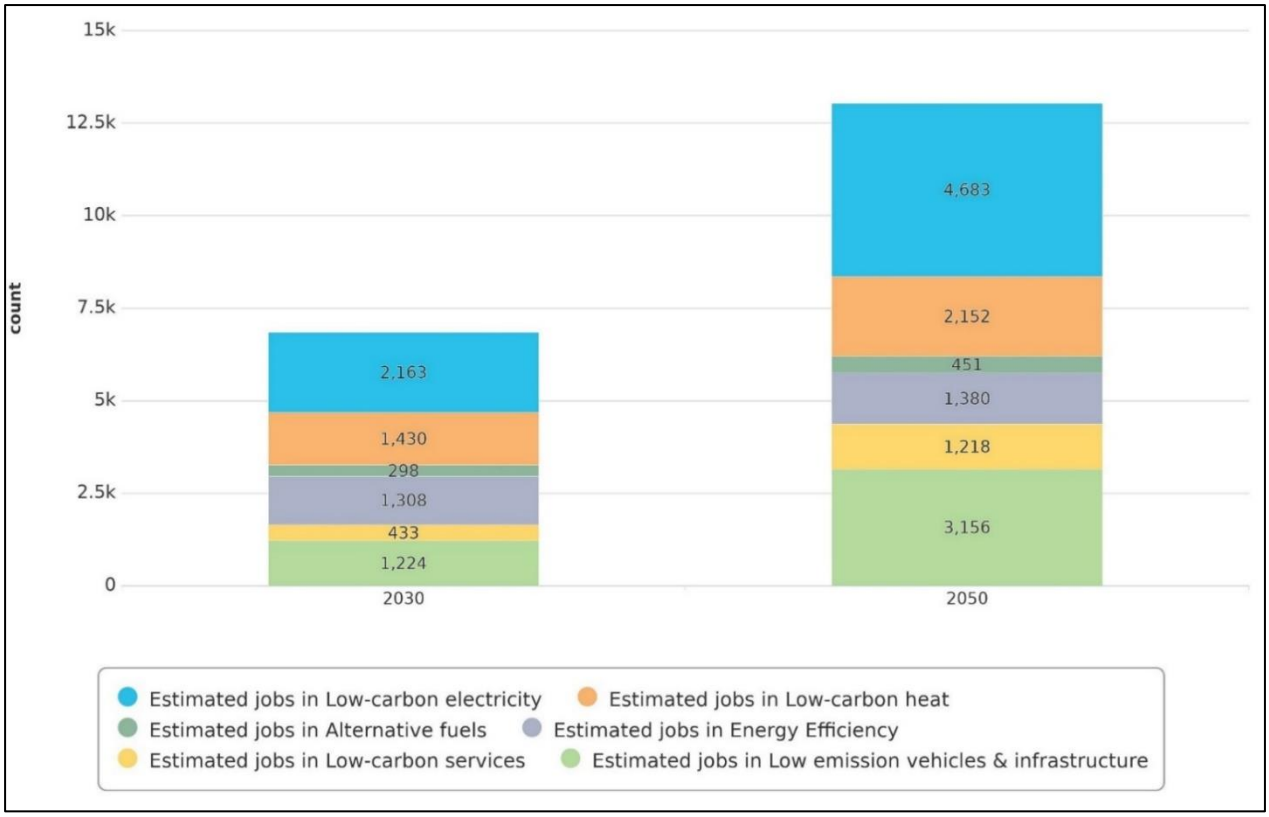


Figure 7.14 Estimated number of direct jobs by sector in Wiltshire (LG Inform)

92. Wiltshire and Swindon's Local Industrial Strategy recognises that we are at the brink of change and aims to help shape Wiltshire as a prosperous, productive and inclusive community.

93. Government funded projects to decarbonise public sector buildings and to retrofit council homes can incorporate opportunities to develop skills in the county, showcase new technologies, and provide employment. Funding will need to be ongoing to encourage employers and training providers to invest in skills development.

94. Innovation will be a key part of the transition to a circular economy. Wiltshire's industries will need to explore how to reduce emissions and increase resource efficiency throughout supply chains. There is an opportunity to capitalise on the Great West Way touring route and showcase positive projects, including carbon neutral catering and tourist venues.

95. Consumers will increasingly need to take into account the impacts of their choices – more information, e.g. labelling, will help us to be aware of carbon emissions, recyclability and ethical impacts of products, services and technology that we use.

96. A shift to more local production and distribution is a key opportunity, requiring significant investment in local town centres and a change in shopping habits.

97. The required changes for a green, resilient and circular economy cannot be achieved by any one organisation or community alone. All levels of government, as well as campaign groups, community groups and individuals will need to embrace the transition in order to make the necessarily changes.

98. Jobs will be created in some sectors and lost in others. To date 'green' products have often been a luxury that not all can afford. It is crucial that everyone can benefit from the transition to a low carbon future and there is support and information for businesses, organisations and individuals who need it.

What Wiltshire Council can do

- Stimulate the green and circular economy and local supply chains by championing best practice in key sectors such as waste management and recovery, housing retrofit, electric vehicles and investment in renewables
- Work in partnership with Wiltshire's larger companies on resource efficiency and best practice
- Work with its suppliers to require, encourage and support them to measure and decrease their carbon emissions
- Work with local networks to support small organisations, from SMEs to local charities, to become resilient and sustainable
- Continue to promote 'shop local' campaigns
- Support the growth of businesses focused on sustainability and attract new ones to invest in the county
- Work with training providers and employers to increase training for green skills
- Input to government policy and funding programmes, to make sure they are appropriate for Wiltshire residents and businesses

7.5 Natural environment, land use and farming

Where we are now? Natural environment and resilience

99. The natural environment is an intricate, finely-tuned system that supports our physical and mental wellbeing, provides resources for all life and economic activity and also incorporates complex climatic processes. The term 'ecosystem services' is used to describe the functions that the natural environment provides.

100. In nature, the carbon cycle emits and absorbs carbon dioxide all the time, for example through photosynthesis absorbing CO_2, soil and oceans storing CO_2 and volcanic activity, decomposition, and respiration emitting CO_2. Additional greenhouse gases are important, such as methane (CH_4). Human influences on emissions are not only due to fossil-fuel burning, but also due to the way land is used and managed.

101. Trees and vegetation are natural stores of carbon and tree planting can play a role in offsetting our carbon emissions. UK average woodland coverage in the early 1900s was only 5%. 100 years later we have now increased to 13% nationally. The national target is to increase tree cover to 19% by 2055. In this context, our current tree cover in Wiltshire is 9% and we will need to define an appropriate target that takes into account our landscape and archaeology, as well as competing land uses.

102. We often look to trees when we think of carbon offsetting. However, soils simultaneously produce food, store carbon and purify water, so they are a crucial part of the earth's ecosystem services. The threat to soil is as important as the climate and biodiversity crises. Soil is being lost all the time, and it takes thousands of years for soil to be produced. The type of land use, e.g. cropland, grassland, wetlands, forest, settlements, and land

management practices determine how much carbon the land holds or emits. The health of the soil and associated habitats are also vital in terms of resilience to climate change effects such as biodiversity loss and flood risk.

Where are we now? Food and farming

103. The South West region is home to nearly a quarter of the nation's agricultural holdings, contributing twice as much to the economy and generating twice as many jobs as the average English region. Within the South West, Wiltshire is the most farmed county, with more than three quarters of its land being farmed commercially (273,555 ha of Wiltshire's total 348,500 ha). Figure 7.15 shows some of the changes in farming over time.

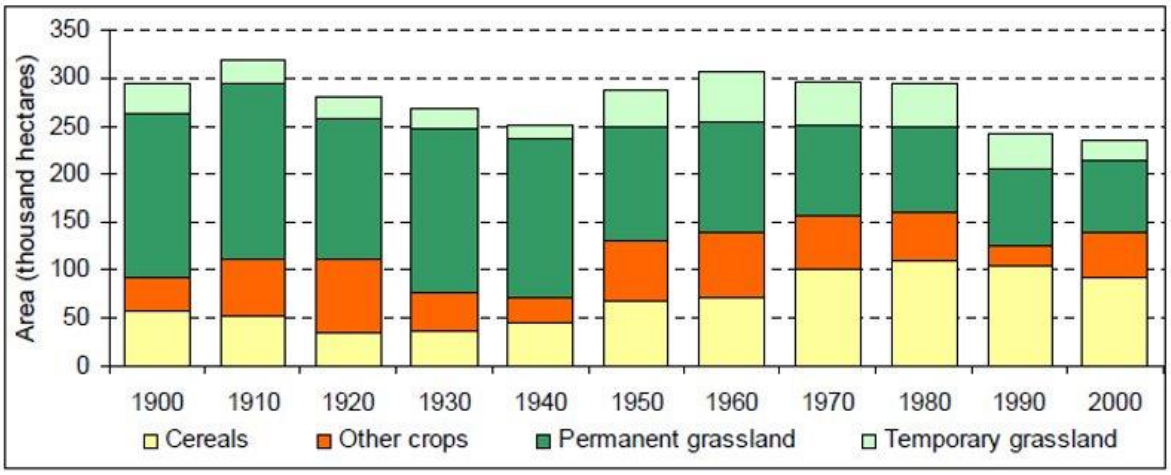


Figure 7.15 Wiltshire farming types - historic changes over time. (Wiltshire Council Landscape Character Assessment 2005)

104. GHG emissions from agriculture, forestry and other land uses ('AFOLU') come from

- Methane from livestock
- fertiliser production and application
- soil disturbance and compaction
- use of energy in farm buildings, machinery and waste

105. Our SCATTER[6] analysis completed in 2019 indicated that 4% of Wiltshire's emissions comes from agriculture (112.9 $ktCO_2e$). However, this is likely to be a significant underestimate and more research is needed to fully understand the emissions in this sector.

106. Land use, land use change and forestry (LULUCF) is a complex area, and in terms of carbon monitoring and accounting is one of the most difficult. For that reason, the Tyndall Centre (see section 5.2) suggests putting in place measures to reduce emissions, but monitor and track LULUCF separately from other sources and exclude it from Wiltshire's carbon budget.

107. In addition to emissions generated within Wiltshire through food production, our food also has an environmental (and social) impact elsewhere, both in its production and its transportation. Consumers are already becoming aware of the benefits of buying local, however there is currently a lot of confusion around the pros and cons of choices, for example in relation to eating less meat, or choosing organic.

[6] SCATTER – 'Setting City Area Targets and Trajectories for Emissions Reduction' is a tool for local authorities to understand and analyse carbon emissions for their area.

What does a climate resilient and carbon neutral Wiltshire look like?

108. We need to look for ways to reduce carbon emissions from agriculture and other land uses. This includes working towards sustainable, low-carbon food and farming systems, where food production, whether within our county or elsewhere, minimises its environmental impact.

109. At the same time, the role of the natural environment in relation to climate is crucially around its ability to absorb greenhouse gases, and its potential for helping us to adapt and be resilient to climate change.

110. In this context, the ultimate goal is to achieve a stable environment, that is able to provide ecosystem services to support social, economic and environmental wellbeing. All ecosystem services are interlinked, but for carbon neutrality and climate resilience we need to focus on:

- Sequestration of carbon, by vegetation and well-managed soils
- A strong network of green and blue infrastructure of different habitats – providing biodiversity resilience
- Natural water management – reducing flood risk and summer droughts, and providing cooling corridors
- Green networks to provide opportunities for sustainable, active travel, cooling and shade
- An optimal balance between food production and other land uses such as woodland creation, renewable energy generation, housing.

What will make this happen?

111. We need to work with and support and protect the natural environment to reduce emissions (including offsetting measures) and become more resilient to climate changes

112. Nature-based solutions are actions to protect, sustainably manage or restore our ecosystems that address identified socio-economic and environmental issues, so we will need to look for options that offer benefits for biodiversity and human well-being, alongside carbon emissions reduction.

113. In Wiltshire this means:

- Reducing our carbon emissions to almost zero and using nature-based solutions (e.g. tree planting, better management of soils) to offset the remaining unavoidable emissions
- using nature-based solutions alongside technical measures to help us adapt and be resilient to a changed climate.
- decisions and operations undertaken by Wiltshire organisations and businesses should place value on ecosystem services and fully consider impacts on the natural environment.

114. Wiltshire, as a rural county, has perhaps more potential than some other local authorities to use land to sequester carbon emissions. However, this raises the question of how our countryside should be used. We will need an open discussion to develop a vision and solutions that ensure a balance between land uses for food, carbon storage, renewable energy generation and development, while supporting health and wellbeing of people and nature. For example, solar installations may remove the ability to produce food on that land but can also bring benefits in relation to improvement of soil and biodiversity.

115. It follows that our future landscapes may look different to what we are currently used to. In order to be carbon neutral and resilient it will be important to be pragmatic and open to necessary change, as well as valuing the historic, cultural and working environment that makes Wiltshire special and gives us a sense of place and identity.

116. To date, farming subsidies have not necessarily supported widespread uptake of sustainable land management practices. The government's post-EU agricultural policy, including the Environmental Land Management Scheme (ELMS), alongside the Environment Bill represent opportunities for a low carbon farming future.

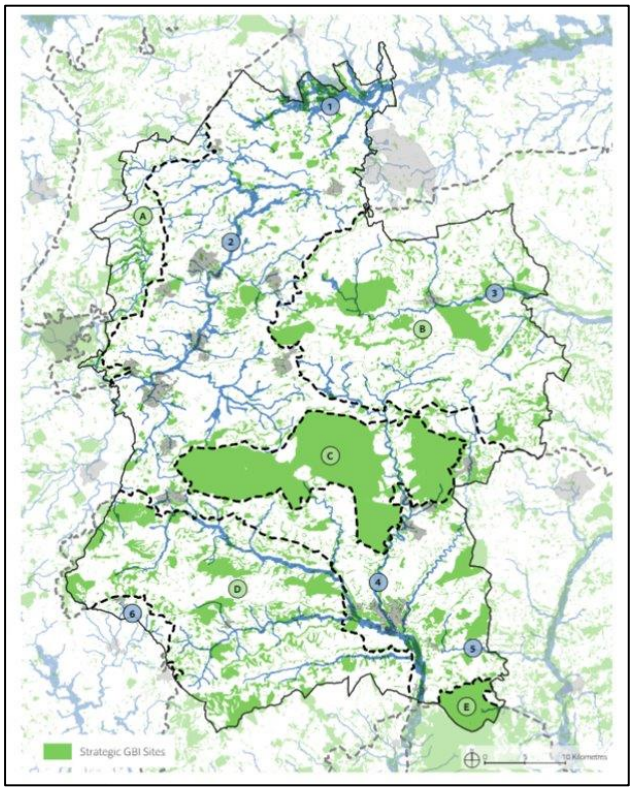


Figure 7.16 Wiltshire's Green and Blue Infrastructure Network. (Wiltshire GBI Strategy)

117. Wiltshire's network of water bodies, river catchments, green open spaces, parks, woodlands all link and function together as a **green and blue infrastructure network** (shown in Figure 7.16). This resource needs to be bolstered, so that it can help offset emissions, offer shading and cooling, opportunities for active travel, recreation and wellbeing, flood risk management and support biodiversity. The emerging Wiltshire Green and Blue Infrastructure Strategy has 'adaptation and resilience to climate change' as the first of its three goals. The strategy will provide a framework for Wiltshire-wide improvements and protection of the network. It needs to be delivered in partnership with stakeholders, including developing delivery plans for nature recovery, tree and woodland planting and integrated water catchment management.

118. The Environment Bill provides the basis to support this work, for example developing a national Nature Recovery Network to address biodiversity loss, climate change and wellbeing, and includes increasing woodland cover, with associated funding, including the 'Nature for Climate Fund'.

119. While trees are part of the solution to reduce carbon dioxide in the atmosphere, tree planting alone is nowhere near enough to deal with all our carbon emissions:

- Offsetting 10% of our current emissions as a county would take 104,500 ha - or one third of Wiltshire's area.

- If we were to achieve 19% tree cover by 2055 in line with national targets, in Wiltshire we would need to more than double our tree cover in the next 35 years.
- Other sensitives such as archaeology and special habitats may not be compatible with tree planting. 40% of our area is protected landscape designations.
- Other land uses such as food production, renewable energy production and development may compete.

120. Maximum carbon sequestering benefits happen after about 40 years, so we need to develop a long-term strategy for trees and woodlands in Wiltshire, focusing on planting the right trees in the right places, to ensure maximum benefits. As a county we can also harness the benefits of other land uses than help to sequester carbon, such as permaculture and agroforestry.

What Wiltshire Council can do

- Support biodiversity, and nature-based solutions through the Wiltshire Green and Blue Infrastructure Strategy
- Work with partners to develop a shared vision for sustainable, carbon neutral and resilient agriculture, forestry and land use in Wiltshire. Exploring optimal balance between food production and other land uses –e.g. renewable energy vs sequestration through woodland
- Review the council decision-making and planning framework so that it values and fully considers impacts on the natural environment
- Research carbon emissions and potential for emissions reductions from the agriculture, forestry and other land use sector
- Work with partners (including County Farms, and existing networks) to measure and understand GHG from Wiltshire farms and forestry, to support sustainable management practices, develop carbon reduction plans, and climate resilience
- Plant trees on its own land where appropriate, and support community groups to plant the right trees in the right places, in alignment with the emerging England Tree Strategy and Wiltshire Tree and Woodland Strategy
- Work with Wiltshire stakeholders and community on ways to reduce GHG emissions from food and farming
- Work with partners to continue to implement the Wiltshire Council Climate Change Adaptation Plan and update the actions

7.6 Carbon neutral council

121. Wiltshire Council has been working to reduce its carbon emissions for over a decade. Since 2010 the council has been monitoring and reporting its carbon emissions, in line with UK government requirements. A suite of documents was produced to help steer the council in its efforts (as shown in Figure 7.17), with some of the following results:

- By 2015, energy consumption from corporate estate had been reduced by 35%
- The council's Carbon Management Plan target – to reduce emissions by 20% by 2017 - was achieved

- Since 2013/14, energy consumption from streetlights has been reduced by 36% thanks to part-night lighting, dimming and the use of LEDs for new and replacement units. During this period carbon emissions have more than halved despite a growth in the number of streetlights as new developments are built.
- Thanks to sustained investment in renewables over time, in 2019/20 the council generated 4747 MWh from renewable sources; 7% from solar PV and 93% from biomass.

122. The new Climate Strategy will build on previous work but also acknowledges the wealth of recent science and knowledge about impacts and solutions.

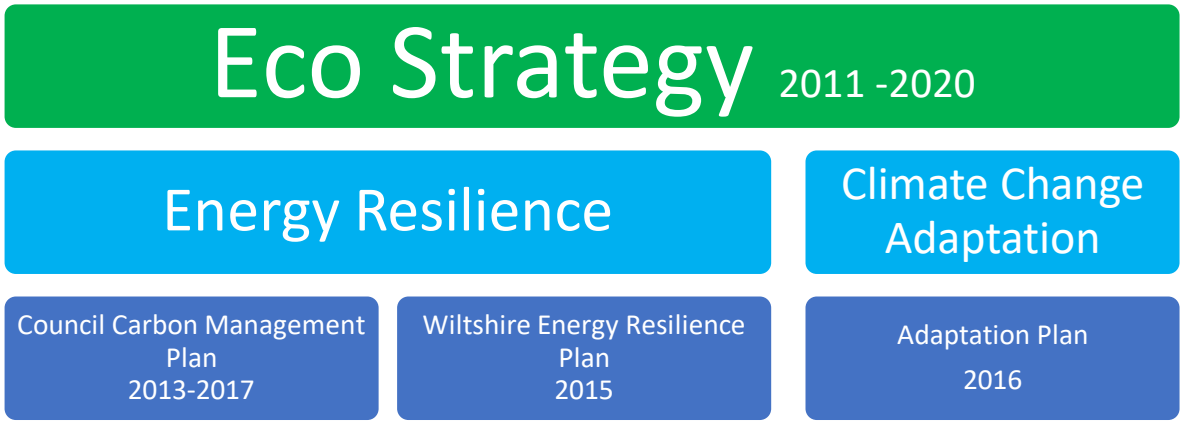


Figure 7.17 Wiltshire Council's existing climate programme documents

Where we are now?

123. In accordance with the international Greenhouse Gas Protocol, emissions are categorised into 'scopes' depending on how much control an organisation has over them. Table 7.1 sets out a simplified explanation of the scopes.

Table 7.1 Scopes and influence of carbon emissions

Scope	Lever of influence	Definition	Examples
1	Direct control	Carbon emissions from council sources that directly burn fossil fuels, such as gas boilers and combustion engines	Heating of council owned and managed assets, e.g., offices and leisure centres Mileage by council fleet
2	Direct control	Carbon emissions from the council's electricity usage	Power for council owned assets, e.g. offices, leisure centres and streetlights
3	Indirect control	Carbon emissions from sources that the council does not directly control, but over which it has some responsibility and influence	Business mileage by staff Council housing stock and third party occupied buildings Supply chains Community and VC schools Waste management Staff commuter journeys

Scope	Lever of influence	Definition	Examples
Wider county emissions	Regulatory role. Enabling, engaging, partnership working, leadership and demonstration.	Carbon emissions that are outside of the council's control. Some may be influenced through council regulatory role, e.g. taxi licensing or planning policy.	Emissions from new development. Emissions from residents Emissions from businesses Emissions from other institutions including VA schools and academies

124. Analysis of Wiltshire Council's scope 1 and 2 emissions in Figure 7.18 shows corporate estate and leisure centres together accounting for 64% of emissions in 2019/20, streetlights 30% and council fleet 6%. There is currently a £12m programme to convert streetlights across Wiltshire to LEDs. The 42,000 new units are projected to reduce energy consumption by 67% by 2022/23 compared with the 2013/14 baseline.

125. More than half of the council's energy consumption in 2019/20 was for electricity use in buildings and streetlights. These emissions will be recorded as zero from 2020/21 as the electricity is now purchased through a green tariff and comes from 100% renewable sources.

126. While the ultimate concern is reduction of carbon emissions (which a green tariff allows us to achieve, as shown in Figure 7.19) we also need to look at accounting for energy savings, alongside emissions reductions and cost savings. This would reflect the carbon hierarchy (Figure 4.2) and ensure that we are 'eliminating' and 'reducing' emissions before 'substituting' (with renewables).

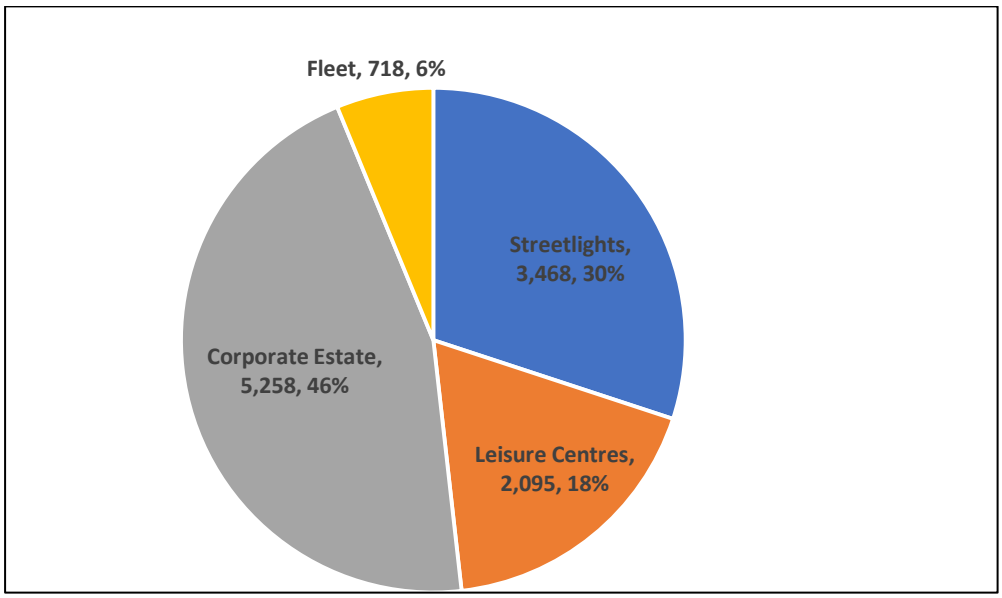


Figure 7.18 Wiltshire Council emissions 2019/20 (scopes 1 & 2, tCO2)

127. The baseline for measuring progress will be the first year Wiltshire Council was created, i.e. financial year 2009/10. However, consistent and comparable data is currently available from 2014/15 which was the point when schools were no longer included in the council's carbon footprint.

Figure 7.19 Wiltshire Council carbon emissions pathway 2010-2030, scopes 1 & 2

128. As Figure 7.19 shows, significant progress has been made towards becoming carbon neutral by 2030:

- In the financial year 2019/20, Wiltshire Council's carbon footprint was 11,641 tCO_2, which is half the emissions of 2014/15.
- Projected emissions for 2020/21 are approx. 4,800 tCO2e;
- This means that since Wiltshire Council declared a climate emergency, emissions will have reduced from 14,864 t in 2018/19 to 4,800t in 2020/21 – a 68% decrease.

129. This is due to a range of measures, such as the green tariff which counts as zero carbon electricity for corporate estate and streetlights, and on-going investment in energy efficiency. Our £5.2m corporate carbon reduction programme will focus on a range of measures, including decarbonising heat in buildings, installing PV and heat pumps.

What does a climate resilient and carbon neutral council look like?

130. In July 2019 Wiltshire Council committed to becoming a carbon neutral council by 2030. This means that all emissions within our direct control (Scopes 1 and 2) will come down to net zero. The goal by 2030 is for the council to have all its fleet running on alternatives to fossil fuels, all corporate estate to have decarbonised heating systems and use only renewable power for all its electricity needs. If there are any residual carbon emissions, these will be offset.

131. Emissions from our outsourced operations or supply chains (Scope 3) are more complex. More understanding of these emissions is needed, and the council will need to develop a target that is evidence-based and aligns with Wiltshire's carbon budgets.

132. Wiltshire Council has an up to date Climate Change Adaptation Plan and measures have been put in place to ensure that the council is resilient to changes in the climate, for example all service areas understand how climate change could affect them and have plans in place to adapt to or be prepared for extremes in weather, flood risk, and overheating.

What will make this happen?

133. As Figure 7.20 shows, we already have data that will help us to focus on the key areas for carbon reductions.

134. Even though our Scope 2 emissions are decarbonised through a green energy tariff, we will still need to work to improve energy efficiency across the board in alignment with the carbon hierarchy. This will be done through our ongoing programme to address energy use from streetlighting and an updated Carbon Management Plan will be developed for all areas and will help to prioritise actions and identify where further investment is required.

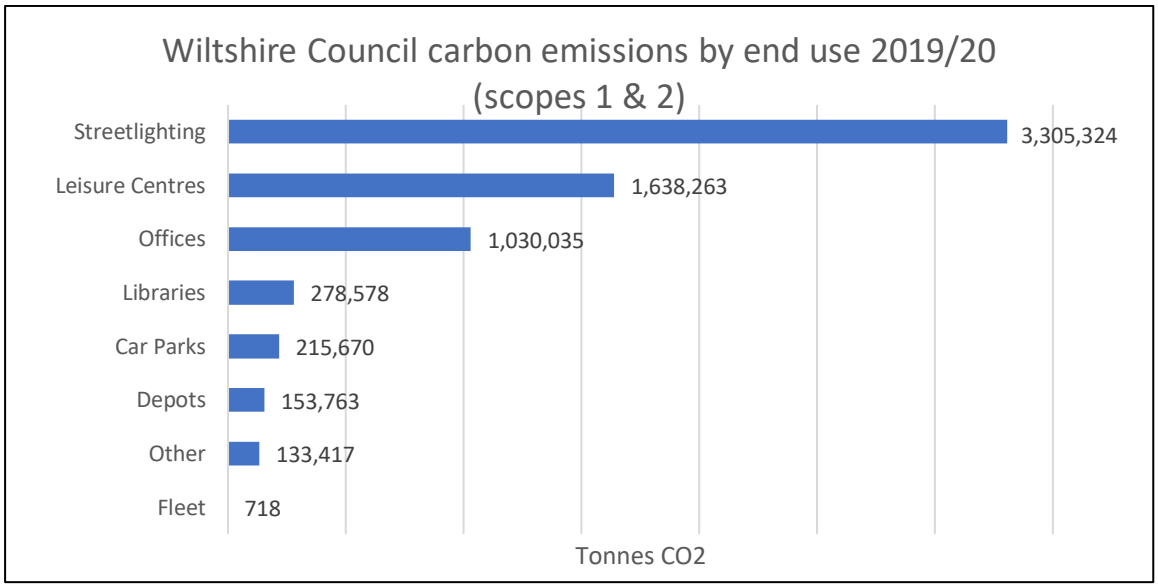


Figure 7.20 Wiltshire Council carbon emissions by end use 2019/20 (Scopes 1 & 2). (GHG Emissions Report 2020)

135. We will need to use systems to help us monitor carbon reductions towards our goal, and link this into a cyclical review process.

136. Governance within the council will need to integrate carbon reduction and climate resilience into everything it does. Decision-making and strategic plans and processes need to include climate considerations at all stages.

137. This is something we would also expect to see at other levels of government, so that our work is supported and not hampered by tensions between different policy areas. National government policy must support the role of local authorities in their climate work and fund decarbonisation projects.

What Wiltshire Council can do

- Review decision-making to embed climate considerations
- Develop Local Plan policies & planning advice
- Develop a new Carbon Management Plan which will include our roadmap to net zero by 2030 for scopes 1 and 2 and our approach for scope 3:
    - Property / Assets: continue to decarbonise heating, improve energy efficiency and switch to renewable electricity generation
    - Fleet: currently under review; move in the main to electric vehicles and identify alternative solutions for larger vehicles
    - Maximise opportunities to install renewable energy to meet council demand
    - Scope 3 emissions:
        - develop a sustainable procurement approach / policy: contractors to measure and report carbon emissions and include reduction targets
        - schools: not currently included in measurements for Wiltshire Council. If resources are available, the council could work with its community and Voluntary Controlled schools to monitor and reduce carbon emissions and become climate resilient, involving pupils and showcasing this work to encourage academies to do similar
        - deliver a council housing retrofit programme and zero carbon new build
- Engagement and training of staff as climate ambassadors
- Lead by example in the way we manage property, operations and make decisions
- Work with Wiltshire Pension Fund so that it supports the council's climate aspirations
- Lobby government for increased funding and powers through groups such as UK100/Countryside Climate Network, ADEPT and the County Councils Network
- Ensure council property and infrastructure is resilient to the impacts of climate change.

8. Next Steps

8.1 Developing a shared vision and delivery plans

138. Wiltshire Council invites your ideas and feedback on this document which will enable us to prepare a consultation draft of our Climate Strategy. Choices will need to be made about priorities and your feedback will help to inform this.

139. A range of delivery plans will be required in addition to the Climate Strategy. An updated Wiltshire Council Carbon Management Plan will support our carbon neutral commitment as an organisation, and Wiltshire Council's Climate Change Adaptation Plan will also be updated.

140. While the strategy is being developed and finalised it is crucial that we continue to implement immediate carbon reduction measures and strengthen our resilience efforts. Progress will continue to be reported to Wiltshire Council Cabinet and Full Council twice a year.

8.2 Governance and risks

141. The council has set up the governance structure set out in Annex A to oversee its climate programme.

142. A new Climate and Environment Forum will be set up in 2021 to involve stakeholders and enable regular two-way communication, as well as a new youth forum.

143. The following risks and mitigation have been identified in relation to the programme.

Key risk	Mitigation
Lack of engagement by Wiltshire residents and resistance to change	Prioritise engagement in developing the strategy and in delivery
National policy does not facilitate delivery locally/keeps changing	Lobby national government; keep strategy and action plans flexible; review regularly; prioritise 'no regrets' measures which will yield benefits in a range of scenarios
Lack of political support	Ensure cross-party support; take part in new councillor induction; regular briefings/updates
Reputational risk from delays to timeline due to elections or other unforeseen circumstances	Develop engagement plan ready for new council; communication team plan to regularly update on progress
Difficulties embedding climate objectives in all council decisions	Develop new decision-making tools and processes
Market lacks capacity to deliver large scale programmes	Work with employers and training providers to develop capacity and skills; fund programmes to stimulate the market
Lack of resources to deliver programme	Identify adequate officer resources and support; access training / best practice networks; access grants and 0% loans; leverage private sector investment; work with Stone Circle Energy Co; develop capital invest to save bids.

8.3 Your role

144. Please give us your feedback on this document and what you would like us to include in our Climate Strategy by emailing climate@wiltshire.gov.uk Comments will be open throughout the engagement period and will inform the consultation draft of our Climate Strategy which will be made available later in 2021.

145. Updates on the development of the strategy and how you can be involved will be available on our website.

9. List of Abbreviations and units of measurement

BEIS – Department for Business, Energy and Industrial Strategy

CCC – Climate Change Committee

CIPFA - Chartered Institute of Public Finance and Accountancy

CO_2 – carbon dioxide

CO_2e – carbon dioxide equivalent

DEC – Display Energy Certificate

DfT – Department for Transport

DNO - District Network Operator

DSO - District Systems Operator

EPC – Energy Performance Certificate

GBI – green and blue infrastructure

GHG – greenhouse gas

GWh – Gigawatt hours

IPCC - Intergovernmental Panel on Climate Change (set up in 1988 by the UN)

kt – kilotonnes

LULUCF - Land use, land use change and forestry

OFGEM - Office of Gas and Electricity Markets

ONS – Office for National Statistics

PV – solar photovoltaics

SCATTER – Setting City Area Targets and Trajectories for Emissions Reduction

t - tonnes

Annex A: Wiltshire Council Climate Programme - Governance Structure