

STRATEGIC SCRUTINY COMMITTEE

Date: Thursday 16 June 2022

Time: 5.30 pm

Venue: Rennes Room, Civic Centre, Paris Street, Exeter

Members are invited to attend the above meeting.

If you have an enquiry regarding any items on this agenda, please contact Sharon Sissons Democratic Services Officer (Committees) on 01392 265115.

Entry to the Civic Centre can be gained at the rear of the Customer Service Centre, Paris Street.

Membership -

Councillors Hannaford (Chair), Leadbetter (Deputy Chair), Allcock, Asvachin, Branston, Harvey, Jobson, Knott, Lights, Mitchell, K, Moore, J, Oliver, Read and Vizard

Agenda

1 Apologies

2 Minutes

(Pages 5 -
12)

To approve and sign the minutes of the Strategic Scrutiny Committee held on 17 March 2022.

3 Declaration of Interest

Councillors are reminded of the need to declare any disclosable pecuniary interests that relate to business on the agenda and which have not already been included in the register of interests, before any discussion takes place on the item. Unless the interest is sensitive, you must also disclose the nature of the interest. In accordance with the Council's Code of Conduct, you must then leave the room and must not participate in any further discussion of the item.

Councillors requiring clarification should seek the advice of the Monitoring Officer prior to the day of the meeting.

4 Local Government (Access to Information) Act - Exclusion of the Press and Public

It is considered that the Committee would be unlikely to exclude the press and public during the consideration of the items on this agenda, but if it should wish to do so, then the following resolution should be passed:

"**RESOLVED** that, under Section 100A (4) of the Local Government Act 1972, the press and public be excluded from the meeting for the particular item(s) of business on the grounds that it (they) involve the likely disclosure of exempt information as defined in the relevant paragraph(s) of Part 1, of Schedule 12A of the Act."

5 **Questions from the Public Under Standing Order 19**

Details of questions should be notified to the Corporate Manager Democratic and Civic Support via the committee.services@exeter.gov.uk email by 10.00am at least three working days prior to the meeting. For this meeting any questions must be submitted by 10.00am on Monday 13 June 2022.

For details about how to speak at Committee, please click the following link - <https://exeter.gov.uk/council-and-democracy/councillors-and-meetings/public-speaking-at-meetings/overview/>

6 **Questions from Members of the Council Under Standing Order 20**

To receive questions from Members of the Council to the relevant Portfolio Holders for this Scrutiny Committee. The Portfolio Holders reporting to this Scrutiny Committee are:-

Councillor Bialyk - Leader
Councillor Morse - Portfolio Holder City Development
Councillor Parkhouse Portfolio Holder Leisure & Physical Activity
Councillor Wood - Portfolio Holder Climate Change
Councillor Wright - Portfolio Holder Culture, Corporate & Democratic Services

Advance questions from Members relating to the Portfolio Holders above should be notified to the Corporate Manager Democratic and Civic Support.

7 **Progress Report from Exeter City Futures and the City of Exeter Greenhouse Gas Inventory** (Pages 13 - 76)

To consider the report of the Chief Executive & Growth Director.

8 **Presentation on the Role of Scrutiny - Terms of Reference attached** (Pages 77 - 80)

A presentation will be made. The current terms of reference for this Scrutiny Committee are attached.

9 **Forward Plan of Business**

Please see for noting a link to the schedule of future business proposed for the Council which can be viewed on the Council's web site - <https://exeter.gov.uk/council-and-democracy/councillors-and-meetings/forward-plan-of-executive-decisions/>

Should Members wish to raise issues in respect of future business please notify Sharon Sissons in advance of the meeting.

Date of Next Meeting

The next scheduled meeting of the Strategic Scrutiny Committee will be held on **Thursday 22 September 2022** at 5.30 pm in the Civic Centre.

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STRATEGIC SCRUTINY COMMITTEE

17 March 2022

Present:

Councillor Barbara Denning (Chair)

Councillors Allcock, Branston, Hannaford, Jobson, Mitchell, K, Moore, J, Pearce, Sheldon and Vizard

Apologies:

Councillors Newby and Buswell

Also present:

Chief Executive & Growth Director, Service Lead - Net Zero, Commercialisation, Skills, Business and City Centre and Democratic Services Officer (SLS)

In attendance:

Councillor Philip Bialyk	- Leader
Councillor Bob Foale	- Portfolio Holder for Transformation & Environment
Councillor Rachel Sutton	- Portfolio Holder for Net Zero Exeter 2030

1 Minutes

The minutes of the meeting held on 18 November 2021 were taken as read, approved and signed by the Chair as correct.

2 Declaration of Interest

No declarations of pecuniary interest were made.

3 Questions from the Public Under Standing Order 19

No questions from members of the public were received.

4 Questions from Members of the Council Under Standing Order 20

In accordance with Standing Order 20, the following questions were submitted by Councillor Jobson in relation to the Board of Exeter City Futures Community Interest Company (ECFCIC). The Chief Executive & Growth Director Karime Hassan answered the questions as a representative of the Board of Exeter City Futures and the responses are included in italics below -

The Board of Exeter City Futures CIC

1. Has there been a Board Meeting of Exeter City Futures (either in person or remote) between 24 November 2020 and 2 January 2022? If so, when and why have the Minutes not been published?

Two meetings have been held on 13 December 2021 and 3 March 2022. For the most part of the period of the Covid pandemic they did not have Board meetings. The minutes were published and on the Exeter City Futures web site and the site map would be made easier to navigate. Members of the Exeter City Futures team could also supply any necessary copies on request.

2. If not has there been a Board Meeting of Exeter City Futures since 2 January 2022? If so, when was it held and when will the Minutes be published?

There had been a Board meeting and the minutes for the Board meeting were published.

3. Has a new Director been appointed to represent Devon County Council (DCC)?

It was anticipated that Dave Black, the Head of Transport at Devon County Council who had attended the Board meeting on 13 December 2021 would have become the new Director of ECF to replace Jamie Hlland. Companies House had not been informed about the change yet but the records would be updated as soon as possible. He understood that Mr Black was not now taking up that place but he was optimistic that a replacement Board member would be appointed soon. He added that Lisa Roberts, the Vice Chancellor of Exeter University had joined the Board as a Director and that was a boost and indication of support from one of the city's main institutions to help deliver the Net Zero agenda. The University, had brought forward their target date for their strategy for Net Zero 2035 to 2030 to coincide with that of the city.

A Member updated Members and stated that it was a matter of public record that Mr Black was due to retire from the County Council shortly.

4. If so, when were they appointed and has the paperwork gone to Companies House?

Once the appointment was made to the Board, the information would be sent to Companies House to update their records.

5. If not, is DCC planning on making a new appointment?

The appointment would be made as soon as possible following discussions.

Councillor Jobson agreed that it was important that members of the public could access such information such as the Board minutes easily and she welcomed the responses.

Finances (All Information in the Questions is in the Public Domain)

1. Exeter City Futures Community Interest Company (CFCIC) was allocated a start-up budget from Exeter City Council (ECC) at the Executive Meeting in February 2016. Did ECFCIC receive this sum? If so when, as no figures appear in the published accounts for the period to December 2017 or was this sum only received in the year to end December 2018 there being a figure for prepayments and accrued income of £49,108.

ECFCIC did not receive this sum directly, the £50,000 budget was set aside towards Council expenditure incurred to help facilitate the start-up and promotion of the Exeter City Futures programme. In 2016/17 £23,160 was incurred and this was disclosed in the Council's published accounts on page 74. The balance was carried forward and spent in 2017/18.

2. In 2019 Exeter City Futures Community Interest Company (ECFCIC) bid for and was awarded a grant of £200,000 from Central Government. Was that sum directly received into the ECFCIC bank account or via some other body? How was it distributed? There is no reference to such sum in either the 2019 accounts or the accounts published in December 2021? If received on what has it been spent?

Devon County Council managed the overall One Public Estate Programme and awarded the Funds via ECC. ECFCIC provided quarterly grant claims (backed by invoices), ECC paid the ECFCIC the invoice and then reclaimed from DCC. It was important for Members to note that the Government tend to require that there is a Section 151 Officer to take responsibility for grant funding and therefore do not allocate the funds directly.

The £200,000 was received from the One Public Estate and in order to prepare the master plan for the St David's Station site which was one of the strategic sites in the Liveable Exeter vision. The governance structure had been set up and included Exeter University, Exeter College, Devon County Council, Network Rail, and Exeter City Council. It should be noted that Network Rail were obliged in respect of the franchise with Great Western Railway (GWR) to deliver a number of parking spaces currently allocated in the front of the Station, which offered a challenge to deliver viability on this project. Work on the masterplan paused until such issues were resolved, which has meant that funding of £147,000 remained outstanding.

3. In 2020 ECFCIC bid for £840,000 from Central Government. It is understood that £350,000 was awarded. Was that sum directly received into ECFCIC bank account or via some other body? How was it distributed? There is no reference to such sum in either the 2019 accounts or the accounts published in December 2021? If received, on what has it been spent?

The full £840,000 was awarded over two years. The accountable body was Exeter City Council and the Council received £380,000 on 1 March 2021 and £470,000 on 15 February 2022. The funds were being paid over to ECFCIC in arrears on the production of an invoice. This was the Exeter City Fund, which Scrutiny will be looking at shortly. This was a significant sum which would be used to model the cost of delivering the entire Liveable Exeter programme in order to get to the Net Zero agenda. The One Public Estate were with the Exeter Development Fund testing an initiative that might be nationally replicated, and although a final decision had yet to be made on the Fund being used in Exeter, there was the opportunity for modelling of the viability of this development to help achieve these big ambitions, and help the City Council access that funding.

Councillor Jobson asked a supplementary question and whether there was scope within the Executive or Scrutiny to get regular reports on how the modelling will be done and preferably before any big decisions are made.

The Chief Executive & Growth Director welcomed the opportunity for Members to scrutinise through a structured programme of scrutiny meetings to understand the Exeter Development Fund model, and consider how to deliver the kind of development that they all would like to aspire to. No decisions would be taken other than through the Council's formal Committee processes. They would also be asking all the other partners including Exeter University, Devon County Council, Exeter College and the Royal Devon & Exeter Hospital to engage with the Exeter City Futures team.

4. A grant of £250,000 was to be received from the Heritage Lottery Fund? Was that sum received? There is no reference to such sum in the accounts published in December 2021? If received - on what has it or is it being spent?

The Chief Executive & Growth Director stated that £250,000 was awarded to Exeter City Futures from the National Lottery Community fund to help with the mission to deliver on Net Zero. The fund was broken down into four packages with a financial statement included as part of the submission. The funding would go directly into a separate account belonging to Exeter City Futures for work that had been identified, and would be paid in six months tranches based on the initial budget. Currently, the account was slightly underspent due to the impact of Covid, and the National Lottery Fund had given a further six months in recognition of activities that may have paused.

Councillor Jobson asked a supplementary question on whether the ECFCIC accounts are audited. She recalled seeing an auditor's signature on the Company's House published web site and so she asked whether the report would be available or if it would not be in the public domain.

The Chief Executive & Growth Director would make enquiries and report back to Members.

Question to the Leader

1. Would the Leader please confirm that Exeter City Futures CIC, which has either statutory power or policy-making authority, can do no more than make recommendations directly to Exeter City Council as to how Net Zero 30 can be achieved? Can the Leader confirm that all such recommendations will be fully debated by the membership of Exeter City Council?

The Chief Executive & Growth Director at the invitation of the Leader offered the following response -

Exeter City Futures was a Community Interest Company and could not take decisions that bind Exeter City Council. All decisions impacting on those areas of the Council would be taken to the Executive and Council. It was noted that the Council had no powers to enforce decisions upon partner organisations as they have their own decision making process. Other Councils may follow consideration of the Exeter Development Fund model to bring together institutions to create a single vision and rethink of the way to plan and take decisions collectively about how to align to deliver the Net Zero agenda to develop clean energy. He would be happy to make a presentation to a future Committee outlining the work of Exeter City Futures are doing with the secured funding of £1.2m to deliver the city's Net Zero agenda.

The Chair thanked the Chief Executive & Growth Director for the responses.

Councillor Hannaford asked a question of the Leader raising his concern of the announcement of the closure of Clarendon House by the Department Work and Pensions, (DWP) which included the city's Job Centre. He had hoped to present this matter as an emergency resolution, but would address the matter by way of a question to the Leader.

Councillor Hannaford read out a statement in the following terms:-

- concern about the shock announcement by the Department of Work and Pensions to close Exeter's Clarendon House that includes Job Centre Plus.
- that these proposals do not include any relocation measures for the staff and essential services.
- this move was particularly outrageous during an international economic crisis, that will see people in Exeter coping with spiralling living costs, state benefits in effect cut as they are not inflation linked, and our city ready and willing to take in refugees who will also need additional employment support.
- it was essential that people in Exeter and the surrounding area have access to customer facing transactions to receive professional help, support and advice during times of unemployment, distress and disability, and educational, training and skills advice to secure employment.
- to register concern that nationally all 12,000 Universal Credit Advisors have to now reapply for their own jobs once their temporary contracts run out, which could lead to additional financial hardship for vulnerable people during the cost of living crisis during the transition period.

He asked for the Leader of the Council to seek an urgent meeting with all relevant parties, including the regional Department of Work Pensions representatives, staff and unions, Devon County Council, and local Members of Parliament. He asked that this meeting should consider amongst other matters, the decision to close this employment hub, the possible transition period, potential future alternative sites, and Job Centre Plus provision for the Exeter travel to work area.

The Leader responded and in referring to the statement prepared by Councillor Hannaford confirmed he would make arrangements to convene a meeting with all of the relevant parties as requested. He would also send a letter based on the statement and add his own concerns because the service offered a place for individuals to obtain information and resolve any benefits enquiries and would deny access to some of those services. He thanked Councillor Hannaford for raising this matter.

Councillor Hannaford asked a supplementary question if the Leader thought the closure could lead to extra pressure on our services. He acknowledged that Exeter Works Hub had been a great success, but the Council should not shoulder the burden alone and the full suite of professionals should be asked for their support.

The Leader responded and stated that the Council would continue to do more than is expected, with ever decreased resources.

5 Portfolio Holder Update

Councillor Foale, Portfolio Holder Transformation & Environment provided an introduction and update on areas within his Portfolio having met with the Directors of Finance, Transformation and Net Zero and the Service Lead - Environmental Health and Community Safety. He invited the Service Lead – Net Zero & Business to present some detail on the work being undertaken to help the city's economy recover from the Covid pandemic.

The Service Lead – Net Zero & Business referred to the challenges faced by the city over the past two years, predominantly on those impacted by the Covid-19 restrictions, and impact on businesses. A briefing note was circulated providing relevant information, data and an overview of the current situation in relation to key

areas of Exeter's economy, as well as setting out those challenges, and the responses that have been provided by the City Council and its partners.

The key areas were highlighted as –

- **Retail Trade:** a recent Centre for Cities report provided insights and comparisons of Exeter's city centre to other national city centres, citing Exeter with the 8th lowest shop vacancy rate at 12.9% (June 2021). During the pandemic, neighbourhood shopping areas had fared more favourably than the High Street. The biggest retail casualty in Exeter had been in fashion retail. Exeter was identified as having the 12th highest share of spending online between 2019 and 2021, an area where spending has bounced back.
- **Business openings and closures:** there had been over 47 shop closures, with these mainly being national high street chains. In comparison, 59 businesses have opened in the city, the majority being independent shops using locally sourced goods. Demand for vacant units in the city centre remained positive, with units owned by the City Council being let very quickly, whilst some larger units demanding high rents remained vacant.
- **City centre parking:** Exeter city car parks had been effected during the pandemic with many people working from home. Ticket sales remain 16% down on pre pandemic levels, which continued to have an impact on income levels of the service managing car parks. Work continues to be undertaken by InExeter and Visit Exeter to attract people into the city centre.
- **City Centre Footfall:** this has moved in line with national restrictions being imposed and lifted with footfall decreasing by 5.3%, lower than the south west figure of 18.6% and the national figure of 22%. Exeter was awarded Government funding through the Reopening High Street Safely Fund and the Welcome Back Fund to provide a focus to attract people back into the city. The Net Zero and Business team were about to embark on a refresh of the contents and recommendations of the City Centre Strategy in the light of the challenges to the labour market and workforce requirements of businesses in the city. The opening of St Sidwell's Point was keenly awaited to continue to drive up footfall.
- **Labour Market:** the impact of the end of the national furlough scheme has not been felt as anticipated, but was one of the reasons why Exeter Works was established in partnership with Exeter Chamber of Commerce. It supports residents and the business community in the city with advice, and guidance for those seeking jobs, careers and training. The Council's Skills and Inclusivity Manager continues to work on the challenges of the labour market with Job Centre Plus. The team continues to raise awareness with schools, the college and university of the need to retain graduates in the city and have been working with employers to raise the sector.
- **Business support:** support was administered through the Net Zero and Business team, with the Government providing business grants and business support interventions with over 8,733 awards totalling £50 million, as well as a final Discretionary Business Exceptional Hardship Fund post pandemic.
- **Housing:** house prices have risen by 18% since 2016 and there has been a challenge in sourcing rental accommodation for those moving into the area. Efforts continue to be made across Devon to support key workers in sourcing rental accommodation.

In conclusion, the Net Zero and Business team welcomed the positive signs in the economy of the city, but continue with a watching brief on emerging data and information to target their work accordingly.

The Service Lead – Net Zero & Business and City Centre responded to the following Members' questions:-

- the city was still an attractive and affordable place for relocation with a real change in recent years, with high growth around digital and tech businesses, as well as environmental science.
- the Member's comment that there were professional colleagues who had difficulties securing accommodation was noted. The increase of Airbnb and second homes was having an impact and had the potential to hold back the growth. She would circulate information on the average rental level to Members.
- recognition of the need to ensure as many residents can benefit from the city's growth as possible with a continuation of looking at support through access to the benefits of careers advice education and training.
- the Service Lead - Environmental Health and Community Safety has been continuing to look at how the city centre can evolve to attract more families into the city centre and extend the day time retail economy into the evening in the city centre.

The Service Lead – Net Zero & Business would circulate information on Graduate retention which had been comparable to other cities. There had been an increase from 2019 to 2020 with graduates remaining in the city and also information relating to the effect of Brexit, on economic activity in the city with an impact within the health and social care sectors.

The Chief Executive & Growth Director in responding to a Member's question on putting forward a request for a BID for St Thomas, extending out from the Exe Bridges to the Alphington corridor, reminded Members that the focus of the business team was now on education and skills. The Service Lead – Net Zero & Business added that they were about to begin work on a refresh of the City Centre Strategy and she would raise this matter.

The Chair thanked the Portfolio Holder and the Service Lead – Net Zero & Business for their work which has shown that Exeter make all the efforts for inclusion.

6 **Forward Plan of Business**

Members noted the Forward Plan.

The meeting commenced at 5.30 pm and closed at 7.05 pm

Chair

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REPORT TO STRATEGIC SCRUTINY COMMITTEE

Date of Meeting: 16 June 2022

Report of: Chief Executive & Growth Director

Title: **Progress update from Exeter City Futures and city of Exeter Greenhouse Gas inventory**

Is this a Key Decision?

No

Is this an Executive or Council Function?

Executive

1. What is the report about?

1.1 This report sets out progress from Exeter City Futures CIC on the work being done to progress the Net Zero Exeter 2030 Plan together with a baseline greenhouse gas (GHG) inventory for the city, it quantifies the reductions required to achieve net zero in 2030 and identifies more specific and timely metrics for monitoring progress towards carbon neutrality in each emissions sector.

1.2 The Report paints a stark picture of the scale of the challenge ahead for the city of Exeter in achieving a Net Zero city by 2030. It does provide a helpful suite of key performance indicators that are measurable and capable of being held as a strategic dashboard on performance for the city. The Report inevitably raises questions regarding resources to achieve the goal. Therefore the report suggests options for consideration.

2. Recommendations:

2.1 That Members note the Exeter Greenhouse Gas Emissions Inventory and acknowledge that the pace and scale of change required to deliver on the Net Zero 2030 goal will require a step change in resources, activity and policy making both at a local and national level, and are invited to consider what messages they would wish to relay to the Executive when it considers the Greenhouse Gas Emissions Inventory.

2.2 That Members of Scrutiny Committee acknowledge the importance of biodiversity and carbon sequestration in addressing the challenge of delivering a net zero Exeter and invite a presentation to a future meeting of Scrutiny Committee on practical proposals for linking the planning and development system with the climate and ecological emergency involving a mechanism to deliver net biodiversity gain on development sites and carbon offsetting within Devon, this could comprise a Natural Capital Delivery Partnership.

3. Reasons for the recommendations:

3.1 Exeter City Council (ECC) declared a Climate Emergency in 2019 and pledged to work towards creating a carbon neutral city by 2030. The target year is 20 years in advance of the 2050 national net zero target required under the Climate Change Act and reported on in the Sixth Carbon Budget.

- 3.2 In 2020 the Council announced a series of initiatives to drive forward the city's net zero ambitions. The Centre for Energy and the Environment at the University of Exeter was commissioned to establish a baseline greenhouse gas (GHG) inventory for the city, quantify the reductions required to achieve net zero in 2030 and identify more specific and timely metrics for monitoring progress towards carbon neutrality in each emissions sector.
- 3.3 The GHG inventory reports emissions for eight sectors: power, buildings, industry, transport, agriculture, land use, waste and fluorinated gasses (F gases). The inventory is for territorial emissions. Territorial emissions are those arising from within the boundaries of the city and are therefore more in the control of people living, working and visiting the city.
- 3.4 Greenhouse gas emissions in Exeter have generally been on a downward trajectory since 2008. Estimated GHG emissions of 717 thousand tonnes of carbon dioxide equivalent (kt CO₂e) in 2008 have declined by a third to 476 kt CO₂e in 2019. Buildings is the sector with the highest emissions (35%) followed by power (24%) and transport (22%). Emissions from each of the remaining sectors are 7% or less.
- 3.5 Analysis for ECC's 2007 Climate Change Strategy identified a 2020 emissions target of 516 kt CO₂. With 2019 emissions below 500 kt CO₂e, this looks achievable (subject to Covid 19 bounce back). However, the sector detail shows that the reduction is the result of grid decarbonisation, which has taken place outside Exeter, and has delivered three times the change estimated in 2007. Local sector reduction in buildings and transport has failed to meet the objectives set in 2007 by factors of 6 and 4 respectively.
- 3.6 Extrapolating from the "current trend" since 2016 suggests that emissions in 2022 will be 448 kt CO₂e. The continuation of the current trend to 2030 would give residual emissions of 291 kt CO₂e, nowhere near net zero. Importantly, the current trend will not continue because of grid decarbonisation; for the decline in emissions to continue at the same rate, a 28% reduction from non-power sectors will be required to deliver the extrapolated trend in 2030.
- 3.7 Delivering net zero in 2030 requires a much greater reduction in emissions. A linear decline in emissions from 2021 to zero in 2030 requires a decline of 50 kt CO₂e (11%) per year and gives cumulative emissions over the period of 2.2 Mt CO₂e. Under the extrapolated current trend these cumulative emissions would be exceeded in 2026. Lack of progress in the buildings and transport sectors is particularly concerning. Growth in the city is leading to increases in emissions and the decarbonisation of electricity cannot continue to make up for the shortfalls in these sectors. The city needs to make significant progress in buildings and transport to deliver net zero.
- 3.8 In the sector analysis, net zero 2050 targets from the Sixth Carbon Budget set the 2030 values for measures in Exeter. The default assumption is that progress from the current position to net zero will occur in a linear manner, i.e. with the same annual increment in the nine years between 2021 and 2030. The danger with other assumptions (for example an exponential change which starts at a low level) is that the short term challenge is minimised only for the measure to then be impossible to deliver in the late 2020s

Power

- 3.9 Local renewable energy contributes to grid decarbonisation and to the local economy. In the power sector, the majority of Exeter's future additional renewable energy will come from solar photovoltaic (PV) panels on roofs. The Sixth Carbon Budget does not set targets for roof mounted PV so it has been assumed that by 2030 25% of Exeter's existing domestic roofs have PV installed and that 50% of new

homes built between 2020 and 2030 have PV with each installation assumed to have the historic average peak capacity (3 kW). Hitting this target would mean that in 2030, 14,000 of Exeter's domestic roofs (28%) would have PV (currently 2,300). The target for larger non-domestic arrays is 890 installations (currently 128). Recent PV installation rates have been low (36 in 2020) with a long run average of 220 installations per year. Hitting the 2030 monitoring target of 14,900 installations in total requires a rate of some 1,240 installations per year, every year to 2030. This installation rate is twice the peak historic rate achieved in 2012.

Buildings

- 3.10 Emissions from Exeter's buildings have hardly changed since 2008. Buildings were responsible for 35% of GHG emissions in 2019. 25,400 of Exeter's 56,400 homes (45%) are estimated to still need more loft insulation. Installing this basic energy efficiency measure by 2030 requires 2,800 installations in every year until 2030. The city needs cavity or solid wall insulation in 10,200 homes. Insulating all cavities and half the solid walls by 2030 requires 1,500 wall insulation measures each year.
- 3.11 Net zero requires moving away from natural gas for heating. While Exeter has more homes connected to heat networks than many UK cities its size (3,100), another 11,200 will need to be connected by 2030 (1,200 each year). While some homes will be on heat networks, the majority will need to install heat pumps with a target of 42,200 homes having heat pumps by 2030 (currently 449 homes are estimated to have heat pumps). This requires the installation of 4,600 heat pumps every year to 2030.
- 3.12 Non-domestic buildings also need improving. 3,100 non-domestic buildings in Exeter have energy efficiency ratings of C or below. Achieving a targeted 27% improvement in energy efficiency means upgrading most of these buildings to band B with 260 buildings upgraded every year to 2030. The need to switch to low carbon heating in non-domestic buildings implies heating system replacement in 270 non-domestic buildings every year to 2030.

Industry

- 3.13 The industrial sector covers emissions from manufacturing and construction businesses excluding those arising from the consumption of electricity and from buildings (covered above). Typically, the sector includes energy intensive industrial activities such as refineries, chemicals, iron and steel, and cement, which together are responsible for nearly two thirds of UK industrial sector emissions. These industries are not present in Exeter. Emissions in the area are more likely to occur from food and drink manufacture, printing, water, waste management and a variety of other smaller manufacturing businesses.
- 3.14 Industrial emissions in Exeter are relatively small (6% in 2019) and are less than one-half of the 2008 value. Only 2% of Exeter's 2019 industrial emissions came from industrial processes with the remainder arising from fuel consumption (mostly gas) indicating that cutting fuel consumption is the priority. The absence of identified point source emissions in Exeter makes it difficult to identify specific measures that target significant industrial emissions in the city. Improving industrial energy efficiency and switching away from fossil fuels to electricity are likely to be the most effective ways of reducing emissions. However, there is currently insufficient granularity in the data to measure or target specific measures in the sector. Reducing 2019 emissions of 27 kt CO₂e will require annual emission reduction of 2.4 kt CO₂e per year over 11 years to 2030.

Transport/Mobility

- 3.15 Emissions from transport, Exeter's third largest emissions sector (22%), have remained stubbornly high with little change since 2008. Pre Covid rises in vehicle

miles in Exeter need to be reversed to hit the 2030 target of a 17% decline in the 542 million kilometres driven in 2019. This change requires a 10 million kilometre per year reduction to 2030, a large change from the 6 million average annual increase from 2000 to 2019.

- 3.16 Electric vehicle (car and van) ownership in Exeter has grown exponentially over recent years. At the end of 2020 there were 590 battery electric vehicles registered in Exeter. For all 50,400 vehicles in Exeter to be electric requires 317 to be registered in 2021 with exponential growth continued thereafter. However, this rate of growth means that beyond 2027 the required replacement rate exceeds the pre Covid new vehicle registration rate. Adequate charging points will also be needed; as of October 2021 Exeter had 49 charging points for electric vehicles. The 2030 charging point target is 778, which if it is to be met, needs the installation of 81 new charging points per year to 2030.
- 3.17 Larger commercial vehicles and HGVs will also need to be zero emissions. In 2020 there were 2,500 HGVs, buses and other vehicles registered in Exeter. These are likely to be a fraction of those categories of vehicle driving on the city's roads. Although relatively few in number, larger vehicles have a greater per vehicle impact on emissions, so transitioning them away from fossil fuels is important. Targets and monitoring for larger vehicles need to be developed as data becomes available.
- 3.18 Exeter has recorded steady increases in cycling over the past decade. However, to reach the target of 11% of car and taxi journeys requires current cycling (5 million kilometres) to increase to 46 million kilometres in 2030, an annual increase of 4 million kilometres each year every year. Similar numbers of journeys will need to be walked.

Waste

- 3.19 Exeter's waste emissions (7% of the 2019 total) have been similar over the past 4 years following the commissioning of the energy recovery facility (ERF) in Marsh Barton. Emissions prior to 2014 were lower as Exeter's waste was disposed of outside the city (mostly to landfill).
- 3.20 Exeter City Council and Devon County Council, the respective waste collection and disposal authorities, only have information on, and collection and disposal responsibilities for, domestic waste. Local authorities have little knowledge of or influence over commercial waste in their locality. It is important for Exeter to obtain reliable and up to date information on volume and composition of non-domestic waste streams to enable assessment of emissions from non-domestic waste.
- 3.21 The Sixth Carbon Budget foresees a range of measures including reducing waste generation by 33% by 2037, increasing the UK wide recycling rate to 70% by 2030 and fitting carbon capture and storage (CCS) to all energy from waste (EfW) plants by 2050.
- 3.22 Exeter generated 39,000 tonnes of household waste in 2020/21. A 33% reduction would require this to fall to 26,000 tonnes in 2030, equivalent to an annual reduction of 1,300 tonnes each year. Although Exeter's households each generate moderately less waste than those in other parts of county, the city has a relatively low recycling rate (28% versus 55% for Devon as a whole). Improving recycling to 70% requires a 4.2% annual increase each year to 2030.
- 3.23 Measures for lowering emissions from the ERF include reducing fossil inputs to the ERF (e.g. by increasing plastic recycling) and exporting heat. The use of heat increases the efficiency of energy recovery from the waste and reduces CO₂ emissions; the more heat used, the lower the emissions. Promoting heat use in the Liveable Exeter schemes in Water Lane and Marsh Barton will be important in this

respect. Ultimately, the installation of CCS is required. The Sixth Carbon Budget requires the installation of CCS on all UK energy from waste plants between 2040 and 2045. Net zero in Exeter requires this in 2030.

F-gases

3.24 Although emissions from F-gases in Exeter are a minor part of Exeter's footprint (7%), under a net-zero scenario, the decarbonisation of other sectors means that, left unchanged, the F-gas contribution will play an increasing role.

3.25 Emissions reduction in the F-gas sector is driven by national and international legislation and there is therefore relatively limited scope for Exeter to accelerate emission reduction from F-gases. Local trading standards bodies enforce air conditioning inspections and more proactive enforcement may be a route to lower emissions.

3.26 Further work is required to develop specific targets for F-gas emissions. Reducing 2019 emissions of 29 kt CO₂e will require annual emission reduction of 2.6 kt CO₂e per year over 11 years to 2030.

Proposed Monitoring Targets

3.27 The monitoring targets show the scale of the changes needed in Exeter to meet the 2050 targets set out in the Sixth Carbon Budget by 2030. In summary, these include:

- Over 1,200 PV installations each year every year to 2030, compared to 36 in 2020, a six-fold increase in the long run average installation rate.
- Installing loft insulation in 25,400 homes by 2030 or 2,800 homes each year every year to 2030.
- Insulating the walls of 13,500 homes by 2030 at the rate of 1,500 every year.
- Putting 4,600 heat pumps in homes every year to 2030, there are currently 449 heat pumps in Exeter's homes.
- Connecting an extra 11,200 homes to heat networks by 2030 (over 1,200 each year).
- Improving the energy efficiency of 260 non-domestic buildings every year to 2030 and switching 270 every year to low carbon heating.
- Reducing driving in Exeter by 10 million kilometres each year, every year to 2030.
- Continuing the exponential growth in electric vehicles ownership (aiming for 317 in 2021) and putting in an additional 81 charging points in every year to 2030.
- Increasing cycling rates by 4 million kilometres annually (equivalent to 70% of the current total level) with matching increases in walking.
- Achieving a 1,300 tonne annual reduction in household waste generation each year, every year and a 4.2% annual increase in recycling rates each year, every year to 2030.
- Capturing and storing CO₂ emission from the Exeter energy recovery facility by 2030.

3.28 It has not been possible to identify data sources or specific proxy measures for the industry and f-gas sectors and some more specific targets have yet to be determined and therefore do not currently have data sources or incremental targets. These shortcomings should be addressed as part of the ongoing monitoring process.

Carbon off setting and Biodiversity gain

3.29 It is inevitable that carbon off setting will be part of the programme to achieve a net zero city, urgently the City Council needs to satisfy itself that a mechanism has been established that is credible and capable of delivering greenhouse gas reductions. There is a growth in international and national initiatives to off-set carbon, there is an international and national price for off-setting a ton of carbon. That pricing

mechanism will change over time. There is opportunities for abuse and opportunities to do indirect damage. It would be interesting to work out all the existing commitments to deliver carbon off setting and whether it is feasible to actually achieve these stated commitments.

3.30A couple of local authorities have put in place a local pricing mechanism for biodiversity gain and given the planning obligations it is timely that the city council establish a process that will satisfy members both in terms of biodiversity but also as part of the carbon off setting requirements.

3.31It would be helpful if Members could look at local initiatives and see for themselves the opportunities for addressing biodiversity gain and carbon off setting. It would be possible to invite to Scrutiny committee companies already working on local initiatives that may provide a mechanism to deliver with a degree of confidence.

4. What are the resource implications including non-financial resources

4.1 ECF as a Community Interest Company is minimally resourced and has relied heavily in the past upon funding from Oxygen House and Global City Futures and to a lesser extent ECC. At times other partner organisations contribute by providing an officer resource. For example in the past a transport planner from DCC was based in the team, and a project manager was seconded into the team by the University of Exeter. If the role of ECF is defined as a change agent, a vehicle for the city's organisations to keep a focus on the challenge and to align and co-ordinate activities towards a net zero goal then the capacity of the team is insufficient to meet the task but nevertheless it can continue to perform an effective role in moving the agenda forward, but in an opportunistic way rather than as supporting a programme designed to meet defined targets.

4.2 Presently there is insufficient resource within ECF to support the whole programme to achieve Net Zero Exeter 2030. Even if the work was limited to a traditional programme management role ECF would need more staff. There is insufficient funding to support studies and prototype work. There is no funding for capital projects nor a constant funding resource to fund bid writing for national funding opportunities. However, there is clear alignment with the strategic ambitions for the partner organisations that should be suggestive of a willingness to address these issues.

4.3 The Net Zero Plan 2030 identified the scale of the investment programme required to deliver Net Zero 2030. A successful delivery plan would be a mixture of public and private finance. There is already large scale investment taking place in various work streams and there is investment appetite to fund aspects of the work, big shifts are taking place with long term investment strategies. For example land is being bought by institutional investors for the purpose of carbon off setting requirements, pension funds are investing in technology such as air heat pumps. Registered Providers (RPs) are investing hundreds of millions in housing retrofit programmes. It would therefore be a mistake to assume that the public sector has to do the heavy lifting in funding the transition. There is an interest in working with cities to deliver an ambitious programme. International examples of cities making progress are worth looking at. The clear 2030 end date for delivering net zero crystallises the challenge and what has to happen to achieve the goal. But the present pace of change within the city will not get us to the goal of Net Zero by 2030.

4.4 The retrofit programmes for domestic and commercial buildings are quantifiable and we have enough examples of the ingredients for achieving the required improvement in performance to be able to quantify the cost and work through the logistical challenges to achieving the monitoring targets. It will become more interesting and challenging when addressing the solution for individual buildings, as the Council's own retrofit programme illustrates optimising the solution for specific properties has to be done by building type and building specific. The technical solutions require

assessors and contractors, labour and product, finance and rigorous inspection. There already exists private and public funded programmes, and contractors are working with the Exeter College to address challenges in areas such as skills and labour supply. RPs are willing to share learning. Individual companies are building digital twins of the city's roofs to identify capacity for PV, potential for walls to contribute to PV output. The city possess firms at the leading edge of air heat pumps technology. Therefore there are many of the ingredients already assembled to make solid progress towards a meaningful retrofit programme. But to achieve the targets required to meet Net Zero 2030 requires a step change in activity, a massive increase in outputs.

4.5 The same can be said for: connecting an additional 11,200 homes to heat networks; stepping up Electric Vehicle (EV) infrastructure, reducing car usage and increasing cycling usage etc. A massive step change is required. From an ECF point of view aggregating individual programmes in a programme management function will not achieve the goal, although there is a lot of value in bringing this body of work together in one place and holding the data on performance in a public fashion, and it is clearly an option.

4.6 It has been known for some time that the sector that is likely to be most challenging is transport, because people live complex lives and transport policy impacts on us all, movements across the city and in and out of the city are vital to us as individuals and to businesses. We also know that when public transport is less than satisfactory or when there is no public transport available the car becomes essential to our quality of life. This is particularly so for those living within the rural catchment of the city. A Net Zero Exeter requires us to address this theme. The County Council transport planners can testify to the difficulty in making decisions that require interventions prioritising pedestrians and cyclists over motorists. The simple fact is that the city will need a profound shift in cycling within the city and this will require a combination of reprioritising of infrastructure in favour of cyclists, safe networks and supportive policies, plus co-ordination of transport policies, parking tariffs and innovation in mobility solutions. Layered on to this will be the need for changes in the planning system the distribution of land uses and physical activities and support for communities and individuals. Good work is already taking place to begin this transformation but the pace of the change is not sufficient to meet a Net Zero Goal. In real time the city council is having to consider policies that will lock in the city development for the next 20 years and therefore the redevelopment of surfaced car parks or not, the location for multi-story car parks or not, the provision of car free developments or not are all matters that require urgent attention and care so as to not to damage businesses in the here and now for the sake of a goal that we have chosen 20 years ahead of the country as a whole.

4.7 Therefore, in answer to the question what are the resource implications of this report, the question is what role members wishes ECF to play in pursuance of the Net Zero 2030 goal? It can be modest, assuming that Members simply note the report and acknowledge the considerable challenge or it can be seen as mission critical and therefore requires an enhanced resource commensurate to the challenge in hand. A combination of investment and a clear policy framework will be required to support the city of Exeter achieve the Net Zero goal and options to achieve these outcomes should be brought back to Executive with some urgency.

5. Section 151 Officer comments:

This report sets out in stark terms the challenges to deliver net zero. From a financial point of view, the scale of investment required is far in excess of that which the Council can afford. Council set aside £1 million a year ago in order to provide some resource to the project, but this in itself is clearly a tiny fraction of what is required. Members will

have a difficult balancing act on driving forward the agenda, whilst protecting number of income streams that they rely on to deliver services to their citizens.

6. What are the legal aspects?

None identified

7. Monitoring Officer's comments:

This report is an update paper for Members information. Given that, it raises no issues for the Monitoring Officer.

8. Report details:

Background Report

- 8.1 Exeter City Council (ECC) declared a Climate Emergency in 2019 and pledged to work towards creating a carbon neutral city by 2030. The target year is 20 years in advance of the 2050 national net zero target required under the Climate Change Act and reported on in the Sixth Carbon Budget. The Devon Carbon Management Plan aligns with the 2050 national net zero target. At the 23rd July 2019 meeting of Council members also recognised the connected biodiversity crisis, and the vital role of biodiversity in tackling climate change and its contribution to our quality of life.
- 8.2 In July 2020 Council adopted the Net Zero Exeter 2030 Plan to inform all policy documents, plans and corporate decision making in response to the Climate Emergency and in pursuance of the goal to make Exeter a carbon neutral city by 2030.
- 8.3 The Plan presents a blue print for how the city of Exeter can achieve its ambition to be net-zero carbon by 2030. The Plan sets out ways in which each of us can play our part in achieving the net zero ambition, and to enable everyone across the city to engage in a meaningful way. It is built on an understanding that the city can only achieve its net-zero carbon targets if organisations, individuals and institutions take responsibility and accept they have a role and play their part. It is an attempt to focus the city on a sequence of key actions that take us to 2030 and enable these actions to be reflected in city and organisational plans.
- 8.4 It needs to be acknowledged that in pursuing a 2030 goal some national policies will not be aligned and therefore, as with the case of new housing, there will be limits to what councils can oblige.
- 8.5 At the time members adopted the Net Zero 2030 Plan the country was battling Covid and the financial impacts of lock-downs on the council's finances was severe. There was a recognition that once the crisis was over and the financial impacts were better understood work would be done to consider how the city council would progress those actions identified in the Plan as actions that ECC could lead on. Since approving the report there have been changes internally within the council to bring a clear focus on the net zero agenda under the Director for Net Zero and that work, focused on the greenhouse gas emissions from ECC, will be brought forward separately for consideration.
- 8.6 The focus of this report is the work of Exeter City Futures CIC to support the city of Exeter's Net Zero ambition.

Exeter City Futures CIC

- 8.7 Exeter City Futures (ECF) was established in 2015 to transform Exeter into a leading sustainable city. Comprising Exeter City Council, Devon County Council, the University of Exeter, Exeter College, the Royal Devon & Exeter NHS Foundation Trust, Global City Futures and Oxygen House, it was conceived as an ambitious,

long-term vision for the city that promises to harness pioneering technology and data analytics to tackle transport, energy and health challenges, and accelerate the city's economic development. The focus on data analytics was deliberate and matched a particular skill set in the city and suggested opportunities to do things differently. Further, it was an attempt to support a greater level of innovation in the city that could stimulate new start-up businesses. Exeter's economy needs more SME and greater levels of innovation, indeed this is a significant regional challenge - Exeter does relatively better than other parts of the region but - the region lags behind relative to the country as a whole. The work launched simultaneously to a major push by Sir Steve Smith, then Vice Chancellor at the University of Exeter on Innovation Exeter, an attempt to provide leadership to an emerging strategic theme that framed the big opportunity and challenge for the region. The University of Exeter had become a Russell Group University and was securing increasing amounts of research funding, a challenge for the region was to capitalise on this research for the benefit of the wider economy and the opportunity was to shape an economic agenda focused on two world leading institutions the Met Office and the University of Exeter in their expertise in the area of environmental intelligence.

- 8.8 Bringing private and public sector institutions together to support an emerging ecosystem for firms wishing to work on the challenges faced by urban areas especially in the area of climate change was, and still is, an opportunity to address some of the structural challenges facing the economy as well as solving practical problems in the city.
- 8.9 The initial focus of the work of ECF was energy independence and congestion, with an emphasis on supporting the shaping of a new vision for the city of Exeter, i.e., the Exeter Vision 2040 statement. The Work of ECF suggested that at the heart of any successful city must be sustainability, wellbeing, resilience, innovation and productivity. These themes continue to weave through the work of ECF.
- 8.10 The first report commissioned by ECF was an examination of the potential options and road maps that would enable the greater Exeter area to develop a path towards a sustainable future starting with Energy Independence and Congestion Free. The energy independence study identified financial and technical barriers and contained a series of 10 recommendations, including:
1. Net Energy Positive Buildings: it is particularly important to develop a supply chain and policy environment where new build developments are net positive energy as soon as possible
 2. Develop a credible roadmap to large scale domestic retrofit
 3. Encourage and demonstrate innovate solutions to reduce appliance energy use
 4. Develop demonstrator commercial/industrial case studies of what is achievable
 5. Develop tangible roadmaps to cut transport consumption
 6. Co-ordinate solutions to grid constraints
 7. Stimulate onshore generation encouraging joined up cross authority planning
 8. Provide economic evidence of energy independence
 9. Support & encourage research into enhanced generation efficiency, and
 10. Encouraging investment into marine & geothermal technologies
- 8.11 This early work was typical of the early work of ECF, it was an exercise in thought leadership, building an ambition for place that recognised the scale of the challenge was significant but also presented opportunities, both in terms of innovation and working collaboratively with the private sector. The ambitious pronouncements on congestion free and energy independence brought interest and a wider audience for an agenda that had been quietly and in a disciplined way already been making steady progress in the transition to low carbon. An example of this approach was the rolling out of the district heat network in East Devon and Exeter. That project demonstrated three local authorities working together to achieve tangible progress

towards “net zero” homes. The councils were supported in this programme because national policy explicitly required the house builders to reach a defined standard on a progressive path towards net zero homes and, as a consequence, it was possible to cost the option against a more traditional approach, namely individual measures on a building by building basis. This type of project demonstrated both what was possible and also the limitations of operating within a nationally framed policy environment. This continues to be an issue but should not be used as a reason not to try different approaches.

8.12 The transition to a low carbon future for Exeter has been solid, it has informed the work of the local authorities and has galvanised effort in pursuit of lots of good practise. There has been a very public campaign championing the agenda both in the city and nationally. Throughout this campaigning, especially by ECF, there has been a spirit of collaboration, innovation and doing things differently. While ECC has quietly got on with carrying out a raft of measures to improve its carbon footprint, ECF stepped into the space of galvanising business, our institutions, communities and individuals to contribute to shaping a vision, supporting new enterprises, and providing a focal and vocal point for the ambition for place.

Presently work is being progressed on:

Exeter Development Fund

8.13 The Net Zero Exeter 2030 Plan identifies locally controlled finance as a goal under the theme of capability. This 3 year project is funded by central government.

The following actions are identified:

- Create and lead a city partnership and aligned investment fund that enables the city to strategically develop, co-ordinate, deliver and invest in infrastructure that supports Exeter to achieve a “just transition” to carbon-neutrality (12.1, 12.2)
- Presently a joint scrutiny committee is exploring the strategic business case for the city fund concept, this work will take place over a number of meeting and is expected to conclude by the autumn. The business case will need to be presented to Executive and Council. The team at ECF is inviting engagement with the key stakeholder partners to better understand their appetite for the fund concept.

Change Makers Programme

8.14 The Change Makers programme is funded by the National Lottery Community Fund. The programme is now in Year 3 of delivery and the end date has been extended with National Lottery approval until June 2023. ECF Net Zero Change Makers Programme aims to cultivate a vibrant community of net zero change makers across Exeter through:

Establishing a collaborative infrastructure for community and business change makers by:

- building city partnerships
- Enabling cross-city dialogue
- Creating accessible networks
- Developing ideas with and supporting net zero citizen-led projects and enterprises

8.15 The key focus is on improving collaboration between change makers – whether representing a community, business or local authority – wanting to positively impact Exeter’s ambition to be carbon neutral by 2030.

8.16 The aim to better enable localised, self-sufficient, citizen-led change projects and enterprises to improve the places and spaces that matter to them, and to address local challenges, particularly around climate change, rapidly and at the earliest possible stage. We are doing this through:

Connect events

8.17 To help showcase local projects already delivering sustainable change in Exeter. The Connect programme events provide open events where residents, communities and organisations share their change making projects, form new partnerships to drive their projects forward, and build joint solutions. ECF have run Connect events on the themes of active travel, travel to school, greening the city and reducing and reusing waste.

Toolkit & Resources

8.18 An Innovation Toolkit and training package will be published to facilitate change makers' understanding of city and local challenges, and to help them design solutions to identified challenges. Currently in development, the aim is that ECF will share its Innovation Process, enabling citizens to define shared net zero challenges and initiate, plan and develop their own net zero projects.

Social enterprise and community development support

8.19 ECF is mapping the support available for social enterprises and community organisations in the city, to understand what help is available and to draw together a programme that will support local change makers in building sustainable projects that align with Exeter's 12 goals in the Net Zero Exeter 2030 Plan.

8.20 The aim is nurturing an increased openness to new ideas, change and innovation across the city, we want communities to more greatly influence city decision makers and to be recognised for the contribution they make to Exeter.

8.21 The Officer leading the work started as Community Engagement Officer in September 2021, with the task of coordinating and running the Connect events, which is 'Work Package One' of the project. There are four work packages in total.

Ambition and the 2030 net zero goal

8.22 The national commitment to achieve Net Zero by 2050 is challenging, no one should underestimate the challenge for the country to make the necessary changes. However, assuming the whole country will be net zero by 2050, why should the City Council work to achieve Net Zero by 2030?

8.23 One can argue, it is one planet and therefore reducing the city of Exeter's carbon emissions by making Exeter Net Zero by 2030 will have no material impact on the planet as a whole, but it will be challenging for the city and because of the resources that will have to be directed at this goal, will require significant changes that will impact on everyone in the city. The city of Exeter is not an island and operates within a county that is committed to the national timetable. It is reasonable for members to ask these questions when the City Council and our communities will be asked effectively to prioritise investment and resources from other areas of the City Council to make the impact on this agenda.

8.24 Members of the city council declared a climate emergency and this declaration recognises that we are in a crisis and we need as a planet to reduce greenhouse gas emissions by at least 50% by 2030. Today's decisions on energy, transportation and land use lock in their respective emissions levels for decades and therefore action must be taken immediately.

- 8.25 This has been the tone of the debate around the net zero agenda in the city. In simple terms soon it will be too late. But the Council went further than framing the matter with reference to the city council. Members have defined the goal for the city of Exeter, recognising that the city council has only limited levers to pull in relation to the city as a whole, hence the work through ECF to shape a wider effort.
- 8.26 Some like to think of the City Council as a running a business. Many businesses run what may be called an efficiency model, namely, they continue to drive down costs and can be much focused on their core business costs. In such cases taking any resource out to address structural issues that affects the wider sector can be seen as inefficient. For example, taking time to invest in developing the supply chain and skilling up workers for the sector, for the individual company the risk is that training the staff and developing the supply chain benefits their competitors and some therefore will chose not do it. Doing the right thing is not always win win.
- 8.27 The Council has strategically chosen not to view the council in a simple efficiency model, it has long recognised we need both to focus on efficiencies but also demonstrate leadership of Place. Some businesses recognise that investing in the supply chain makes them more resilient in the long term and therefore less resilient to economic shocks. Many successful business also embrace a value model that places increasing weight on the triple bottom line of people, planet and profit. The City Council tries to encourage firms to move from an efficiency model to a value model when it sets procurement tenders, the council encourages some investment in the skills agenda or social value in order to build a stronger local economy. The Council has worked hard to support a stronger city by being aware of the shared outcomes that matter to all of us rather than a strict statutory services view of the role of a council. What may be good for the city council as a business may not be helpful to the wider community and therefore the council has always held up strategic considerations when viewing its role, budget and policy making.
- 8.28 In relation to the economy of the City, the Council pivoted its economic development approach to move away from a traditional model of supporting inward investment to a model to support inclusive growth. Therefore our resources have been directed to the skills agenda and increasingly a relentless focus on the net zero agenda. This recognises that climate sciences are the strength of the local economy and our greatest opportunity to build innovation, increase start-ups and attract investment and the most significant opportunity to transform the whole of the Devon economy. Net zero is the most significant issue that will shape the investment market over the longer term and it is an area where presently we have considerable assets but others areas of the country are moving with ambition, and some areas who have been in contact with ECF to duplicate the model and already looking press on.

The Opportunity

- 8.29 Some of the city of Exeter's institutions are unique in a national and international context. The University of Exeter and the Met Office have an acknowledged global strength in the areas of climate sciences. For example a number of the University of Exeter academics have been lead authors for chapters on the Intergovernmental Panel on Climate Change (IPCC). The Global Systems Institute is applying Earth system science to generating networked solutions. The aim is to work with others to secure a flourishing future for humanity as an integral part of a life-sustaining Earth system. They are uniting a trans-disciplinary group of researchers, educators and partners to look beyond single 'environmental' issues to a truly systemic view of coupled global changes in the human social and economic sphere and the biosphere. The Met Office Hadley Centre is one of the UK's foremost climate change research centres. Contributing to all six Assessment reports by the IPCC; contributing 2 lead authors, 2 coordinating lead authors, and 1 review editor in the latest report.

8.30 The City has one of the highest concentrations of recognised climate change scientists of any place in the world. The area of climate sciences is the USP of the city of Exeter. Therefore, it provides a compelling picture that has fed into the regional narrative in terms of the Heart of the South West Local Enterprise Partnership Productivity Strategy 2018 and Local Industrial Strategy.

8.31 For example in the Productivity Strategy under Key Strengths and Challenges Transformational Growth, it states:

“The HotSW region has world class potential across several, high value sectors, with the potential to provide a springboard for accelerated productivity growth – within those sectors – throughout their supply chains and across the area. These transformational sectors are our ‘golden opportunities’:

Exeter has an exceptionally high concentration of climate and environmental science experts, and Europe’s most powerful supercomputer located in the Met Office. It is emerging as a cutting-edge place for enviro-technology, agri-tech and data analytics.

8.32 Translating world leading research into local impact in Exeter and the region is a strategic objective and opportunity. Both institutions: The Met Office and the University of Exeter have a place on the Liveable Exeter Place Board and have signed up to the Exeter 2040 Vision. The Vice Chancellor of the University, Lisa Roberts, has done a number of things since her arrival that has demonstrated leadership of this agenda. Firstly she has signed a Civic University Agreement with the city and has identified Net Zero 2030 as one of the key themes. This recognises that ECF will be the vehicle to support this city wide work. Lisa has also now taken up a role as a director on the Board of ECF. This has been further backed by the publication of the ten year strategy Exeter 2030 strategy in which it states:

“We will create the Exeter Futures initiative to support bold, new research ideas, working across disciplines and with our partners to address societal challenges. Each year, we will support a number of new research ideas from the community and provide the resources and time for teams to pursue ambitious new avenues of research.”

“We will launch a Net Zero Plus Innovation Hub for the South West, supporting regional businesses and organisations with their climate and environment action plans. We will attract start-ups and entrepreneurs to the region, providing skills development for green and digital transformation and building the South West into an international leader in climate action, biodiversity and natural capital.”

8.33 The University of Exeter has brought forward its carbon net zero target to 2030. After declaring an environment and climate emergency in 2019, the University set out a plan to reach net zero before 2050. But – based on support and input from students and staff – this has been accelerated to 2030.

8.34 The city of Exeter’s institutions collaborating for local impact is an explicit aim of the Exeter 2040 Vision. The City Council has a vital role in shaping the leadership of place and the direction over the long term and the type of long term investment that is required to meet the needs of the city.

8.35 It is therefore worth reflecting on the fact that there is a strong culture of collaboration in the city, there is good alignment among the city’s institutions, there is a new focal point with the civic university agreement, and innovation is centre stage as a key objective with the goal of converting research into solutions for our challenges an aim. Many of the leading officers of the city’s institutions regularly meet and explore the challenges through the Liveable Exeter Place Board. Therefore, the city is in a better position than most places in galvanising organisations behind a big ambitious goal.

The immediate challenge

8.36 There is not sufficient resources for a traditional project management programme in support of such an ambitious programme, let alone the scale of face to face interactions required to support behavioural shift and the need to make specific interventions that require one to address technical, financial and political considerations. From procurement to legal specialists a multi-disciplinary team is required to support whole city change. Between the leading institutions it should be possible to pull together resources for a core team but rolling out the scale of initiatives required to deliver against the greenhouse gas inventory, sector by sector to meet the 2030 timeline will require upfront funding to support a range of technical studies, feasibility and business cases, bid writing, communications, behaviour change expertise and data analysts.

Policy Considerations:

8.37 The two local authorities have a vital role to play in putting in place a policy framework to deliver the Net Zero goal for Exeter. There are a number of clear messages that flow from the Greenhouse Gas Inventory that will require policy development in coming months.

- Optimising the contribution of existing roofs domestic and commercial to accommodate PV
- Planning policies on new build, mechanisms for enhancing biodiversity and possibly financially rewarding communities in rural areas that support carbon offsetting, biodiversity enhancement and multi-authority agreements on renewable energy.
- Rolling out more district heating networks - two feasibility studies previously prepared for a city centre network and a heat network from the Veridor plant to serve Marsh Barton and South West Exeter offer a basis for thinking about future expansion including the relationship to the Liveable Exeter Strategic sites, and how planning policy may need to be written to support provision.
- Immediate provision of EV charging infrastructure both for buses, fleet and private vehicles.
- Policies that will have to address non EV use within the city, this is particularly an issue given the considerable retail and employment catchment area.
- Planning policies in support of cycling and pedestrians with reprioritisation of spaces and infrastructure to support cycling.
- Stepping up of recycling and roll out of food waste.

8.38 This not to make light of the issues involved with the development of the policy framework. It is challenging but necessary to deliver on the goal. ECF will be exploring the issues and the policy considerations that may be required.

Conclusions

8.39 Greenhouse Gas Emissions in the city of Exeter have declined by a third since 2008. This reduction has occurred because of decarbonisation of the national grid. Emissions from buildings and transport have hardly changed since 2008.

8.40 The Greenhouse Gas Inventory has set out the reductions required by sector to meet the Net Zero 2030 goal.

8.41 The strategy for delivering a net zero Exeter is broadly understood: optimise the amount of renewable energy from PV on residential and commercial properties, connect over 11,000 additional homes to district heating networks, minimise energy use within buildings by retrofitting commercial buildings, and retrofitting the homes in the city with a fabric first solution, such as cavity wall insulation, and then replacing

all gas boilers with air heat pumps - 42,000 of them. Back this up with replacing all fossil fuel cars (50,430 licensed vehicles) with EV battery cars, making most of the short journeys in the city by walking or cycling, massively increasing the amount of cycling. Plan all new homes so they don't need to be retrofitted, make sure all new homes are within 15mins of facilities and designed in a fashion to avoid the need to use the car, and improve recycling rates.

8.42 There are plenty of political, financial, legal, technical and supply chain reasons why this may be extremely challenging to deliver by 2030. It also identifies the opportunities for the local economy, investment, labour demand, and innovation in technology.

8.43 The City Council's Medium Term Financial Plan requires a significant reduction of over £6m over the next 4 years. Identifying additional resources from the city council's budget to support the task of achieving Net Zero 2030 will not be easy, and therefore alternative ways of bringing resources to the task would need to be identified.

9. How does the decision contribute to the Council's Corporate Plan?

9.1 Net Zero Exeter 2030 Plan has been adopted by Council, and Net Zero is one of the Council's core corporate priorities. Net Zero Exeter 2030 is explicit in the Exeter 2040 Vision. This report is focused on progress, and to highlight the size of the task ahead of the city of Exeter in getting to this goal.

10. What risks are there and how can they be reduced?

10.1 This agenda is challenging as it touches on all aspects of the way people live their lives. From challenging the way people move around the city, to the heating of their homes and the choice of motor vehicle they purchase. People live complex lives and we know from the work supporting our communities that the type of changes envisaged will require a great deal of care and resources to support our residents and business through the changes required.

10.2 There are clear tensions for the city council in supporting the roll out of ambitious programmes that challenge the way the council is funded. Car parking income generates a lot of income, over £8m, and there will be pressure on both the transport authority and the city council re income verses policy instruments designed to deter car use for short journeys. The City Council has signalled a desire to redevelop some of the existing surface car parks to provide homes close to the centre and to improve the street scene and public realm. The phasing of removing spaces does need to take into account the needs of city centre businesses and the availability of alternative transport solutions for a wide rural catchment. The Council is producing a new parking strategy and this will provide direction on the total amount of parking that will be required. However, the shaping of the strategy will need to reflect the challenge of supporting a step change in cycling and significant reduction in car usage.

10.3 Transport is probably the most challenging part of this net zero agenda for the city of Exeter, a significant area of risk. Everyone living, working or visiting the city of Exeter will be impacted by transport interventions. It is a polarising issue that becomes immensely emotional as it has a direct bearing on our lifestyles. People living complex lives view changes from their point of view, and therefore the intensity of community engagement and consultation is demanding. The transport authority has to balance many considerations and needs the institutions and businesses to work

constructively with the agenda. During the Covid crisis and the roll out of emergency measures to support active travel the city had a flavour of what could be achieved but listening to the cycling interest groups the measures don't go far enough, and the reality is they don't go far enough to make the scale of changes required to ensure 50% of all journeys in the city are walking or by bicycle. The County and City will have to make a choice regarding priorities, business as usual will not get us to a net zero city. A significant risk is that the stick comes before the carrot and alternative transport solutions are not progressed ahead of policy sticks.

10.4 In the early years of setting up Exeter City Futures an accelerator programme was established to help fund business start-ups exploring environmental challenges such as transport challenges, moving goods around the city, car clubs etc, and this type of initiative could have a role in meeting specific needs and working through risks. Having the city's anchor institutions invested in place and driving local impact, is an important quality to reduce the risk of failure.

10.5 The Exeter Vision 2040 states: "An innovative and analytical culture will support communities, businesses, civil society and public bodies to work together to solve the city's challenges and achieve its ambitions. The city institutions work collaboratively with a coherence in pursuit of the city's vision. Getting the city institutions to work in this fashion is a major plus in reducing the risk of failure.

10.6 It is not recommended that individual programmes are instigated without a risk assessment

11. Equality Act 2010 (The Act)

11.1 Under the Act's Public Sector Equalities Duty, decision makers are required to consider the need to:

- eliminate discrimination, harassment, victimisation and any other prohibited conduct;
- advance equality by encouraging participation, removing disadvantage, taking account of disabilities and meeting people's needs; and
- foster good relations between people by tackling prejudice and promoting understanding.

11.2 In order to comply with the general duty authorities must assess the impact on equality of decisions, policies and practices. These duties do not prevent the authority from reducing services where necessary, but they offer a way of developing proposals that consider the impacts on all members of the community.

11.3 In making decisions the authority must take into account the potential impact of that decision in relation to age, disability, race/ethnicity (includes Gypsies and Travellers), sex and gender, gender identity, religion and belief, sexual orientation, pregnant women and new and breastfeeding mothers, marriage and civil partnership status in coming to a decision.

11.4 In recommending this proposal no potential impact has been identified on people with protected characteristics as determined by the Act because the report is a discussion document requesting Members to consider the strategic resource implications of the Council's Net Zero 2030 ambition and is requesting a mandate for Exeter City Futures CIC to lead on the securing of investment partners for the City.

11.5 It is well understood, that the impacts of climate change globally will be felt most keenly by the most disadvantaged groups in society. Therefore a full Equalities Impact Assessment of the Council's Net Zero Action Plan will be undertaken as this plan is developed.

12. Carbon Footprint (Environmental) Implications:

12.1 This report seeks to identify those actions that will be required to achieve a net zero Exeter, it identifies clear targets to measure progress. It raises questions of the policy, financial and technical challenges to delivery.

13. Are there any other options?

13.1 To note the findings of the Greenhouse Gas Inventory and to push out the 2030 target date for Net Zero to reflect the scale of the challenge.

13.2 For the Council itself to explore opportunities with private investors, energy companies and local enterprise partnerships their appetite to work collaboratively with the city on achieving a net zero city 2030.

13.3 The city of Exeter could choose to work with investors on an opportunistic basis, this would be to accept the limitations of funding and project management capacity and therefore simply work with those companies that can take the agenda forward when those opportunities present themselves and assuming the basis for the engagement can pass the appropriate procurement obligations. Presently there are companies that can install some forms of battery electric vehicle charging infrastructure, it would not cost the local authorities; likewise companies are interested in installing heat networks; the transport authority will be approached by numerous companies interested in mobility solutions and novel schemes.

13.4 Therefore, instead of one large strategic investment partner, the city of Exeter could work with lots of companies as and when they identify a funding route to delivery, this has an obvious appeal, it moves the dial forward and progresses the agenda. The downside with pace is that it brings its own challenges, and as we have seen with the digital agenda and the roll out of fibre, there can be downsides in locking into a specific initiative in the absence of a strategic plan. Strategic planning, procurement and implementation require a project management capacity and up front funding when it is not always apparent how the project will return on the investment. The attraction of responding opportunistically is things can happen without apparent upfront investment.

13.5 A challenge for the city of Exeter is that without a vehicle such as Exeter City Futures CIC a similar approach of bringing together a number of partners will require some form of co-ordination role that gives confidence to investors, this could be transactional on a one to one basis, such as Devon County Council in relation to charging infrastructure, or multi party in relation to district heating involving a similar number of organisations that sit around the Board of ECF, namely local authorities, hospital trust and university. It is worth recalling that in delivering the existing district heat networks in the city and sub-region Government funding has been essential for building business cases and unlocking the problems. Much of that early work funding is at risk and the costs are significant. Many hundreds of thousands of pounds in building the feasibility studies and business case and undertaking the legal and financial due diligence, and in the case of south west Exeter and Central Exeter failed to achieve implementation. The city council in isolation cannot afford to invest upfront in this manner.

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Local Government (Access to Information) Act 1972 (as amended)

Background papers used in compiling this report:-
Energy Independence 2025 Report, Exeter City Futures, 2017
[Energy-Independence-2025.pdf \(cityscience.com\)](http://cityscience.com/energy-independence-2025.pdf)

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Exeter's 2019 greenhouse gas inventory and sector
emissions monitoring



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*Cover image:
Exeter quay*

Management Summary

Exeter City Council (ECC) declared a Climate Emergency in 2019 and pledged to work towards creating a carbon neutral city by 2030. The target year is 20 years in advance of the 2050 national net zero target required under the Climate Change Act and reported on in the Sixth Carbon Budget.

In 2020 the Council announced a series of initiatives to drive forward the city's net zero ambitions. The Centre for Energy and the Environment at the University of Exeter was commissioned to establish a baseline greenhouse gas (GHG) inventory for the city, quantify the reductions required to achieve net zero in 2030 and identify more specific and timely metrics for monitoring progress towards carbon neutrality in each emissions sector.

The GHG inventory reports emissions for eight sectors: power, buildings, industry, transport, agriculture, land use, waste and fluorinated gasses (F gases). The inventory is for territorial emissions. Territorial emissions are those arising from within the boundaries of the city and are therefore more in the control of people living, working and visiting the city.

Greenhouse gas emissions in Exeter have generally been on a downward trajectory since 2008. Estimated GHG emissions of 717 thousand tonnes of carbon dioxide equivalent (kt CO₂e) in 2008 have declined by a third to 476 kt CO₂e in 2019. Buildings is the sector with the highest emissions (35%) followed by power (24%) and transport (22%). Emissions from each of the remaining sectors are 7% or less.

Analysis for ECC's 2007 Climate Change Strategy identified a 2020 emissions target of 516 kt CO₂. With 2019 emissions below 500 kt CO₂e, this looks achievable (subject to Covid 19 bounceback). However, the sector detail shows that the reduction is the result of grid decarbonisation, which has taken place outside Exeter, and has delivered three times the change estimated in 2007. Local sector reduction in buildings and transport has failed to meet the objectives set in 2007 by factors of 6 and 4 respectively.

Extrapolating from the "current trend" since 2016 suggests that emissions in 2022 will be 448 kt CO₂e. The continuation of the current trend to 2030 would give residual emissions of 291 kt CO₂e, nowhere near net zero. Importantly, the current trend will not continue because of grid decarbonisation; for the decline in emissions to continue at the same rate, a 28% reduction from non-power sectors will be required to deliver the extrapolated trend in 2030.

Delivering net zero in 2030 requires a much greater reduction in emissions. A linear decline in emissions from 2021 to zero in 2030 requires a decline of 50 kt CO₂e (11%) per year and gives cumulative emissions over the period of 2.2 Mt CO₂e. Under the extrapolated current trend these cumulative emissions would be exceeded in 2026. Lack of progress in the buildings and transport sectors is particularly concerning. Growth in the city is leading to increases in emissions and the decarbonisation of electricity cannot continue to make up for the shortfalls in these sectors. The city needs to make significant progress in buildings and transport to deliver net zero.

In the sector analysis, net zero 2050 targets from the Sixth Carbon Budget set the 2030 values for measures in Exeter. The default assumption is that progress from the current position to net zero will occur in a linear manner, i.e. with the same annual increment in the nine years between 2021 and 2030. The danger with other assumptions (for example an exponential change which starts at a low level) is that the short term challenge is minimised only for the measure to then be impossible to deliver in the late 2020s.

Power

Local renewable energy contributes to grid decarbonisation and to the local economy. In the power sector, the majority of Exeter's future additional renewable energy will come from solar photovoltaic (PV) panels on roofs. The Sixth Carbon Budget does not set targets for roof mounted PV so it has been assumed that by 2030 25% of Exeter's existing domestic roofs have PV installed and that 50% of new homes built between 2020 and 2030 have PV with each installation assumed to have the historic average peak capacity (3 kW). Hitting this target would mean that in 2030, 14,000 of Exeter's domestic roofs (28%) would have PV (currently 2,300). The target

for larger non-domestic arrays is 890 installations (currently 128). Recent PV installation rates have been low (36 in 2020) with a long run average of 220 installations per year. Hitting the 2030 monitoring target of 14,900 installations in total requires a rate of some 1,240 installations per year, every year to 2030. This installation rate is twice the peak historic rate achieved in 2012.

Buildings

Emissions from Exeter's buildings have hardly changed since 2008. Buildings were responsible for 35% of GHG emissions in 2019. 25,400 of Exeter's 56,400 homes (45%) are estimated to still need more loft insulation. Installing this basic energy efficiency measure by 2030 requires 2,800 installations in every year until 2030. The city needs cavity or solid wall insulation in 10,200 homes. Insulating all cavities and half the solid walls by 2030 requires 1,500 wall insulation measures each year.

Net zero requires moving away from natural gas for heating. While Exeter has more homes connected to heat networks than many UK cities its size (3,100), another 11,200 will need to be connected by 2030 (1,200 each year). While some homes will be on heat networks, the majority will need to install heat pumps with a target of 42,200 homes having heat pumps by 2030 (currently 449 homes are estimated to have heat pumps). This requires the installation of 4,600 heat pumps every year to 2030.

Non-domestic buildings also need improving. 3,100 non-domestic buildings in Exeter have energy efficiency ratings of C or below. Achieving a targeted 27% improvement in energy efficiency means upgrading most of these buildings to band B with 260 buildings upgraded every year to 2030. The need to switch to low carbon heating in non-domestic buildings implies heating system replacement in 270 non-domestic buildings every year to 2030.

Industry

The industrial sector covers emissions from manufacturing and construction businesses excluding those arising from the consumption of electricity and from buildings (covered above). Typically, the sector includes energy intensive industrial activities such as refineries, chemicals, iron and steel, and cement, which together are responsible for nearly two thirds of UK industrial sector emissions. These industries are not present in Exeter. Emissions in the area are more likely to occur from food and drink manufacture, printing, water, waste management and a variety of other smaller manufacturing businesses.

Industrial emissions in Exeter are relatively small (6% in 2019) and are less than one-half of the 2008 value. Only 2% of Exeter's 2019 industrial emissions came from industrial processes with the remainder arising from fuel consumption (mostly gas) indicating that cutting fuel consumption is the priority. The absence of identified point source emissions in Exeter makes it difficult to identify specific measures that target significant industrial emissions in the city. Improving industrial energy efficiency and switching away from fossil fuels to electricity are likely to be the most effective ways of reducing emissions. However, there is currently insufficient granularity in the data to measure or target specific measures in the sector. Reducing 2019 emissions of 27 kt CO₂e will require annual emission reduction of 2.4 kt CO₂e per year over 11 years to 2030.

Transport/Mobility

Emissions from transport, Exeter's third largest emissions sector (22%), have remained stubbornly high with little change since 2008. Pre Covid rises in vehicle miles in Exeter need to be reversed to hit the 2030 target of a 17% decline in the 542 million kilometres driven in 2019. This change requires a 10 million kilometre per year reduction to 2030, a large change from the 6 million average annual increase from 2000 to 2019.

Electric vehicle (car and van) ownership in Exeter has grown exponentially over recent years. At the end of 2020 there were 590 battery electric vehicles registered in Exeter. For all 50,400 vehicles in Exeter to be electric requires 317 to be registered in 2021 with exponential growth continued thereafter. However, this rate of growth means that beyond 2027 the required replacement rate exceeds the pre Covid new vehicle registration

rate. Adequate charging points will also be needed; as of October 2021 Exeter had 49 charging points for electric vehicles. The 2030 charging point target is 778, which if it is to be met, needs the installation of 81 new charging points per year to 2030.

Larger commercial vehicles and HGVs will also need to be zero emissions. In 2020 there were 2,500 HGVs, buses and other vehicles registered in Exeter. These are likely to be a fraction of those categories of vehicle driving on the city's roads. Although relatively few in number, larger vehicles have a greater per vehicle impact on emissions, so transitioning them away from fossil fuels is important. Targets and monitoring for larger vehicles need to be developed as data becomes available.

Exeter has recorded steady increases in cycling over the past decade. However, to reach the target of 11% of car and taxi journeys requires current cycling (5 million kilometres) to increase to 46 million kilometres in 2030, an annual increase of 4 million kilometres each year every year. Similar numbers of journeys will need to be walked.

Waste

Exeter's waste emissions (7% of the 2019 total) have been similar over the past 4 years following the commissioning of the energy recovery facility (ERF) in Marsh Barton. Emissions prior to 2014 were lower as Exeter's waste was disposed of outside the city (mostly to landfill).

Exeter City Council and Devon County Council, the respective waste collection and disposal authorities, only have information on, and collection and disposal responsibilities for, domestic waste. Local authorities have little knowledge of or influence over commercial waste in their locality. It is important for Exeter to obtain reliable and up to date information on volume and composition of non-domestic waste streams to enable assessment of emissions from non-domestic waste.

The Sixth Carbon Budget foresees a range of measures including reducing waste generation by 33% by 2037, increasing the UK wide recycling rate to 70% by 2030 and fitting carbon capture and storage (CCS) to all energy from waste (EfW) plants by 2050.

Exeter generated 39,000 tonnes of household waste in 2020/21. A 33% reduction would require this to fall to 26,000 tonnes in 2030, equivalent to an annual reduction of 1,300 tonnes each year. Although Exeter's households each generate moderately less waste than those in other parts of county, the city has a relatively low recycling rate (28% versus 55% for Devon as a whole). Improving recycling to 70% requires a 4.2% annual increase each year to 2030.

Measures for lowering emissions from the ERF include reducing fossil inputs to the ERF (e.g. by increasing plastic recycling) and exporting heat. The use of heat increases the efficiency of energy recovery from the waste and reduces CO₂ emissions; the more heat used, the lower the emissions. Promoting heat use in the Liveable Exeter schemes in Water Lane and Marsh Barton will be important in this respect. Ultimately, the installation of CCS is required. The Sixth Carbon Budget requires the installation of CCS on all UK energy from waste plants between 2040 and 2045. Net zero in Exeter requires this in 2030.

F-gases

Although emissions from F-gases in Exeter are a minor part of Exeter's footprint (7%), under a net-zero scenario, the decarbonisation of other sectors means that, left unchanged, the F-gas contribution will play an increasing role.

Emissions reduction in the F-gas sector is driven by national and international legislation and there is therefore relatively limited scope for Exeter to accelerate emission reduction from F-gases. Local trading standards bodies enforce air conditioning inspections and more proactive enforcement may be a route to lower emissions.

Further work is required to develop specific targets for F-gas emissions. Reducing 2019 emissions of 29 kt CO₂e will require annual emission reduction of 2.6 kt CO₂e per year over 11 years to 2030.

The monitoring targets show the scale of the changes needed in Exeter to meet the 2050 targets set out in the Sixth Carbon Budget by 2030. In summary, these include:

- Over 1,200 PV installations each year every year to 2030, compared to 36 in 2020, a six-fold increase in the long run average installation rate.
- Installing loft insulation in 25,400 homes by 2030 or 2,800 homes each year every year to 2030.
- Insulating the walls of 13,500 homes by 2030 at the rate of 1,500 every year.
- Putting 4,600 heat pumps in homes every year to 2030, there are currently 449 heat pumps in Exeter's homes.
- Connecting an extra 11,200 homes to heat networks by 2030 (over 1,200 each year).
- Improving the energy efficiency of 260 non-domestic buildings every year to 2030 and switching 270 every year to low carbon heating.
- Reducing driving in Exeter by 10 million kilometres each year, every year to 2030.
- Continuing the exponential growth in electric vehicles ownership (aiming for 317 in 2021) and putting in an additional 81 charging points in every year to 2030.
- Increasing cycling rates by 4 million kilometres annually (equivalent to 70% of the current total level) with matching increases in walking.
- Achieving a 1,300 tonne annual reduction in household waste generation each year, every year and a 4.2% annual increase in recycling rates each year, every year to 2030.
- Capturing and storing CO₂ emission from the Exeter energy recovery facility by 2030.

It has not been possible to identify data sources or specific proxy measures for the industry and f-gas sectors and some more specific targets have yet to be determined and therefore do not currently have data sources or incremental targets. These shortcomings should be addressed as part of the ongoing monitoring process.

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1 Introduction

The 2007 Energy White Paper¹ set a goal of reducing carbon dioxide (CO₂) emissions by between 26% and 32% from 1990 levels by 2020. In its 2007 Climate Change Strategy, Exeter City Council (ECC) set a 30% CO₂ emission reduction target over the same timescale. The Centre for Energy and the Environment (CEE) at the University of Exeter undertook an analysis² as input to the strategy. The analysis identified emissions reduction potential in buildings and transport offset by growth to give net emission reduction of 92 kt CO₂ and 16 kt CO₂ respectively with progress towards the target being assisted by a 68 ktCO₂ reduction in the carbon intensity of electricity sourced from the National Grid. These reductions, totalling 175 kt CO₂, would achieve 2020 emissions of 530 kt CO₂ versus estimated 1990 emissions of 736 ktCO₂, a 28% reduction. This study provides an updated greenhouse gas (GHG) inventory for the city and reports on progress towards the 2020 emissions reduction potentials identified in 2007.

The 2008 Climate Change Act, with subsequent amendments, radically changed the UK's climate change ambition and now sets a legal obligation for net zero emissions in UK by 2050. The Act established the Climate Change Committee (CCC). The CCC sets five-year carbon budgets for the UK, the most recent of which is the Sixth Carbon Budget^{3,1} covering the period from 2033 to 2037.

In 2019, increasing urgency to address climate change led ECC to declare a Climate Emergency and pledge to work towards net zero by 2030⁴. In 2020 the Council announced a series of initiatives to drive forward the city's net zero ambitions⁵ and, in addition, to establishing a baseline GHG inventory for the city. The CEE was commissioned to quantify the reductions required to achieve net zero in 2030 and identify more specific and timely metrics for monitoring progress towards carbon neutrality.

¹ This study makes extensive use of material from The Sixth Carbon Budget. References to the CCC refer to the Sixth Carbon Budget unless stated otherwise.

2 GHG inventory

This GHG inventory is for territorial emissions. Territorial emissions are those arising from within the boundaries of the city and are more within the control of people living, working and visiting the cityⁱⁱ. The publication of territorial GHG emissions for local authority areas is 2 years in arrears, so the most recent data available is for 2019⁶.

2.1 Methodology

This inventory reports emissions under the following categories:

- **power:** emissions resulting from electricity consumption;
- **buildings:** emissions resulting from fuel combustion in the domestic, commercial and public administration sectors;
- **industry:** emissions categorised as from industry (other than from electricity consumption and in buildings), including large industrial installations, in the government local authority CO₂ dataset ;
- **transport:** emissions from road and rail vehicles (emissions from electric vehicles are reported under power; emissions from aviation and shipping have not been included);
- **agriculture:** emissions from fuel use in the sector, as reported in the government local authority CO₂ dataset (emissions from livestock and fertiliser use was assumed to be negligible in Exeter in the absence of data for recent years);
- **land use and land use change:** as reported in the government local authority CO₂ dataset;
- **waste:** emissions from the disposal of solid waste and wastewater, and
- **f-gases:** emissions from the consumption of fluorinated gases (in the absence of data for Exeter, national emissions have been apportioned on the basis of non-domestic electricity consumption since the majority of such gases are used in refrigeration systems, air conditioning and heat pumps).

An accompanying report⁷ describes the inventory methodology in more detail.

2.2 Results

Estimated total greenhouse gas emissions in Exeter in 2019 are 476,221 tonnes of carbon dioxide equivalent (t CO₂e). Figure 1 and Table 1 give the breakdown of emissions.

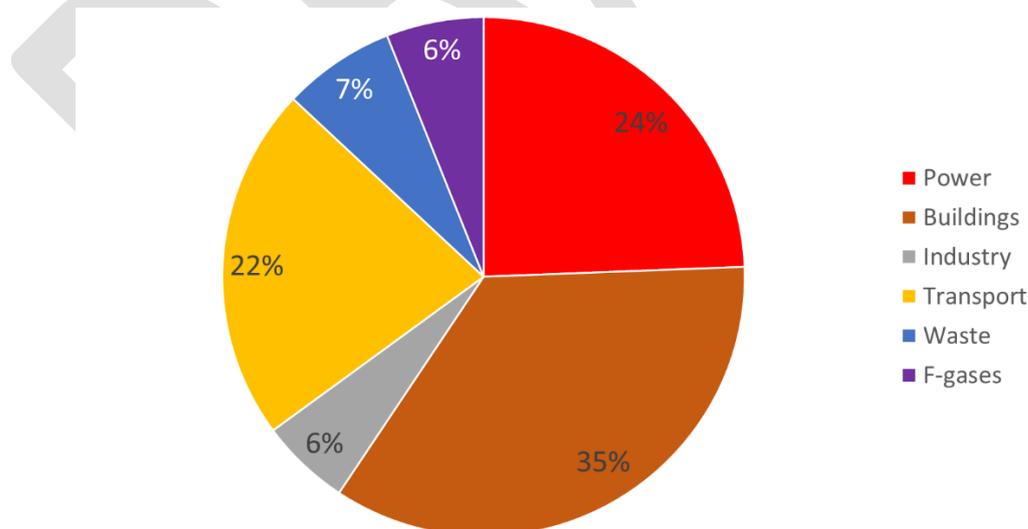


Figure 1. Sources of Exeter's greenhouse gas emission in 2019 (excluding agriculture and land use)

Table 1. Exeter's greenhouse gas emission by sector in 2019

ⁱⁱ The territorial emissions method is consistent with the approach taken in UK national reporting. A complementary method, consumption-based carbon footprinting, considers upstream and downstream emissions arising outside an area.

Sector	GHG emissions t CO ₂ e
Power	117,077
Buildings	167,684
Industry	26,795
Transport	106,023
Waste	33,449
F-gases	28,914
Agriculture	948
Land use	-4,669
Total	476,221

Figure 2 shows the breakdown of emissions for each year since 2008. GHG emissions in Exeter have generally been on a downward trajectory with estimated GHG emissions of 717 kt CO₂e in 2008 declining by a third by 2019.

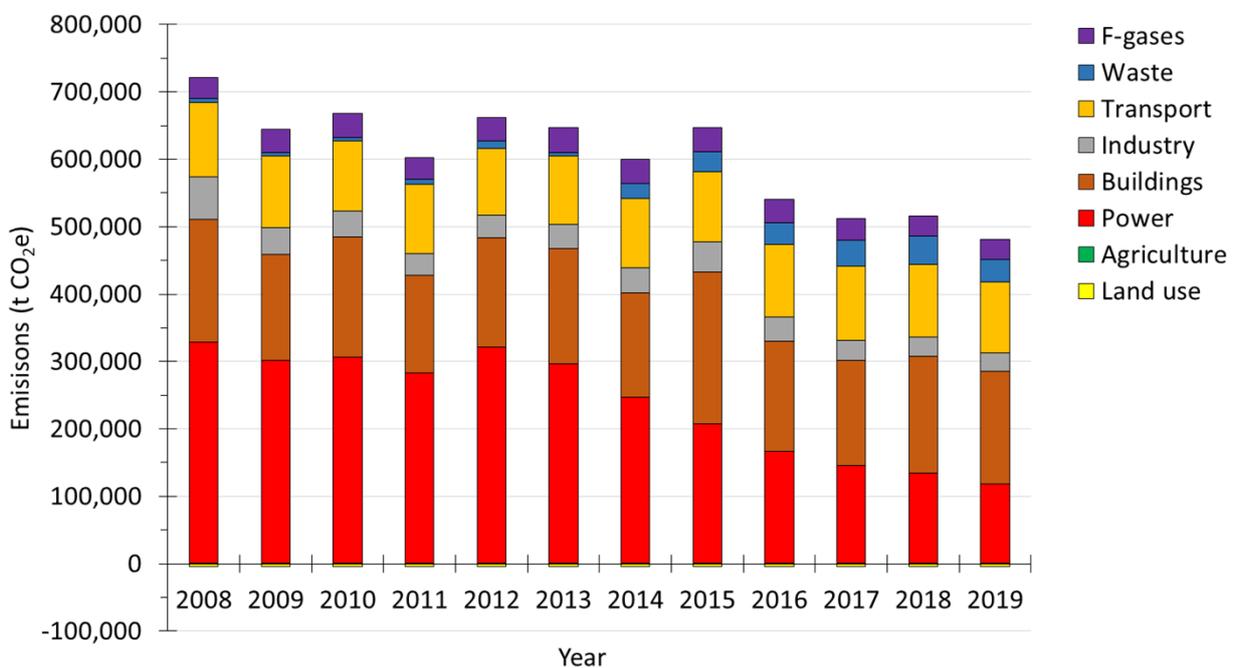


Figure 2. Sources of greenhouse gas emission in Exeter from 2008 to 2019.

2.2.1 Progress in reducing emissions

In 2007, a 30% reduction, based on a 1990 emissions estimate of 736 kt CO₂, required 2020 emissions of 516 kt CO₂. With 2019 emissions below 500 kt CO₂e, this looks achievable (subject to Covid 19 bounceback). However, the sector detail shows that the reduction is the result of grid decarbonisation, which has delivered three times the change estimated in 2007 (210 kt CO₂e versus 68 kt CO₂). Locally, sectoral reduction in buildings (15 ktCO₂e versus 93 kt CO₂) and transport (4 kt CO₂e versus 16 kt CO₂) has failed to meet the objectives set in 2007 by factors of 6 and 4 respectively.

Looking ahead, the changes achieved in each sector, based on the latest emissions trends, are summarised in Table 2 and Table 3, and Figure 3 and Figure 4. Only the power, industry and land use change sectors are on trend to achieve net zero carbon by 2030. Changes in grid carbon intensity will largely take place outside the city, the mix of industry in the city affects industrial emission trends, and land use change will not have a material impact on future emission reduction. Increases in waste sector emissions are a result of the development of the Marsh Barton energy recovery facility (ERF). Prior to 2014 the city's waste emissions were artificially low as Exeter's waste was landfilled outside the city. Since 2014 the situation is partially reversed as the ERF treats some waste that originates outside Exeter.

As emphasised above, lack of progress in the buildings and transport sectors is particularly concerning, with growth in the city leading to significant increases in emissions in recent years. The city needs to make significant progress in these two key sectors to deliver net zero.

Table 2. Changes achieved from a 2008 and 2016 baseline in t CO₂e. Negative values indicate a reduction. Values in green exceed the annual reduction required for zero carbon by 2030 on a linear trajectory; those in red do not.

Sectr	Change achieved (t CO ₂ e)		Average annual change achieved (t CO ₂ e)		Annual change required to achieve zero carbon by 2030 (t CO ₂ e)	
	2008 to 2019	2016 to 2019	2008 to 2019	2016 to 2019	2008 to 2030	2016 to 2030
Power	-210,379	-49,151	-19,125	-16,384	-14,884	-11,873
Buildings	-15,321	+4,327	-1,393	+1,442	-8,318	-11,668
Industry	-35,917	-9,049	-3,265	-3,016	-2,851	-2,560
Transport	-3,661	-1,586	-333	-529	-4,986	-7,686
Agriculture	+71	+8	+6	+3	-40	-67
Land use	-442	-187	-40	-62	+192	+320
Waste	+27,377	+1,363	+2,489	+454	-276	-2,292
F-gases	-2,105	-5,589	-191	-1,863	-1,410	-2,465
Total	-240,378	-59,864	-21,853	-19,955	-32,573	-38,292

Table 3. Changes achieved from a 2008 and 2016 in percentage terms. Negative values indicate a reduction. Values in green exceed the annual reduction required for zero carbon by 2030 on a linear trajectory; those in red do not.

Sector	Change achieved (%)		Average annual change achieved (%)		Annual change required to achieve zero carbon by 2030 (%) ⁱⁱⁱ	
	2008 to 2019	2016 to 2019	2008 to 2019	2016 to 2019	2008 to 2030	2016 to 2030
Power	-64.2%	-29.6%	-5.8%	-9.9%	-4.5%	-7.1%
Buildings	-8.4%	+2.6%	-0.8%	+0.9%		
Industry	-57.3%	-25.2%	-5.2%	-8.4%		
Transport	-3.3%	-1.5%	-0.3%	-0.5%		
Agriculture	+8.1%	+0.9%	+0.7%	+0.3%		
Land use	-10.4%	-4.2%	-0.9%	-1.4%		
Waste	+450.9%	+4.2%	+41.0%	+1.4%		
F-gases	-6.8%	-16.2%	-0.6%	-5.4%		
Total	-33.5%	-11.2%	-3.0%	-3.7%		

ⁱⁱⁱ Except for land use, which starts with negative emissions (carbon uptake), so an increase in emissions would technically be allowable in this sector, although the number is small relative to other sectors.

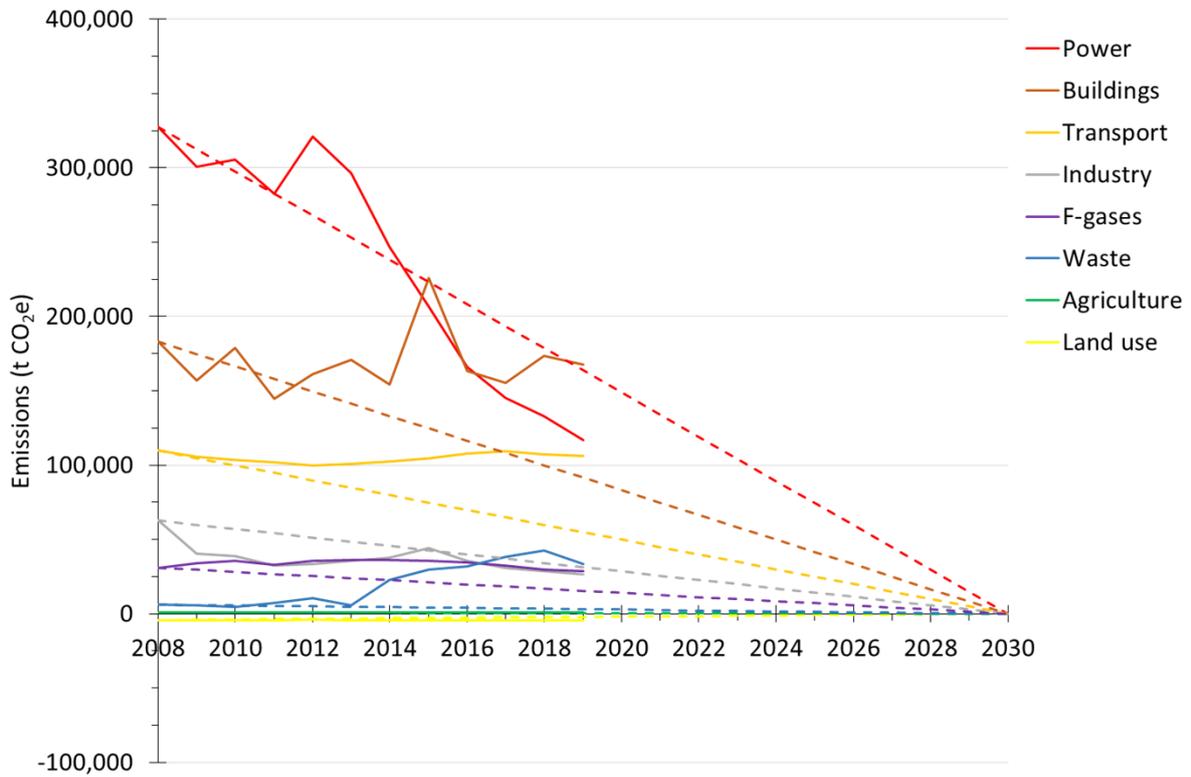


Figure 3. Emissions reductions against a linear trajectory to net zero by 2030 (dotted), 2008 base, by sector.

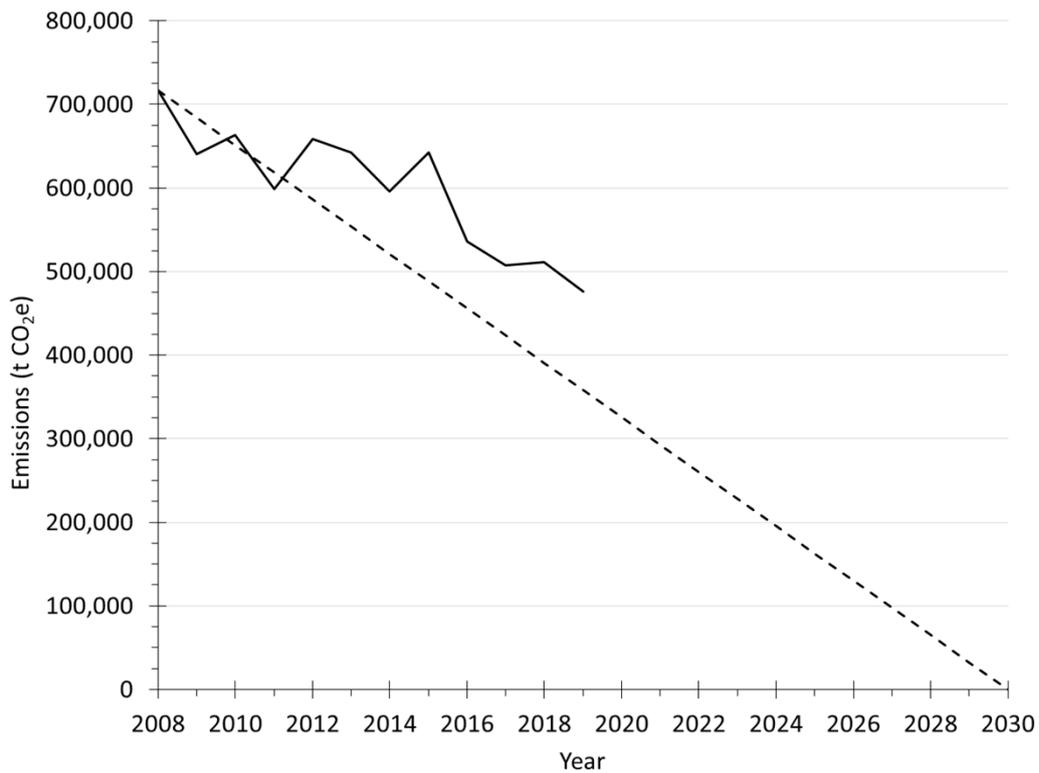


Figure 4. Emissions reductions against a linear trajectory to net zero by 2030 (dotted), 2008 base, total emissions.

Progress in the power sector is attributable to rapid decarbonisation of grid electricity. Locally, emissions from the transport and buildings sectors in particular are not falling at the rate required.

2.2.2 Future emissions trajectories

Figure 5 extrapolates Exeter’s total emissions between 2016 and 2019 to represent the “current trend”. To cover the two year data lag it is assumed that emissions follow this trajectory in 2020 and 2021 giving estimated emissions in 2021 of 448 kt CO₂e. Following the current trend would result in 2030 emissions of 290.5 kt CO₂e and give an ongoing decline of 17.5 kt CO₂e (3.9% of 2021 emissions) per year and cumulative emissions from 2021 to 2030 of 3.7 Mt CO₂e. However, the continuation of the current trend without local GHG reduction relies on unrealistic grid decarbonisation that would imply zero carbon grid electricity in 2026^{iv}. Using the CCC’s Balanced Pathway UK grid carbon intensity projections suggests that, while it may be realistic to assume current trend estimates for 2021 may be achieved with grid decarbonisation, by 2030 a 28% reduction from non-power sectors will be required to continue to follow the current trend.

Emissions reductions from 448 kt CO₂e in 2021 to net zero in 2030 could take many alternative trajectories. For example, a possible but unlikely trajectory would be to follow the current trend until 2029 with net zero occurring in one step the following year. This would create cumulative emissions from 2021 to 2030 of 3.4 Mt CO₂e. Alternatively, a linear decline to net zero in 2030 (shown in Figure 5) would give a decline of 49.8 kt CO₂e (11.1%) per year and give rise to cumulative emissions of 2.2 Mt CO₂e. Achieving the linear decline requires an additional 32.3 kt CO₂e (7.2%) per year over the current trend.

An alternative decline (also illustrated in Figure 5) shows how a delay to the start of emissions reduction can achieve the same cumulative emissions as the linear decline by assuming a more accelerated descent in the middle years of the decade.

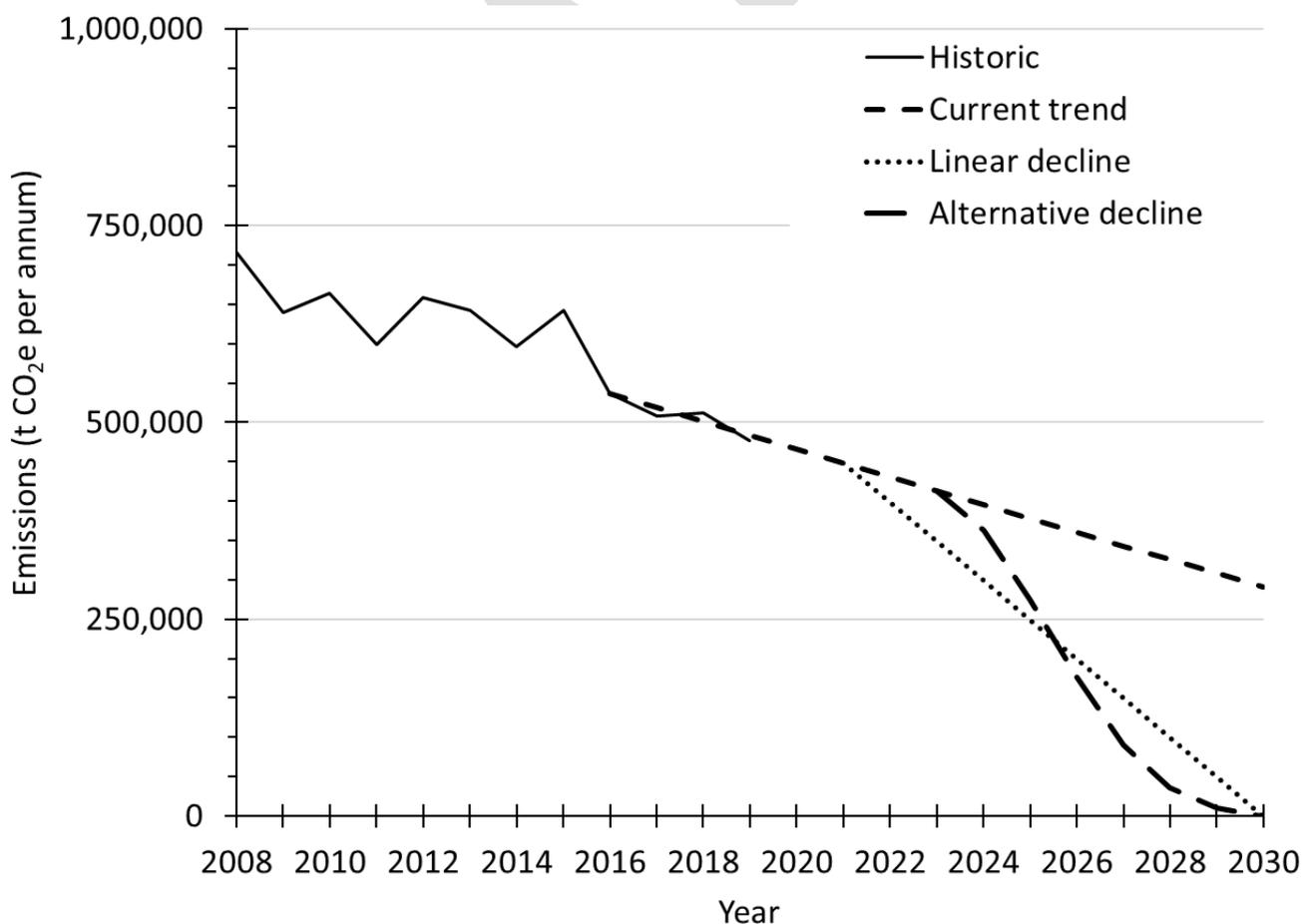


Figure 5. Current trend emissions with alternative trajectories to net zero by 2030.

^{iv} The Climate Change Committee’s assessment in the Sixth Carbon Budget is that electricity grid carbon intensity will approach zero (10gCO₂/kWh, a reduction of 95% on 2019) in 2035.

Figure 6 shows the cumulative emissions from the current trend, linear and alternative declines in Figure 5. By 2026, cumulative emissions from the current trend case exceed the 2.2 Mt CO₂e cumulative emissions to 2030 from the linear decline case.

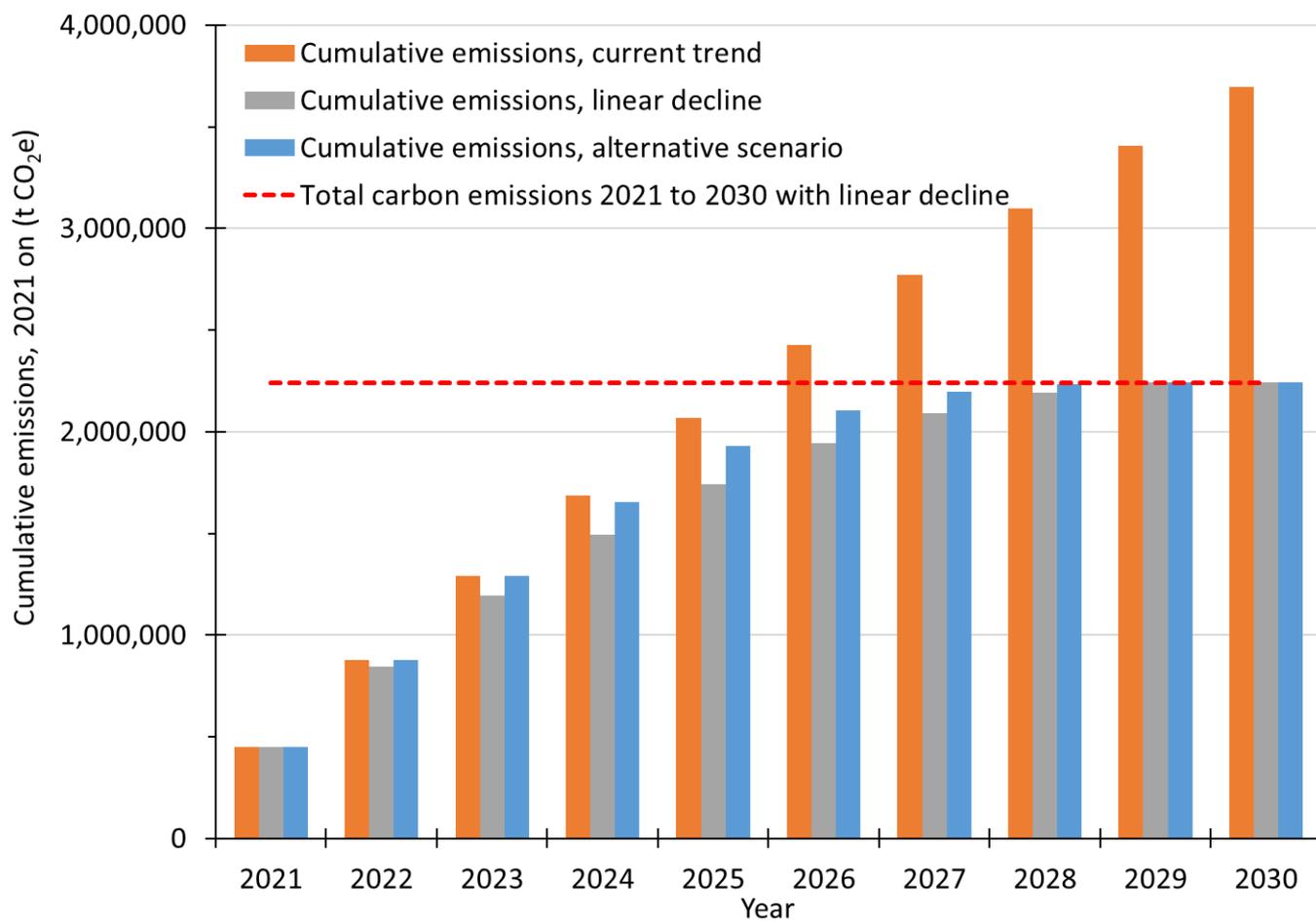


Figure 6. Emissions reductions against a linear trajectory.

3 Sector emissions monitoring

While there may be a broad public understanding of what Net Zero means (i.e. minimal fossil fuel use), the two year lag in the publication of GHG emissions statistics together with the difficulty of relating the reduction in quantities of CO₂ to everyday actions presents challenges for setting and achieving easily understood interim CO₂ targets.

Exeter has pledged to work towards net zero by 2030. This target is 20 years in advance of the 2050 national net zero target required under the Climate Change Act and reported on in the Sixth Carbon Budget.

The approach taken in the sub sections below is to use the 2050 data from the Sixth Carbon Budget to establish 2030 net zero target values for measures in Exeter. The change required between the current status and the 2030 target is then used to calculate a measurable target for the end of 2022 which can be reported on in 2023 and subsequently annually thereafter.

The default assumption, unless there is evidence to the contrary, is that progress will occur in a linear manner, i.e. with the same increment in each of the nine years between 2021 and 2030. This is consistent with the linear GHG reduction profile shown in the graphs above. The danger with other assumptions (for example an exponential change which starts at a low level) is that the short term challenge is minimised only for the measure to then be impossible to deliver in the late 2020s.

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3.1 Power

Power, distributed through the national and regional electricity networks is the sector of the UK economy that has decarbonised most rapidly. The resulting national grid emission factor has fallen by 60%, from 477 g CO₂/kWh in 2010 to 193 g CO₂/kWh in 2019. The use of a national emissions factor for local electricity CO₂ emissions calculations precludes considering carbon emissions from power at a local level by, for example, considering renewable electricity generation in Exeter as Exeter's CO₂ reduction. All renewable energy generation in the UK contributes to national emissions reduction, so while Exeter should do everything possible to deliver local renewable electricity generation, the emission reduction benefits contribute to national grid decarbonisation.

The Sixth Carbon Budget estimates that demand for electricity will more than double by 2050. At the same time the CCC projects that grid carbon intensity will have reduced by 76% in 2030, 96% in 2040 and 99% in 2050. Zero carbon electricity generation is therefore essential for the national net zero target to be met. Projections for the Balanced Pathway show that variable renewables such as solar photovoltaic (PV) and wind generation make up 58% of generation in 2030 and 66% in 2040 and 2050. Given these projections, it is clearly important to maximise Exeter's contribution to zero carbon electricity generation and, to be consistent with a 2030 net zero target, Exeter could therefore target full deployment of its renewable electricity potential by 2030.

The urban nature of Exeter limits the potential for renewable electricity generation in the city and, while there may be discrete opportunities for technologies such as run of river hydro^v and small-scale wind turbines^{vi}; these do not have the potential to generate material amounts of power. A review of a long list of potential renewable energy technologies is included as part of the evidence base for the Greater Exeter Strategic Plan⁸. The review led to an assessment of large-scale wind and ground mounted PV across the region. The assessment identified one 0.5 MW wind site in Exeter with the potential to generate 1 GWh annually and 24 ground mounted PV sites with total capacity of 64 MW and the potential to generate 64 GWh annually. In practice, the number of ground mounted PV sites in the city that are realistically likely to receive planning permission and gain grid access will be significantly fewer. Roof mounted PV arrays, although individually small, have the potential to make a material contribution if widely adopted across the rooftops of Exeter's homes and businesses.

3.1.1 Current renewable electricity generation

Data on renewable electricity (RE) installations is available from the Department of Business Energy and Industrial Strategy's (BEIS) regional renewable energy statistics⁹ and also from Ofgem's feed-in tariff installation report^{10,vii}. The BEIS data shows total RE generation in Exeter of 16 GWh in 2020, 3% of Exeter's 511 GWh electricity consumption. PV generated 78% (12 GWh), sewage gas^{viii} 17% (3 GWh) and hydro 5% (1 GWh).

3.1.2 PV on homes

In 2020 there were a total of about 2,295 PV installations (amounting to 4% of Exeter's homes), with a total capacity of 7 MW generating 7 GWh. 2012 saw the largest annual installation rate (663). Recently installation rates have been significantly less, averaging 82 annually over four years since 2016. Figure 7 shows the trends in domestic PV generation and installations as a percentage of Exeter's domestic roofs.

^v Exeter has two run of river hydro sites with total capacity of 273 kW. The availability of civil infrastructure, e.g. weirs, mill leats, etc., limits the development of new sites.

^{vi} There have been some trials of small-scale wind turbines in the city but these have generally been unsuccessful.

^{vii} The discontinuation of the feed-in tariff for PV means that Ofgem data is not representative after 2018.

^{viii} Generated from combined heat and power at the Countess Weir sewage treatment facility.

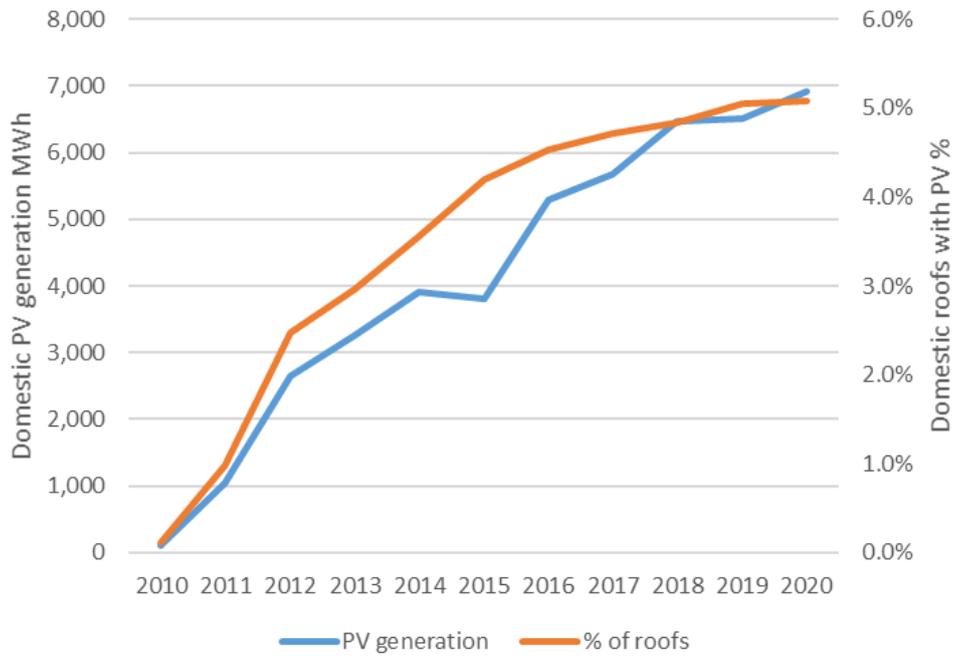


Figure 7: Historic domestic PV in Exeter from 2010 to 2020

Target setting for PV assumes that by 2030 25% of Exeter’s existing domestic roofs^{ix} have PV installed and that 50% of new homes built between 2020 and 2030^x have PV with each installation assumed to have the historic average peak capacity (3 kW). Hitting this target would mean that in 2030 13,971 domestic roofs (28%) in Exeter would have PV. Figure 8 shows the projected increase in domestic solar PV which would generate 42 GWh in 2030.

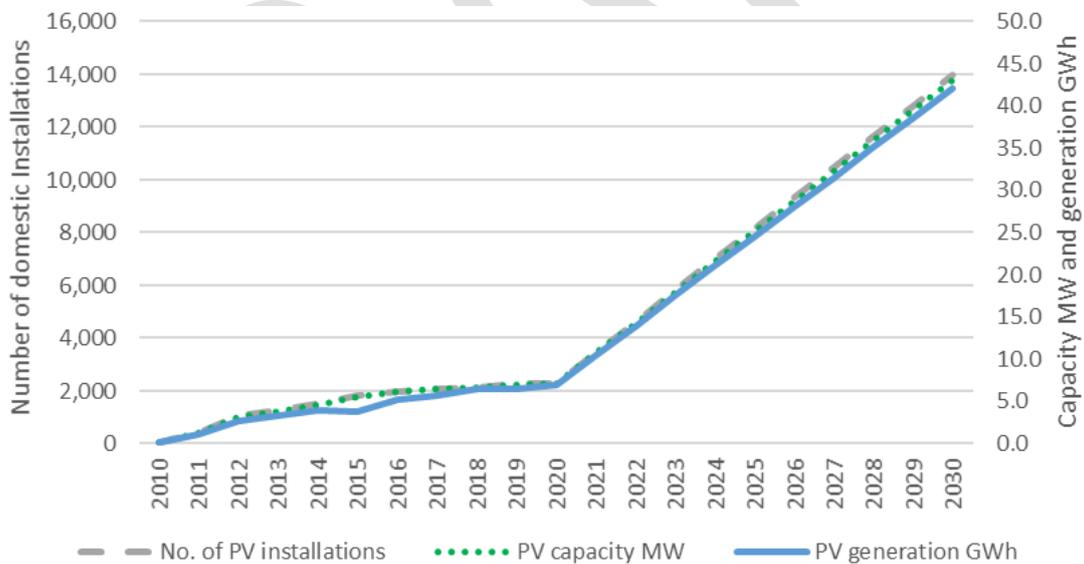


Figure 8: Historic and projected domestic PV in Exeter

The projected domestic installation rate is 1,200 per year, some 6 times the historic average and twice the peak rate achieved in 2012.

^{ix} Number of roofs from 2011 census housing mix (41,160) assumes that 3 purpose built flats or 2 conversions share one roof and does not count flats in commercial buildings or mobile/temporary homes. New roofs added annually (data from ECC’s "Authority Monitoring Report 2020/21" <https://exeter.gov.uk/media/5861/amr-2020-2021.pdf>) to 2020 gives 45,179 existing roofs.

^x Based on ECC 2021 housing supply statement (see <https://exeter.gov.uk/planning-services/planning-policy/monitoring/five-year-housing-supply-statement/>) which gives 5,353 new roofs in 10 years.

3.1.3 Non-domestic PV

Non-domestic PV installations generated 5 GWh in 2020 from 128 sites with a total capacity of 5MW. Exeter City Council PV sites provide about 40% of the non-domestic generation. New non-domestic PV will be a combination of a larger number of roof mounted PV arrays together with a smaller number of ground mounted sites. The relatively high historic average array size (42 kW) accounts for the current ratio of site sizes. Exeter has 3568 non-domestic buildings¹¹. It is assumed that 25% are suitable sites (mostly roofs) and install PV with the average historic installation capacity per site. On this basis projected 2030 generation is 42 GWh. Figure 9 shows historic and projected non-domestic PV installations, capacity and generation.

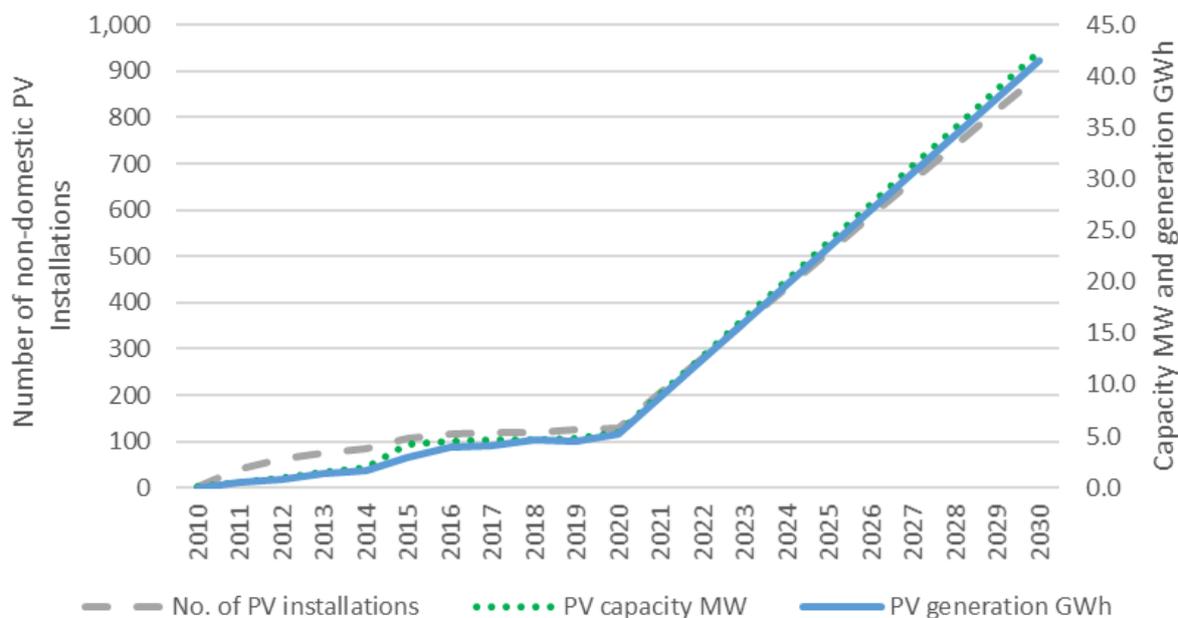


Figure 9: Historic and projected non-domestic PV in Exeter

The projected non-domestic installation rate is 76 per year, nearly 7 times the historic average and twice the peak rate achieved in 2011.

3.1.4 All PV

Table 4 and Figure 10 show historic and projected domestic and non-domestic PV installations in Exeter over the period 2010 to 2030.

Table 4. Historic and projected domestic and non-domestic PV installations in Exeter

Year	No. of PV installations	PV capacity MW	PV generation GWh
2010	51	0.1	0.1
2011	450	1.8	1.5
2012	1,104	4.1	3.5
2013	1,328	5.4	4.6
2014	1,599	6.5	5.6
2015	1,910	9.9	6.7
2016	2,082	10.7	9.2
2017	2,185	11.1	9.8
2018	2,259	11.3	11.1
2019	2,387	11.8	11.0
2020	2,423	12.4	12.1
2021	3,667	19.7	19.3
2022	4,911	27.0	26.4
2023	6,155	34.3	33.6
2024	7,399	41.7	40.7
2025	8,643	49.0	47.9
2026	9,887	56.3	55.0
2027	11,131	63.6	62.2
2028	12,375	70.9	69.3
2029	13,619	78.2	76.4
2030	14,863	85.5	83.6

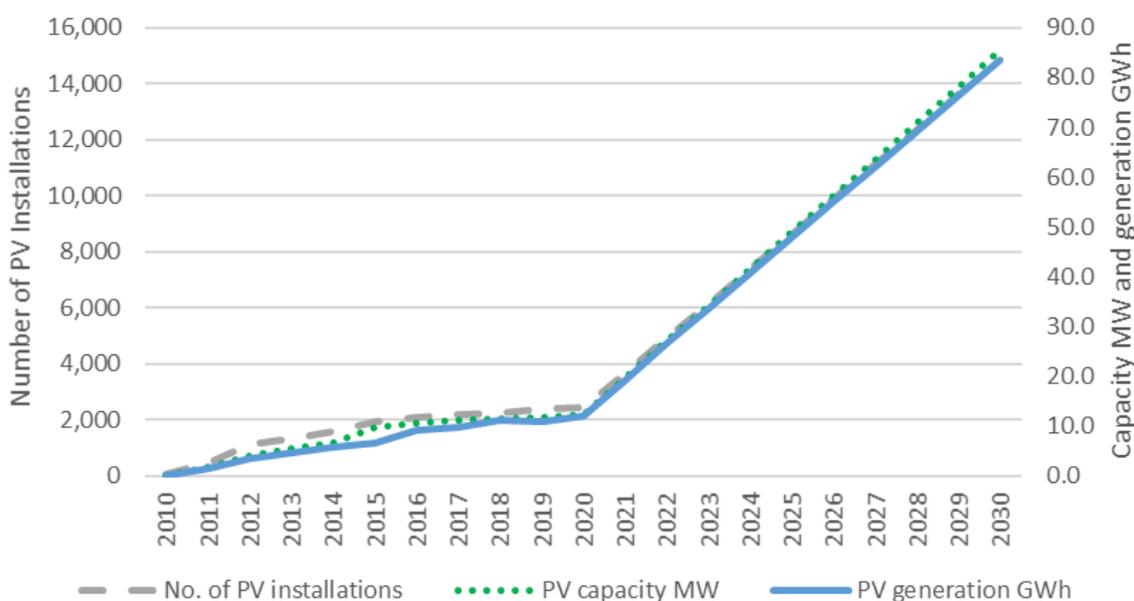


Figure 10: Historic and projected total (domestic and non-domestic) PV in Exeter

The projected overall installation rate is 1,240 per year, some 6 times the historic average and twice the peak rate achieved in 2012. The 2030 PV generation of 84 GWh represents 16% of Exeter’s current electricity consumption. However, by 2030 the CCC projects national electricity demand will rise by 17%. Over the period 2020 to 2030, grid electricity CO₂ emissions offset (using the grid emission factors in the Sixth Carbon Budget) peak at 6.0 ktCO₂e in 2025 falling to 3.9kt CO₂e in 2030, 1% of Exeter’s current CO₂ emissions.

3.1.5 PV monitoring and reporting

SECTOR:	POWER
CURRENT LEVEL:	2,423 PV INSTALLATIONS, 12 MW CAPACITY & 12 GWh GENERATION (2020)
MONITORING TARGET:	14,863PV INSTALLATIONS, 88 MW CAPACITY & 86 GWh GENERATION IN 2030
NEXT YEAR INCREMENT:	1,244 PV INSTALLATIONS, 20 MW CAPACITY & 20 GWh GENERATION
DATA SOURCE:	RENEWABLE ENERGY BY LOCAL AUTHORITY STATISTICS, BEIS
DATA AVAILABLE:	ANNUALLY

DRAFT

3.2 Buildings

Emissions from Exeter’s buildings have hardly changed since 2008. Buildings were responsible for GHG emissions of 167.7 kt CO₂e in 2019, 35% of the city’s GHG emissions.. The majority of emissions associated with the buildings sector are due to the requirements for space heating and hot water. Emissions from the consumption of electricity are included under the power sector. Reducing emissions arising from space heating and hot water relies on both reducing demand through efficiency measures, and supplying any heat required using low-carbon technologies.

3.2.1 Energy efficiency in homes

The Sixth Carbon Budget calls for insulation of all lofts and cavities and solid wall insulation on 50% of solid wall homes by 2033. The target in Exeter is 2030.

Data from Energy Performance Certificates¹² (EPC) provides information on some 37,278 homes or two thirds of the 56,350^{xi} homes in Exeter (duplicate EPCs on the same home excluded). The dates of the EPCs go back to 2008, which means that many will be out of date with the potential for changes to the properties since the EPC. This caveat should be borne in mind when using EPC data. Table 5 shows the roof insulation data in Exeter EPCs with the percentage for each type applied to the total number of homes.

Table 5: Loft insulation recorded in Exeter EPCs

Roof / insulation type	EPCs	% of roofs	Exeter
Dwelling/premises above	6,785	18.20%	10,254
U values given (new homes)	5,352	14.35%	8,088
Pitched uninsulated	2,633	7.06%	3,979
Pitched 100mm or less	7,407	19.86%	11,194
Pitched 101mm to 200mm	6,762	18.14%	10,219
Pitched 201mm to 300mm	5,184	13.90%	7,834
Pitched 300mm plus	1,033	2.77%	1,561
Pitched unknown	26	0.07%	39
Flat roofs	1,043	2.80%	1,576
Roof rooms & thatched	1,037	2.78%	1,567
Unknown	25	0.07%	38
Total	37,287		56,350

About 24% of Exeter’s homes either do not need roof insulation (e.g. non-top floor flats) or are difficult to insulate. Of the remaining 42,876 homes 17,484 (41%) are insulated (new build, where U values are given, and pitched roofs with more than 200mm). However, 3,979 pitched roof homes in Exeter have no loft insulation and 21,413 homes require top up insulation^{xii} giving a total 25,392 homes, or 45% of the housing stock, in need of some loft insulation. Installation over 9 years requires 2,821 loft insulation measures per year to 2030.

^{xi} Estimate of number of homes in Exeter in 2020 based on 2009 census (51,020) plus new dwellings completed since.

^{xii} The recommended depth for loft insulation is between 220mm and 270mm depending on the insulation, material uses (National Insulation Association see: <https://www.nia-uk.org/understanding-insulation/loft-insulation/>)

SECTOR: BUILDINGS

CURRENT LEVEL: 17,484 INSULATED LOFTS

MONITORING TARGET: 42,876 HOMES WITH LOFT INSULATION (200mm OR MORE)

NEXT YEAR INCREMENT: 2,821 FULL AND TOP UP LOFT INSULATION INSTALLS

DATA SOURCE: EPCS

DATA AVAILABLE: QUARTERLY, BUT INCLUDES HISTORICAL DATA

Table 6 shows a summary of the EPC data for wall insulation in Exeter.

Table 6: Wall insulation recorded in Exeter EPCs

Wall type	EPCs	% of walls	Exeter
Insulated cavity walls	21,741	58.31%	32,856
Insulated other walls	1,237	3.32%	1,869
Insulated solid walls	1,172	3.14%	1,771
Partly insulated cavity walls	946	2.54%	1,430
Partly insulated other walls	196	0.53%	296
Partly insulated solid walls	30	0.08%	45
Uninsulated cavity	6,453	17.31%	9,752
Uninsulated other walls	549	1.47%	830
Uninsulated solid walls	4,944	13.26%	7,472
Unknown	19	0.05%	29
Total	37,287	100.00%	56,350

The data suggests that 32% of the homes in Exeter (18,053) do not have wall insulation of which 54% (9,752) are cavity walls and 41% (7,472) are solid walls.

Assuming linear installation of cavity wall insulation over 9 years, 1,084 cavity wall insulation installations are required per year to 2030.

SECTOR: BUILDINGS

CURRENT LEVEL: 32,856 INSULATED CAVITY WALLS; 9,752 UNINSULATED

MONITORING TARGET: 9,752 CAVITY WALL INSULATION INSTALLS BY 2030

NEXT YEAR INCREMENT : 1,084 CAVITY WALL INSULATION INSTALLS

DATA SOURCE: EPCS

DATA AVAILABLE: QUARTERLY BUT INCLUDES HISTORICAL DATA

Assuming linear insulation of half of the 7,472 uninsulated solid walls in Exeter over 9 years gives 415 solid wall insulation installations per year.

SECTOR:	BUILDINGS
CURRENT LEVEL:	1,711 INSULATED SOLID WALLS; 7,472 UNINSULATED
MONITORING TARGET:	3,736 SOLID WALL INSULATION INSTALLS BY 2030
NEXT YEAR INCREMENT:	415 SOLID WALL INSULATION INSTALLS
DATA SOURCE:	EPCS
DATA AVAILABLE:	QUARTERLY BUT INCLUDES HISTORICAL DATA

3.2.2 Low carbon heat in homes

The Sixth Carbon Budget foresees the decarbonisation of home heating in urban areas via heat pumps and heat networks. By 2050 the uptake of heat pumps in UK homes with gas is forecast to reach 17.8 million representing 76% of the 23.6 million UK homes on the gas grid¹³. Around 20% of heat to homes and 42% to public and commercial customers will be through heat networks by 2050. Table 7 shows EPC data on heating in Exeter’s homes.

Table 7: Heating types recorded in Exeter EPCs

Heating type	EPC no.	% of heat type	Exeter
Mains gas central heating	28,846	77.36%	43,594
Electric storage heaters	3,744	10.04%	5,658
Community schemes	2,074	5.56%	3,134
Electric room heaters	1,469	3.94%	2,220
Room heaters mains gas	474	1.27%	716
Heat pumps	297	0.80%	449
Electric central heating	159	0.43%	240
Oil central heating	83	0.22%	125
LPG central heating	70	0.19%	106
Unknown	27	0.07%	41
Room heaters coal	21	0.06%	32
Solid fuel central heating	10	0.03%	15
Room heaters biomass	8	0.02%	12
Biomass central heating	5	0.01%	8
Room heaters bottled gas	0	0.00%	0
Room heaters oil	0	0.00%	0
Total	37,287	100.00%	56,350

BEIS Renewable Heat Incentive (RHI) statistics¹⁴ shows 57 heat pumps in Exeter. This is significantly fewer than the pro-rata 449 calculated from the EPC data (presumably due to the majority of installations not taking up the RHI). The pro-rata EPC data gives 3,134 homes in Exeter connected to community heating schemes (heat networks)^{xiii}. On this basis an estimated 55,819 homes in Exeter will require low or zero carbon-heating retrofit by 2030^{xiv}.

Installation of heat pumps in 76% of homes that do not have heat pumps, or are not connected to heat networks,^{xv} requires 41,714 extra installations over 9 years, a rate of 4,635 each year.

^{xiii} A BEIS FOI request gives 1,261 homes, 54 commercial buildings and 939 educational customers (total 2,255) connected to DH in Exeter with total capacity of 12.1 MW supplying 9 GWh in 2015. The more up to date EPC data is used.

^{xiv} Assuming that new homes built after 2025 have low or zero carbon heating.

^{xv} Assuming all homes in Exeter are on the gas grid.

SECTOR: BUILDINGS

CURRENT LEVEL: 449 HEAT PUMPS IN HOMES

MONITORING TARGET: 42,163 HEAT PUMP IN HOMES BY 2030

NEXT YEAR INCREMENT: 4,635 HEAT PUMP INSTALLS

DATA SOURCE: EPCs

DATA AVAILABLE: QUARTERLY BUT INCLUDES HISTORICAL DATA

Heat networks will play a role in the balance of Exeter’s homes currently without low or zero carbon heating that are not retrofitted with heat pumps (24% or 13,657). Heat networks connecting 20% homes that need retrofit low or zero carbon heating total 11,164. Over nine years to 2030 this requires the connection of 1,240 buildings each year.

SECTOR: POWER AND HEAT

CURRENT LEVEL: 3,134 HEAT CUSTOMERS CONNECTED TO HEAT NETWORKS

MONITORING TARGET: 14,298 HEAT CUSTOMERS CONNECTED TO LOW CARBON HEAT NETWORKS IN 2030

NEXT YEAR INCREMENT: 1,240 HEAT CUSTOMERS CONNECTED TO LOW CARBON HEAT NETWORKS

DATA SOURCE: EPCs

DATA AVAILABLE: QUARTERLY BUT INCLUDES HISTORICAL DATA

Table 8 summarises the current and target 2030 net zero heating mix in Exeter’s homes.

Table 8: Current and target 2030 net zero heating mix in Exeter’s homes

Heating type	Current	2030	Change
Gas	43,594	0	-43,594
Heat pump	449	42,163	41,714
Heat network	3,134	14,298	11,164
Other	9,173	5,815	-3,358
Total	56,350	62,276	5,926

Currently the majority of heat networks are fuelled by natural gas. Fossil fuel based heat networks will need to decarbonise to achieve Net Zero.

SECTOR: POWER AND HEAT

CURRENT LEVEL: NO LOW CARBON HEAT NETWORKS

MONITORING TARGET: ALL HEAT NETWORKS DECARBONISED BY 2030

NEXT YEAR INCREMENT: DECARBONISATION PLAN FOR ALL HEAT NETWORKS IN EXETER

DATA SOURCE: UNKNOWN

DATA AVAILABLE: UNKNOWN

3.2.3 Energy efficiency and low carbon heat in non-domestic buildings

The Sixth Carbon Budget assumes a 27% reduction in energy consumption compared to the CCC’s 2018 baseline. However, in its Balanced Pathway, the CCC assumes that commercial energy efficiency measures are fully deployed by 2030 and public sector measures are fully deployed by 2032. Nationally the CCC projects that by 2030 37% of public and commercial heat demand is met by low-carbon sources. Of this low-carbon heat demand, 65% is supplied via heat pumps, 32% via district heating and 3% by biomass. By 2050 all heat demand is met by low-carbon sources of which 52% is heat pumps, 42% is district heat, 5% is hydrogen boilers and around 1% is new direct electric heating.

In practical terms, this requires organisations (or in many cases, their landlords), to invest in efficiency measures such as insulation and low and zero carbon building services.

Display energy Certificate (DEC) and non-domestic Energy Performance Certificate (EPC) data provide an insight into Exeter’s non-domestic buildings. DEC’s are required annually on buildings accessed by the public which are over 1000 m², and less frequently (every 10 years) on smaller buildings (over 250 m²). There are some 275 premises with DEC’s in Exeter^{xvi}. Non-domestic EPC’s have been required since 2008 on the sale, rental or construction of non-domestic premises. As EPC’s are not required regularly some will be out of date with the potential for changes having been made since the EPC was performed. There are 2,282 non-domestic EPC’s in Exeter^{xvii}. DEC’s and EPC’s provide an operational/asset rating from A (good) to G (poor) for each building based on the building’s estimated CO₂ emissions. Most buildings with DEC’s will also have an EPC.

The CO₂ estimates in DEC’s and EPC’s are calculated using electricity CO₂ emissions factors that are not consistent with those used for Exeter’s 2019 GHG emission estimate. Building electricity consumption figures in the DEC’s have therefore been used to estimate CO₂ emissions using the 2019 grid electricity emission factors for each rating band resulting in total CO₂ emissions from buildings with DEC’s of 33 kt CO₂ (a 38% reduction compared to 87 ktCO₂ reported in the DEC’s). Figure 11 shows the distribution of buildings, floor areas and CO₂ emissions for each DEC band. The graph suggests the poor performing buildings in band E and, to a lesser extent, band G account for a disproportionate share of the building stock’s CO₂ emissions.

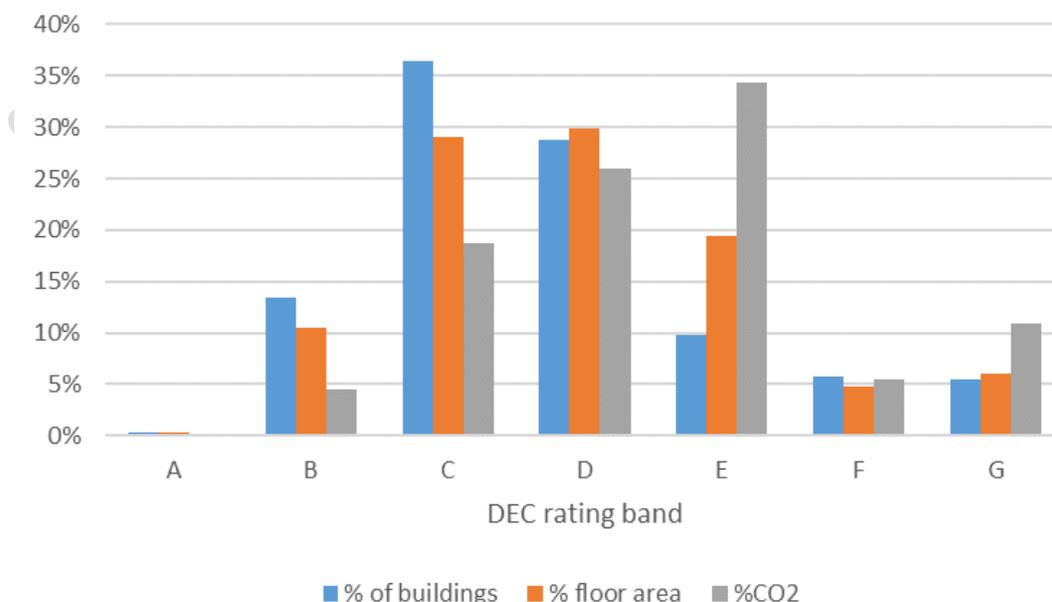


Figure 11: Percentage of non-domestic buildings, floor area and CO₂ emissions for each DEC band in Exeter.

^{xvi} DEC’s with missing energy data excluded.

^{xvii} EPC’s with missing energy data excluded.

Average CO₂/m² figures for each rating band have been used to estimate how improvements in building performance to a better performing band is likely to impact CO₂ emissions^{xviii}. Improving buildings with DEC ratings of D, E, F and G (137 buildings) to a C rating achieves a 38% reduction in CO₂ emissions, while improving only E, F and G rated buildings (58 buildings) to a D rating achieves a 25% reduction.

EPCs do not provide energy consumption data so the methodology applied to DECs cannot be repeated. Total CO₂ emissions recorded in the 2,282 EPCs are 113 kt CO₂. As with DECs, this figure will be inconsistent with Exeter’s 2019 GHG inventory. If the 38% reduction applied to the DECs is applied, total emission fall to 43 kt CO₂ (much of which will duplicate savings from buildings that also have DECs). Figure 12 shows the distribution of buildings, floor areas and CO₂ emissions for each EPC band which suggest a more proportionate profile of CO₂ emissions compared with the number of buildings and floor space than is found from DECs.

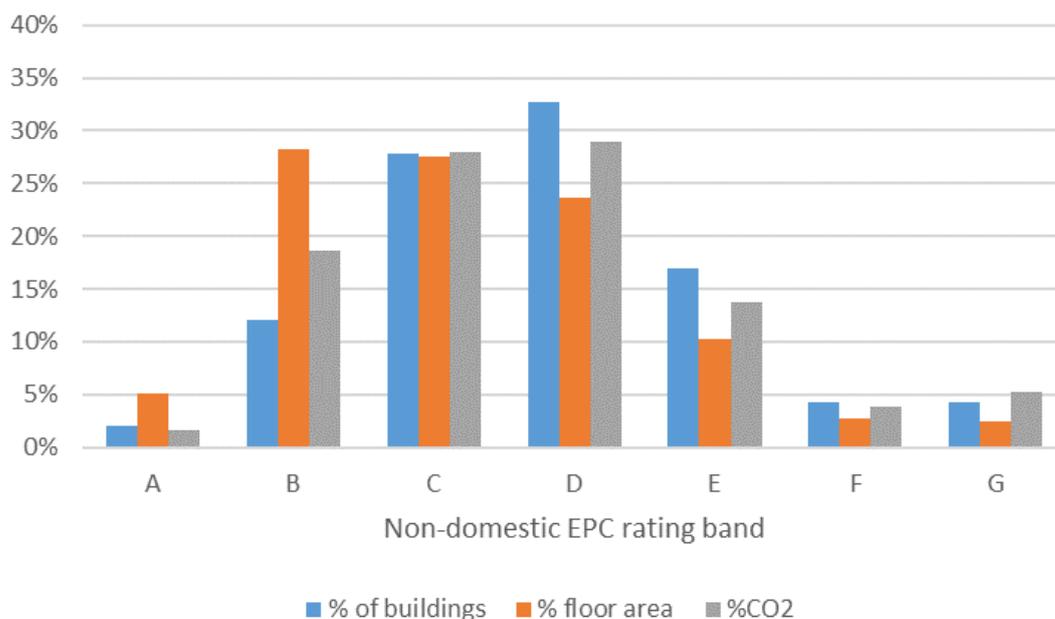


Figure 12: Percentage of non-domestic buildings, floor area and CO₂ emissions for each EPC band in Exeter.

The 43 kt CO₂ adjusted total emissions from EPCs compares with the non-domestic GHG assessment of 127 kt CO₂ (34%). This indicates that EPCs have not been undertaken on all non-domestic properties. This is confirmed by comparing the number of EPCs (2,282) with the 3,568 non-domestic buildings recorded in the non-domestic national energy efficiency data-framework¹⁵ (64%).

As with DECs, average CO₂/m² figures for each rating band in the EPCs have been used to estimate how improvements in building performance to a better performing band is likely to impact CO₂ emissions. Improving buildings with EPC ratings of D, E, F and G rated buildings (1,326 or 58% of the buildings with EPCs) to a C rating achieves a 12% reduction well short of the 27% required by the CCC. Improving C, D, E, F and G (1,960 or 86% of the buildings with EPCs) to a B rating achieves a 36% reduction in CO₂ emissions. This implies that achieving a 27% CO₂ emission reduction will require significant energy efficiency upgrades to some 2,312^{xix} non-domestic buildings in Exeter. Assuming that the same number are upgraded in each of the nine years to 2030 gives 257 buildings requiring upgrading per year.

^{xviii} Note that no specific allowance is made for electricity grid decarbonisation.

^{xix} 86% of the 3,568 non-domestic buildings in Exeter (3,065 pro rated (27/36)).

SECTOR: BUILDINGS

CURRENT LEVEL: 3,065 NON-DOMESTIC BUILDINGS WITH EPC BAND C, D, E, F, AND G RATINGS

MONITORING TARGET: 2,312 NON-DOMESTIC BUILDINGS BAND C, D, E, F & G IMPROVED TO BAND B BY 2030

NEXT YEAR INCREMENT: 257 NON-DOMESTIC BUILDINGS IMPROVED FROM BANDS C, D, E, F & G TO BAND B

DATA SOURCE: EPCS/DECS

DATA AVAILABLE: ANNUALLY BUT INCLUDES HISTORICAL DATA

Table 9 shows the numbers of low carbon heating (LCH) measures implied by the CCC's non-domestic heating projections.

Table 9: Projected low carbon heat sources for non-domestic buildings.

Area CCC timeframe	National 2030	National 2050	Exeter	Exeter
Total low carbon heat provision	37%	100%	37%	100%
from:				
Heat pumps	65%	52%	858	1,855
Heat networks	32%	42%	422	1,499
Biomass	3%		40	
Hydrogen		5%		178
Direct electric		1%		36
Total	100%	100%	1,320	3,568

Net Zero by 2030 requires Exeter to meet the CCC's 2050 target. EPC data shows that 4 non-domestic buildings in Exeter are heated with biomass and 8 are supplied from heat networks. Grid electricity is the main heating fuel for 1,097 premises^{xx}. Assuming that 2,459 buildings require LCH upgrades and that the same number are upgraded in each of the nine years to 2030 gives 273 buildings per year.

SECTOR: BUILDINGS

CURRENT LEVEL: UNKNOWN

MONITORING TARGET: 3,568 NON-DOMESTIC BUILDINGS WITH LOW CARBON HEATING (LCH) BY 2030

NEXT YEAR INCREMENT: 273 NON-DOMESTIC BUILDINGS INSTALL LCH MEASURES

DATA SOURCE: EPCS/DECS

DATA AVAILABLE: ANNUALLY BUT INCLUDES HISTORICAL DATA

^{xx} EPCs do not specify how many of these have heat pumps.

3.3 Industry

The industrial sector covers emissions from manufacturing and construction businesses excluding those arising from the consumption of electricity (included under the power sector) and from space heating and hot water provision in buildings (covered above). Typically, the sector includes energy intensive industrial activities such as refineries, chemicals, iron and steel and cement, which together are responsible for nearly two thirds¹⁶ of UK industrial sector emissions. These industries are not present in Exeter. Emissions in the area are more likely to occur from activities such as food and drink manufacture, printing, water treatment and waste management and a variety of other smaller manufacturing businesses.

Industrial emissions in Exeter are relatively small (26.8 kt CO₂e or 6% of total emissions in 2019) and have more than halved since 2008. Figure 13 shows the historic trajectory of industrial emissions in Exeter. There is a general trend of falling emissions, albeit with an increase in the period 2011 to 2015. The graph shows a linear extrapolation forward from the periods 2015 to 2019 and 2017 to 2019. Were the average reduction of 4.1 kt per annum achieved from 2015 onwards maintained, the sector would be decarbonised by 2025. This is likely to be over-optimistic: firstly, the annual rate of reduction is halved from 2017 onwards to 2.0 kt; at this rate of decline decarbonisation would not be achieved until 2033. Secondly, further examination of the data, discussed below, suggests that the 2015 value may be anomalous. To achieve zero carbon by 2030 would require a reduction in emissions of 2.4 kt per annum from 2020 onwards.

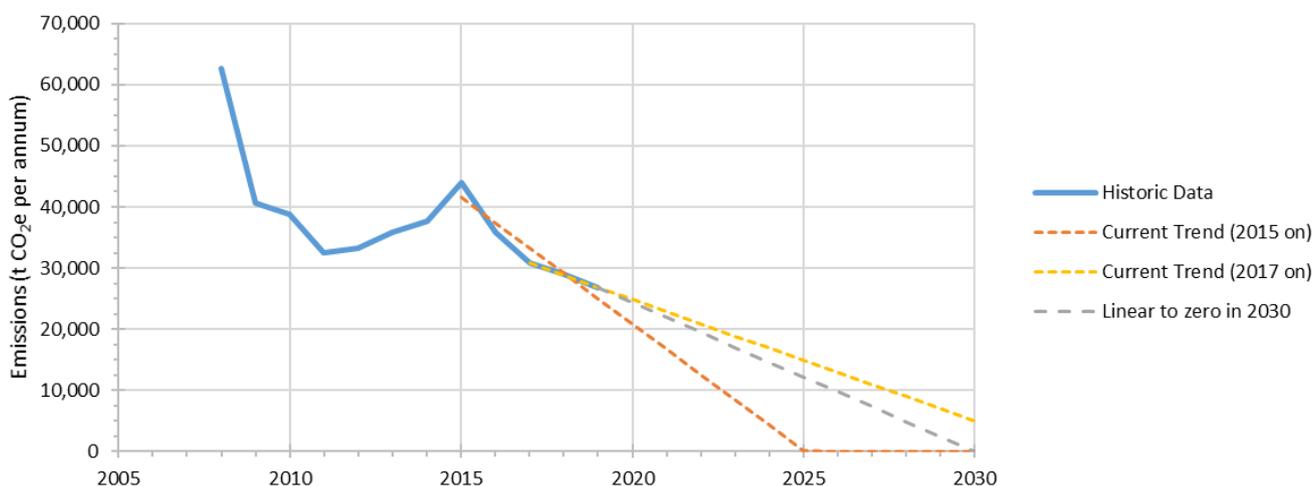


Figure 13: Historic and projected industrial emissions for Exeter.

The BEIS Local Authority CO₂ data⁶ reports emissions from large industry separately. The data includes emission sources identified in the National Atmospheric Emissions Inventory or by the Environment Agency as large industrial point sources. Figure 14 shows the contribution from large industry and other industry; a rapid decline in emissions from large industry is evident in the first reported year, from 2008 to 2009. Emissions from large industry have generally reduced at a faster rate than other industry, accounting for 49% of total industrial emissions in 2008, 36% in 2009, 26% in 2017 and 13% in 2019. The graph also reveals a large spike in emissions from other industry for a single year in 2015. The data show this to be attributable to natural gas consumption^{xxi}.

^{xxi} The anomalously high consumption is present in both the BEIS local authority CO₂ and gas consumption datasets.

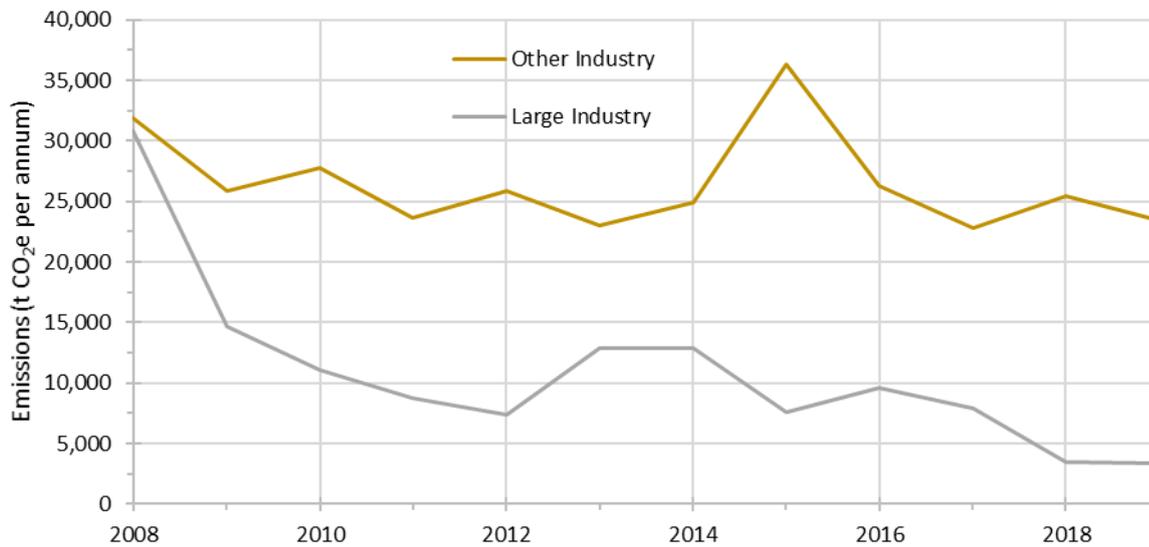


Figure 14: Industrial emissions in Exeter categorised as being from large industry or other industry.

Industrial emissions in the BEIS Local Authority data are significantly higher than those in the National Atmospheric Emission Inventory point and area source data (which lists no industrial point sources within Exeter). This suggests that the BEIS Local Authority data might erroneously include emissions from some non-industrial point sources, such as power generation, commercial and public sector operations.

The National Atmospheric Emission Inventory reports industrial emissions from fuel combustion separately from industrial processes. Data from recent years indicate that only a very small proportion (1 to 2.5%) of industrial emissions in the city originate from industrial processes. Cutting industrial fuel consumption (mostly gas) is therefore a priority for industrial emissions reduction in Exeter.

The Committee on Climate Change envisions fuel switching (to electricity and hydrogen), carbon capture and storage, and improving energy efficiency as key to decarbonisation of the sector. The absence of identified point source emissions in Exeter makes it difficult to identify specific measures that target significant industrial emissions in the city. Improving industrial energy efficiency and switching away from fossil fuels to electricity are likely to be the most effective ways of reducing emissions. However, there is currently insufficient granularity in the data to measure or target progress. The monitoring target is therefore based on the BEIS Local Authority CO₂ emission dataset (excluding non-CO₂ emissions^{xxii}).

SECTOR:	INDUSTRY
CURRENT LEVEL:	26.8 THOUSAND TONNES CO₂ EMISSIONS (2019)
MONITORING TARGET:	ZERO CO₂ EMISSIONS BY 2030
NEXT YEAR INCREMENT:	2.4 THOUSAND TONNES CO₂ EMISSIONS REDUCTION
DATA SOURCE:	BEIS LOCAL AUTHORITY CO₂ STATISTICS
DATA AVAILABLE:	ANNUALLY

^{xxii} Methane and nitrous oxide emission estimates are added to the figures presented elsewhere in this report. In recent years, CO₂ accounted for over 99% of industrial CO₂e emissions in Exeter.

3.4 Transport / Mobility

Emissions from transport, Exeter’s third largest emissions sector (22%), have remained stubbornly high with little change since 2008.

While lower emission vehicles will be key to the decarbonisation of the transport sector, reduction in vehicle use is also an important factor. In Exeter, vehicle-kilometres increased at an average of 6 million per annum between 2000 and 2019. Reversing this trend through lower use and modal shift is potentially the most effective way of reducing CO₂ emissions. The Balanced Pathway in the Sixth Carbon Budget assumes a 17% reduction in vehicle miles in 2050. Figure 15 shows the trend in vehicle miles in Exeter from 2000 to 2019 and a projected linear reduction to 83% of 2019 levels by 2030^{xxiii}.

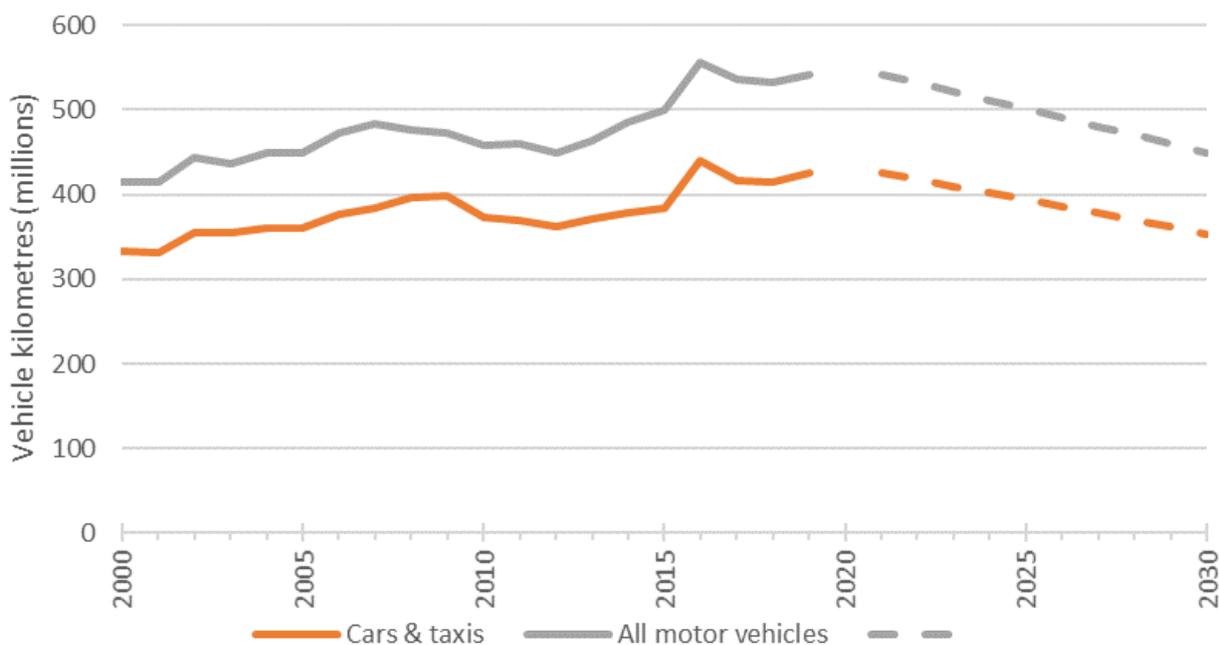


Figure 15: Vehicle kilometres on roads in Exeter ¹⁷.

The annual reduction in activity by all vehicles required to achieve a 17% reduction by 2030 is 10 million kilometres or 2% per annum. This is a large change from the 6 million average annual increase from 2000 to 2019. Investment in alternatives to the private car will help towards achieving this target; investment in capacity for general traffic will have the opposite effect.

SECTOR:	TRANSPORT/MOBILITY
CURRENT LEVEL:	542 MILLION VEHICLE KILOMETRES (2019)
MONITORING TARGET:	17% REDUCTION (FROM 2019) BY 2030 TO 450 MILLION VEHICLE KILOMETRES
NEXT YEAR INCREMENT:	10 MILLION VEHICLE KILOMETRE REDUCTION
DATA SOURCE:	LOCAL AUTHORITY ROAD TRAFFIC STATISTICS, DfT
DATA AVAILABLE:	ANNUALLY

^{xxiii} Data for 2020 is not available and, if it were, would be atypical due to the impact of Covid-19 lockdowns.

3.4.1 Electric and zero carbon vehicles

Electric vehicles and charging points hold the key to the transformation of mobility. Net zero essentially requires all cars and vans driving in Exeter to be electric and the provision of the corresponding charging infrastructure. The provision of infrastructure for larger commercial vehicles and HGVs is also required to enable emissions reduction from these vehicle classes.

The number of battery electric vehicles (BEVs) registered in the Exeter^{xxiv} area has been accelerating with 590 registered in 2021 (1.2% of Exeter’s 50,430 licensed vehicles^{xxv}). Figure 16 shows the exponential rate of increase to date.

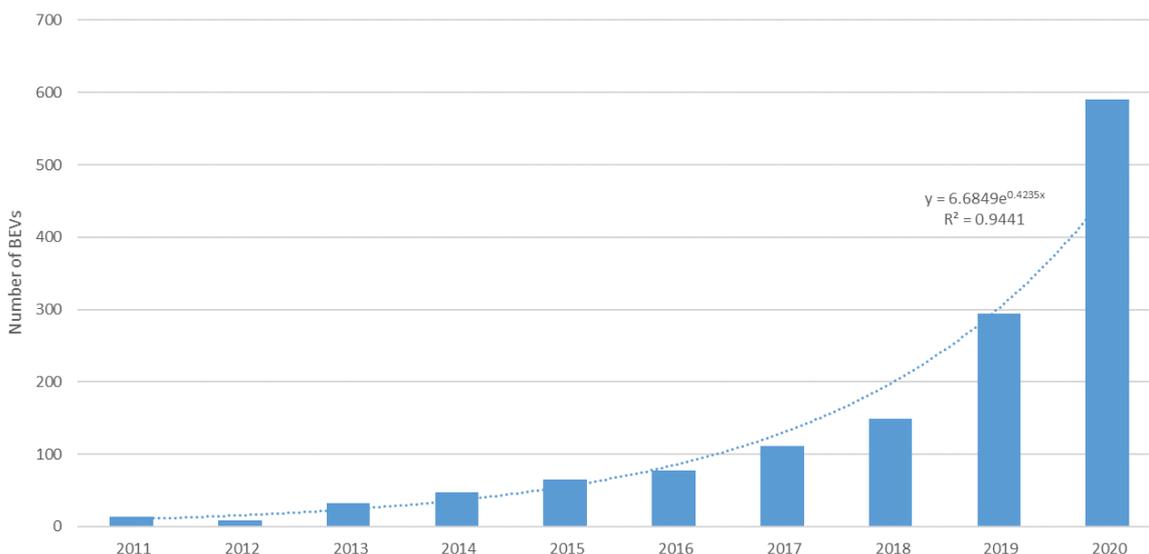


Figure 16: Battery electric vehicles in Exeter, 2011 to 2020¹⁸.

Figure 17 includes projections at the current growth rate and suggests that some 63% of vehicles may be BEVs by 2030. Continuing at this rate could potentially see all vehicles registered in the city electrified by 2032.

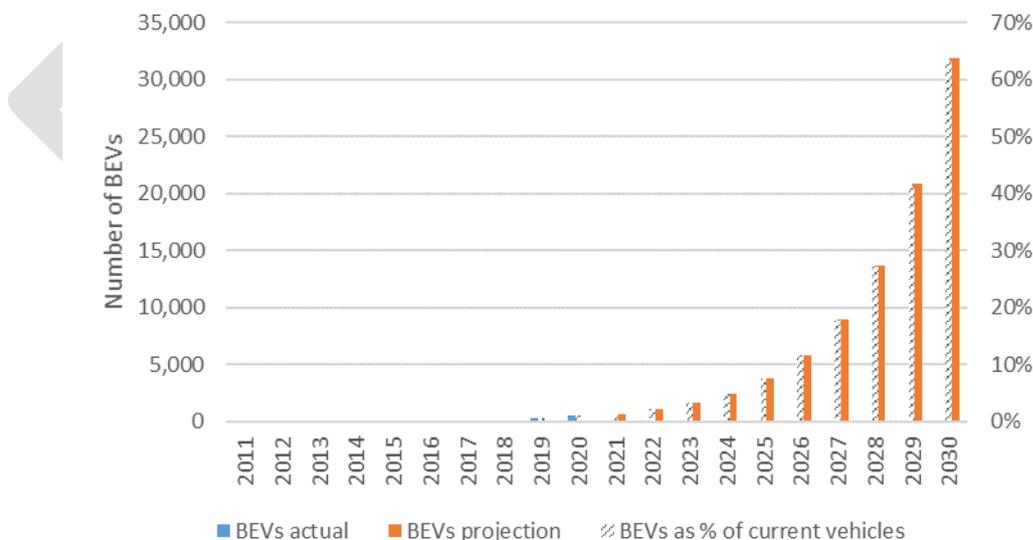


Figure 17: Projected battery electric vehicles in Exeter to 2030 at current growth rate.

^{xxiv} Considering vehicle registrations in Exeter is a consumption-based approach (as against territorial). Vehicles registered in Exeter drive outside the city boundaries. The target is that all vehicle mileage within Exeter is undertaken in EVs, which requires all those driving in the city using vehicles registered elsewhere to also be BEVs. Measures to achieve this might include a strict clean air zone, for example. Nonetheless, BEV registrations in the city are a relevant indicator of progress towards eliminating fossil fuel mobility.

^{xxv} Excluding motorcycles

Delivering 100% electric vehicles by 2030 requires a slightly higher growth rate. The figures and the targets for electrifying all vehicles by 2030 are set out in Table 10.

Table 10. Battery electric vehicle targets to achieve 100% of current vehicle numbers by 2030 (shaded parts of the table are unlikely to be achievable through the normal vehicle replacement cycle - see below).

Year	Current BEV projection		Accelerated Projection to meet 100% by 2030	
	Number	%	Number	%
2020	590	1.2%	590	1.2%
2021	705	1.4%	907	1.8%
2022	1,077	2.1%	1,418	2.8%
2023	1,645	3.3%	2,216	4.4%
2024	2,512	5.0%	3,463	6.9%
2025	3,837	7.6%	5,411	10.7%
2026	5,860	11.6%	8,456	16.8%
2027	8,949	17.7%	13,214	26.2%
2028	13,669	27.1%	20,650	40.9%
2029	20,876	41.4%	32,270	64.0%
2030	31,884	63.2%	50,430	100.0%

In 2019 (pre Covid-19), first time registrations of cars represented 8.4% of the South West fleet which, if applied to Exeter’s vehicles, implies that about 4,200 new vehicles are registered annually. Cells that are shaded in Table 10 exceed this number of annual new registration and occur if either the exponential function from Figure 16 or an accelerated exponential function is applied.

The shading implies that from 2028 (following the current exponential trajectory), or from 2027 (for the accelerated trajectory), all vehicles replacements from then on will be BEVs. If replacement is limited to the current 8.4% per year, the percentage BEVs in 2030 will be limited to 43% of the fleet if the current exponential trajectory is followed, or 50% of the fleet if the accelerated exponential trajectory is followed.

This limitation shows the potential pitfalls of relying of accelerated uptake of measures in the latter part of the decade.

Replacing 4,200 vehicles with BEVs each year to 2030 achieves 43,000 vehicles, 7,000 short (85%) of the target.

Incentives to increase the rate of fleet replacement or further accelerate the uptake of BEVs in earlier years will be required to achieve 100% BEV by 2030. Measures could include the promotion of car clubs or additional regulation of petrol and diesel vehicles.

SECTOR: TRANSPORT/MOBILITY

CURRENT LEVEL: 590 BEVs REGISTERED IN EXETER (1.2%)

MONITORING TARGET: 50,430 BATTERY ELECTRIC VEHICLES (100%) IN EXETER IN 2030

NEXT YEAR INCREMENT: 317 EXTRA BEVS REGISTERED (FOLLOWING ACCELERATED TRAJECTORY)

DATA SOURCE: ULEV STATISTICS, DfT

DATA AVAILABLE: QUARTERLY

Larger commercial vehicles will need to be zero emissions along with cars and light goods vehicles. Whilst the analysis above considers the vehicle fleet as a whole, the strategy for the replacement of large vehicles (which are operated commercially) is likely to differ significantly from the replacement of cars (and to an extent light goods vehicles) which are largely privately owned. In 2020 there were 2,470 HGVs, buses and other vehicles^{xxvi} registered in Exeter. Again, these only represent a fraction of the vehicles driving on the city's roads. Although relatively few in number, larger vehicles have greater emissions per vehicle, so transitioning them away from fossil fuels is important.

SECTOR:	TRANSPORT/MOBILITY
CURRENT LEVEL:	NEAR ZERO NON-FOSSIL LARGER COMMERCIAL VEHICLES
MONITORING TARGET:	100% NON ZERO CARBON LARGER COMMERCIAL VEHICLES AND HGVS BY 2030
NEXT YEAR INCREMENT:	TO BE DETERMINED
DATA SOURCE:	TO BE DETERMINED
DATA AVAILABLE:	TO BE DETERMINED

3.4.2 Vehicle charging points

The Sixth Carbon Budget provides estimates of the public vehicle charging point infrastructure required nationally in 2035. These figures have been prorated by population to estimate the number of charge points required in Exeter in 2030 (see Table 11).

Table 11. The estimated number of public vehicle charging points required in Exeter in 2030.

Charger size	Quantity
3 to 7 kW	127
22 kW	264
50 kW	375
150+ kW	12
Total	778

In October 2021 Exeter had 49 charging points, an increase of 10 since October 2020, and itself an increase of 11 from October 2019. To achieve 779 charging points by 2030, assuming an even number of installations over 9 years will require the addition of 81 new charging points per year. This is approximately eight times the installation rate achieved over the past two years.

SECTOR:	TRANSPORT/MOBILITY
CURRENT LEVEL (2021):	49 PUBLIC CHARGING POINTS
MONITORING TARGET:	778 PUBLIC ELECTRIC VEHICLE PUBLIC CHARGING POINTS IN 2030
NEXT YEAR INCREMENT:	81 ADDITIONAL PUBLIC CHARGING POINTS
DATA SOURCE:	PUBLICLY AVAILABLE EV CHARGING DEVICES BY LA, DfT
DATA AVAILABLE:	QUARTERLY

^{xxvi} Other vehicles include rear diggers, lift trucks, rollers, ambulances, Hackney Carriages, three wheelers and agricultural vehicles, and account for about one-half of the number of vehicles stated.

3.4.3 Walking and cycling

Figure 18 shows cycling activity on Exeter’s major roads. Count data are also available for a small number of minor roads but distance data are not publically available. Activity on major roads is therefore assumed as a proxy for cycling activity as a whole. Growth has been sporadic, with large year-on-year increases in some years, and to a lesser extent year-on-year decline in others. Calculating a three-year rolling average from historic data clarifies the general trend. This averaged data shows a more consistent increase from 2008 onwards. The increase since 2007 averages 12% per annum.

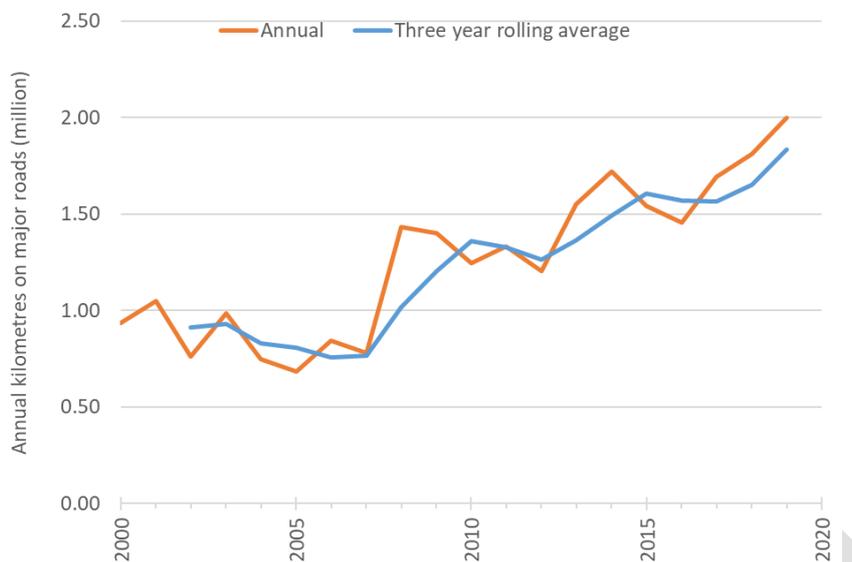


Figure 18: Cycling count in Exeter from 2007 to 2019 ¹⁷.

Additional data from Devon County Council^{xxvii}, which operates a network of traffic counters on off-road cycle paths, facilitates the estimation of the kilometres cycled in Exeter on off-road cycle paths (see Figure 19). From 2007 to 2015, there is an approximately linear increase in cycling averaging about 13% per annum (similar to the on-road figure). Since 2015, activity has been more variable, with the figure for 2021 being similar to 2015.

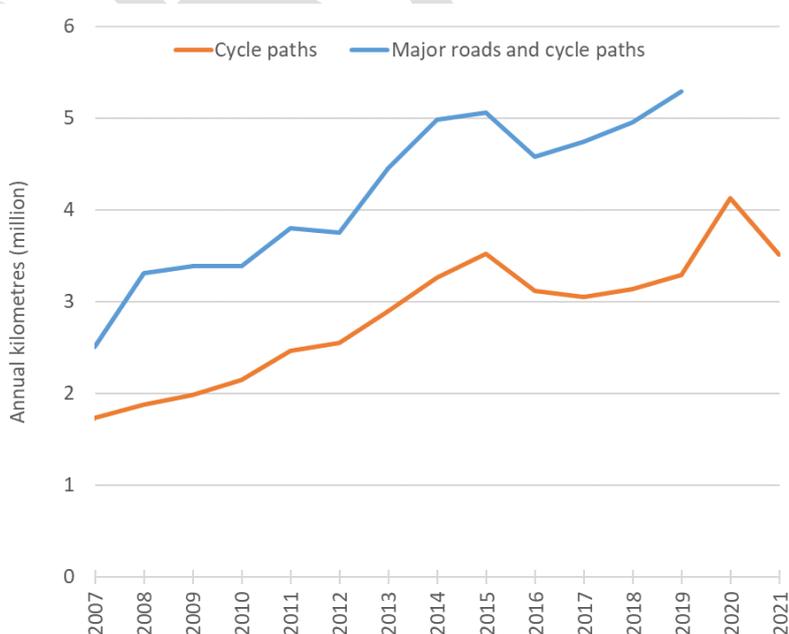


Figure 19: On and off-road cycling counts in Exeter from 2007 to 2021.

^{xxvii} Personal communication with William Pratt, Transportation Planning Team Leader, Devon County Council, 7th Feb 2022.

The DfT publishes statistics on walking and cycling based on the National Travel Survey and the Active Lives Survey¹⁹. These include the proportion of adults who do any walking or cycling, for any purpose, by frequency and local authority. Figure 20 shows the 2018/19 statistics for Exeter compared to the South West and England.

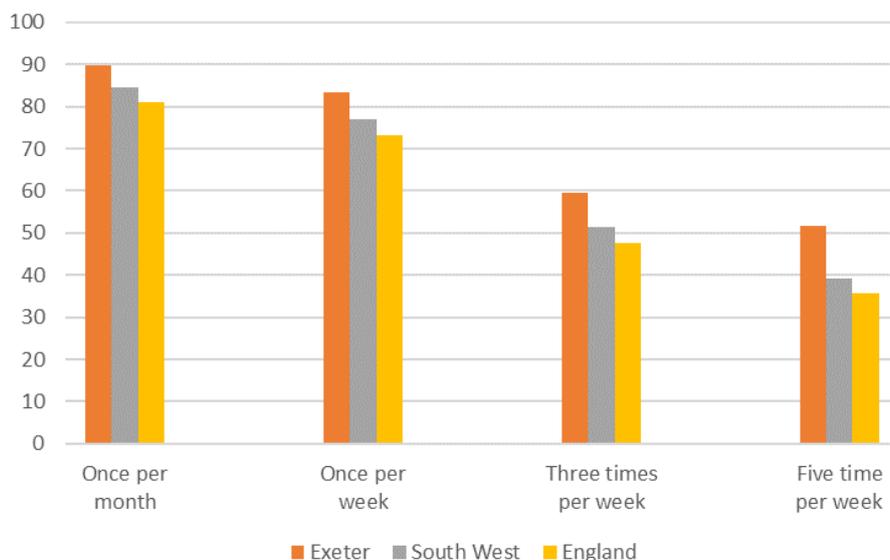


Figure 20: The percentage of adults who did any walking or cycling, for any purpose in 2018/19¹⁹.

The figures suggest that people in Exeter walk and cycle more frequently than average regionally and nationally which, given Exeter’s largely urban nature, is perhaps unsurprising.

In the Sixth Carbon Budget the CCC assumes that 5-7% of car journeys could be shifted to walking and cycling (including e-bikes) by 2030, rising to 9-14% by 2050. Urban areas such as Exeter should exceed this national figure. England’s Cycling and Walking Investment Strategy²⁰ aims to double cycling from 2013 to 2025. The Government’s recent transport decarbonisation plan²¹ identifies that 43% of urban journeys are under 2 miles and aims for 50% of all journeys in towns and cities to be cycled or walked by 2050 (assumed here to be 22% of journeys split evenly between cycling and walking, a target of 11% for each).

Figure 21 takes the historic cycling counts from Figure 18 and projects these to 2050.

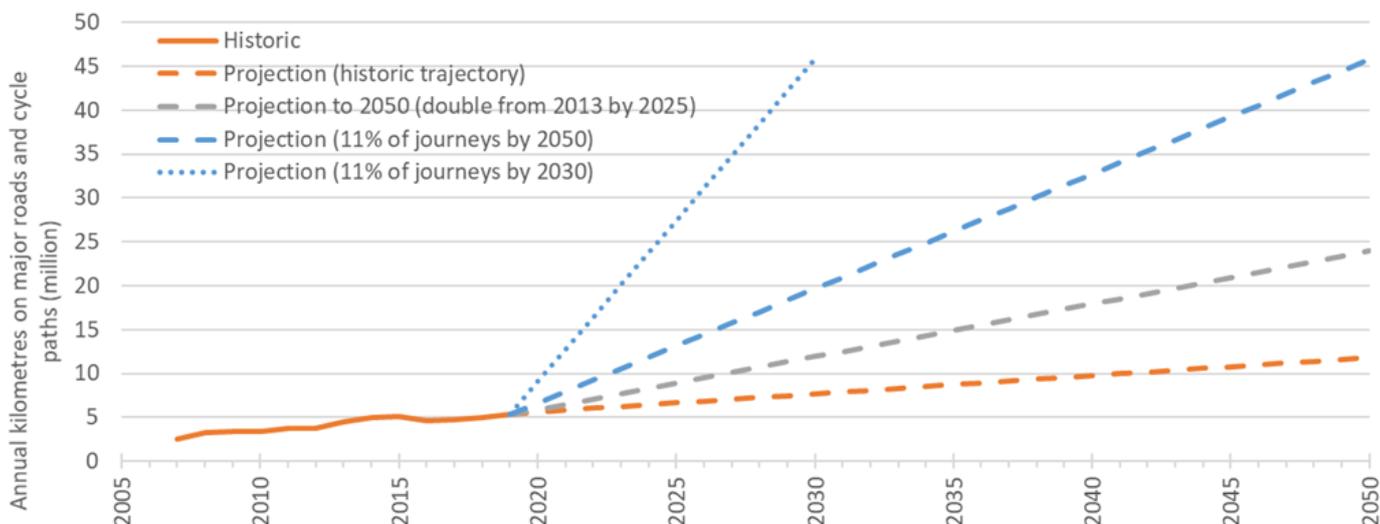


Figure 21: Cycling count projections in Exeter.

Assuming linear growth of the historic trend leads to a 49% increase from 2013 to 2025, well short of the doubling in the Cycling and Walking Investment Strategy. Doubling by 2025 would (if linearly extrapolated) lead to 24 million kilometres cycled on major roads and cycle paths by 2050. This would therefore appear to fall short of the 46 million required for cycling of 11% of all car and taxi journeys (although the cycling projection does exclude unquantified cycling activity on minor roads). To meet the 11% target by 2050 (assuming linear growth) requires an annual increase of 1.3 million kilometres (25% of 2019 levels). Meeting the target by 2030 requires an increase of 3.7 million kilometres (70% of 2019 levels).

SECTOR:	TRANSPORT/MOBILITY
CURRENT LEVEL:	2.0 MILLION km CYCLED (ON MAJOR ROADS) (2019) 3.3 MILLION km CYCLED (ON CYCLE PATHS) (2019)
MONITORING TARGET:	46 MILLION km CYCLED
NEXT YEAR INCREMENT:	3.7 MILLION km CYCLED
DATA SOURCE:	DfT LOCAL AUTHORITY ROAD TRAFFIC STATS (MAJOR ROADS) DCC MONITORING DATA (CYCLE PATHS)
DATA AVAILABLE:	ANNUALLY

To meet the overall walking and cycling target, the amount of walking activity would need to be similar to cycling.

SECTOR:	TRANSPORT/MOBILITY
CURRENT LEVEL:	UNKNOWN
MONITORING TARGET:	UNKNOWN
NEXT YEAR INCREMENT:	3.7 MILLION km WALKED
DATA SOURCE:	UNKNOWN
DATA AVAILABLE:	UNKNOWN

3.5 Waste

The Sixth Carbon Budget suggests that 80% of the UK’s CO₂ abatement in the waste sector to 2035 is from waste prevention, increased recycling and banning biodegradable waste from landfill. By 2050 30% of the abatement comes from fitting carbon capture and storage to energy from waste (EfW) plants. The additional 10% of emissions reductions comes from capturing more methane at landfills, reducing wastewater treatment emissions and improving composting. The CCC foresee a range of measures including reducing waste generation by 33% by 2037, increasing the UK wide recycling rate to 70% by 2030 and fitting carbon capture and storage (CCS) to all EfW plants by 2050.

It is important to recognise that locally Exeter City Council and Devon County Council (the respective waste collection and disposal authorities) only have information on, and collection and disposal responsibilities for, domestic waste. Local authorities have little knowledge of or influence over commercial waste in their locality. It is important for Exeter to obtain reliable and up to date information on volume and composition of non-domestic waste streams to enable assessment of emissions from non –domestic waste.

SECTOR:	WASTE
CURRENT LEVEL:	UNKNOWN NON-DOMESTIC WASTE ARISING AND COMPOSITION
MONITORING TARGET:	TO BE DETERMINED
NEXT YEAR INCREMENT:	OBTAIN DATA ON NON-DOMESTIC WASTE IN EXETER
DATA SOURCE:	TO BE DETERMINED
DATA AVAILABLE:	TO BE DETERMINED

This remainder of this section therefore considers collection and disposal of domestic waste only.

Exeter’s waste emissions (34.4 kt CO₂e) are about 7% of the total and have been similar over the past 4 years following the commissioning of the energy recovery facility (ERF) in Marsh Barton. Emissions prior to 2014 were lower as Exeter’s waste was disposed of outside the City (mostly to landfill).

3.5.1 Waste collection and recycling

The Devon Authorities Strategic Waste Committee provides data on waste across the county²². The data shows that the amount of domestic waste generated by Exeter’s residents is lower than that in the rest of Devon (see Figure 22)

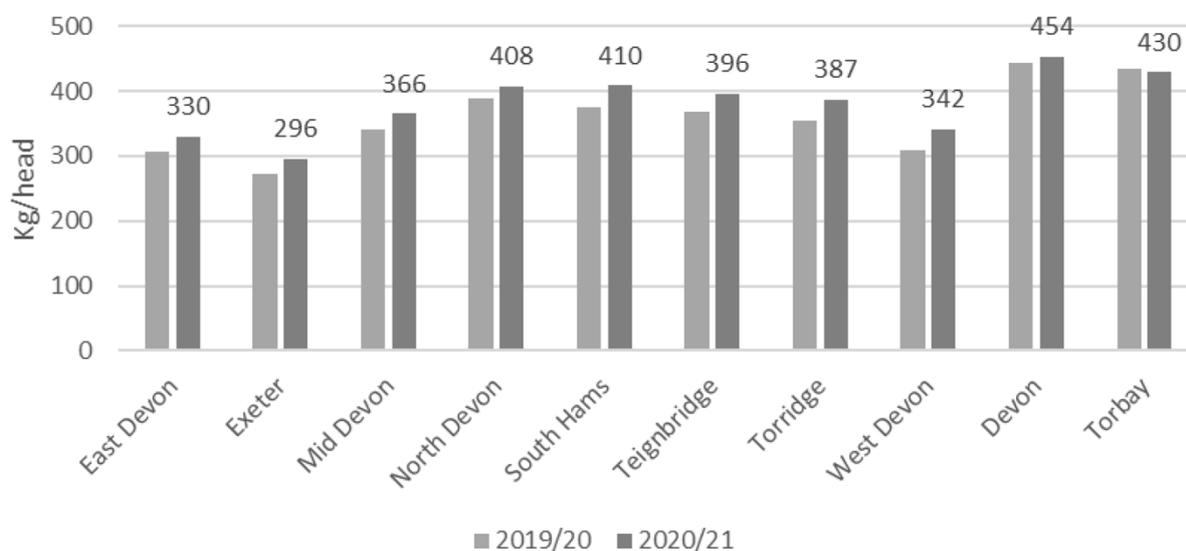


Figure 22: Domestic waste per head in Devon in 2019/21 and 2020/21 (courtesy of DCC)

However, Figure 23 shows that recycling rates are significantly lower in Exeter than in the rest of the county.

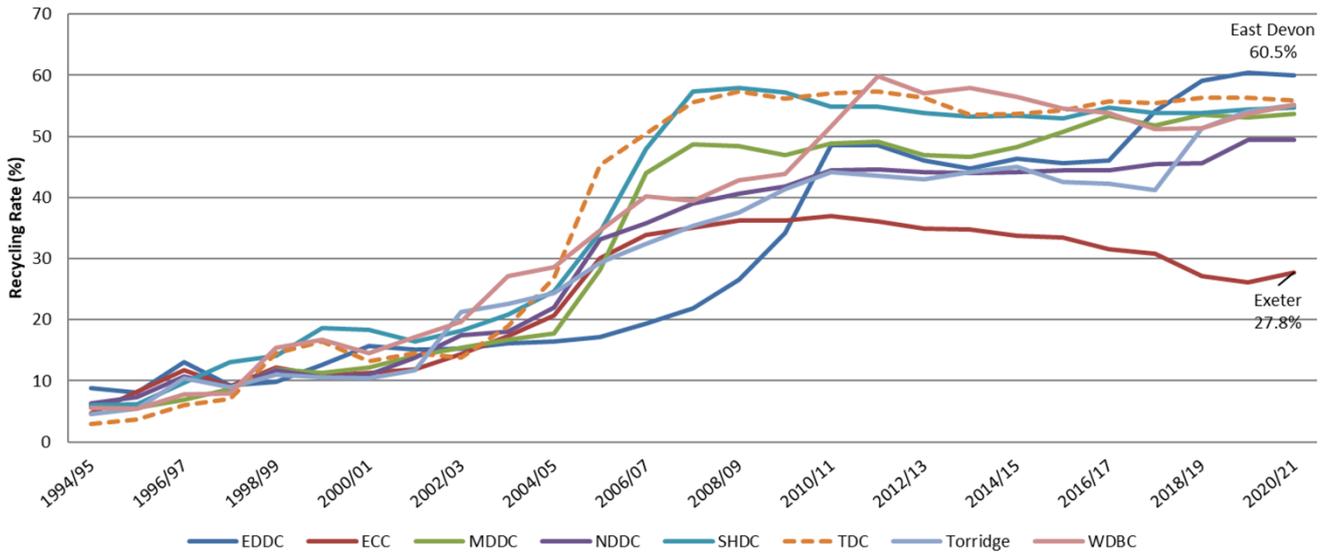


Figure 23: Domestic waste recycling rates in Devon 1994/95 to 2020/21 (courtesy of DCC)

Low recycling rates mean that in 2020/21 Exeter had higher residual waste per head (485 kg/household) than any other Devon district (16% higher than South Hams, the next highest district in Devon). Exeter’s residual waste per head is also 11% higher than comparably urban Torbay. Exeter is currently in the process of introducing food waste collection, which is likely to increase the recycling rate. Figure 24 illustrates the 4.2% annual increase in recycling rate that Exeter needs to achieve the CCC’s target of 70% recycling by 2030.

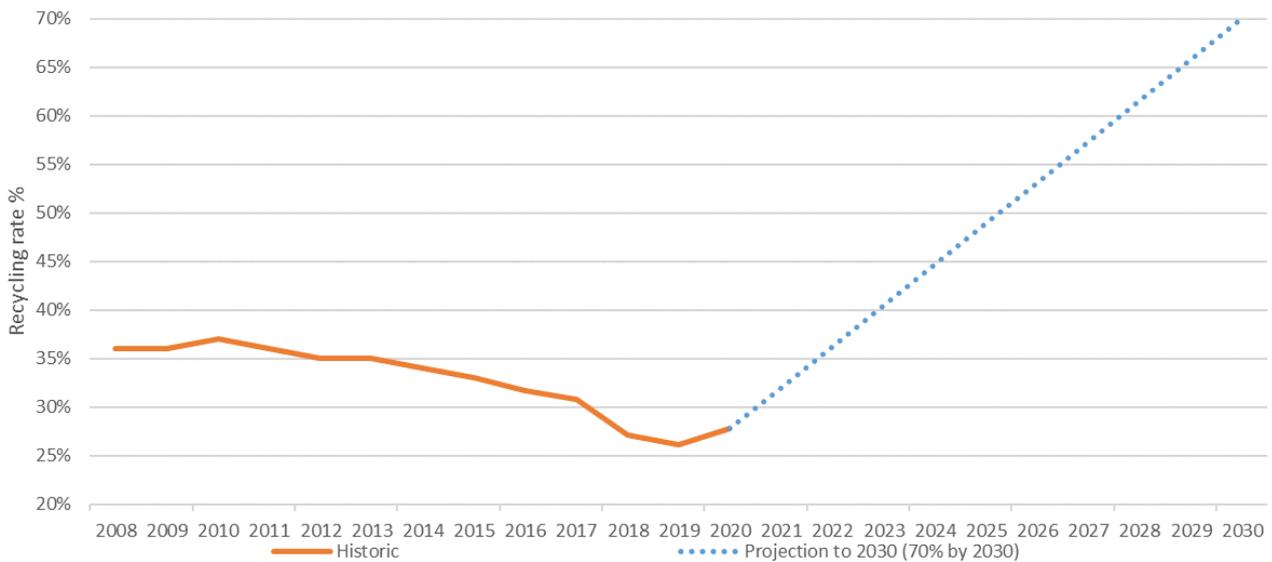


Figure 24: Domestic waste recycling projection for Exeter to meet 70% in 2030

Waste prevention is a vital component of emissions reduction from the sector. In its 2050 trajectory to net zero the CCC targets a 33% reduction in waste arisings by 2037. In light of Exeter’s 2030 target, this is brought forward to 2030.

Figure 25 shows the combination of achieving a 33% reduction in waste arisings and a 70% recycling rate in 2030.

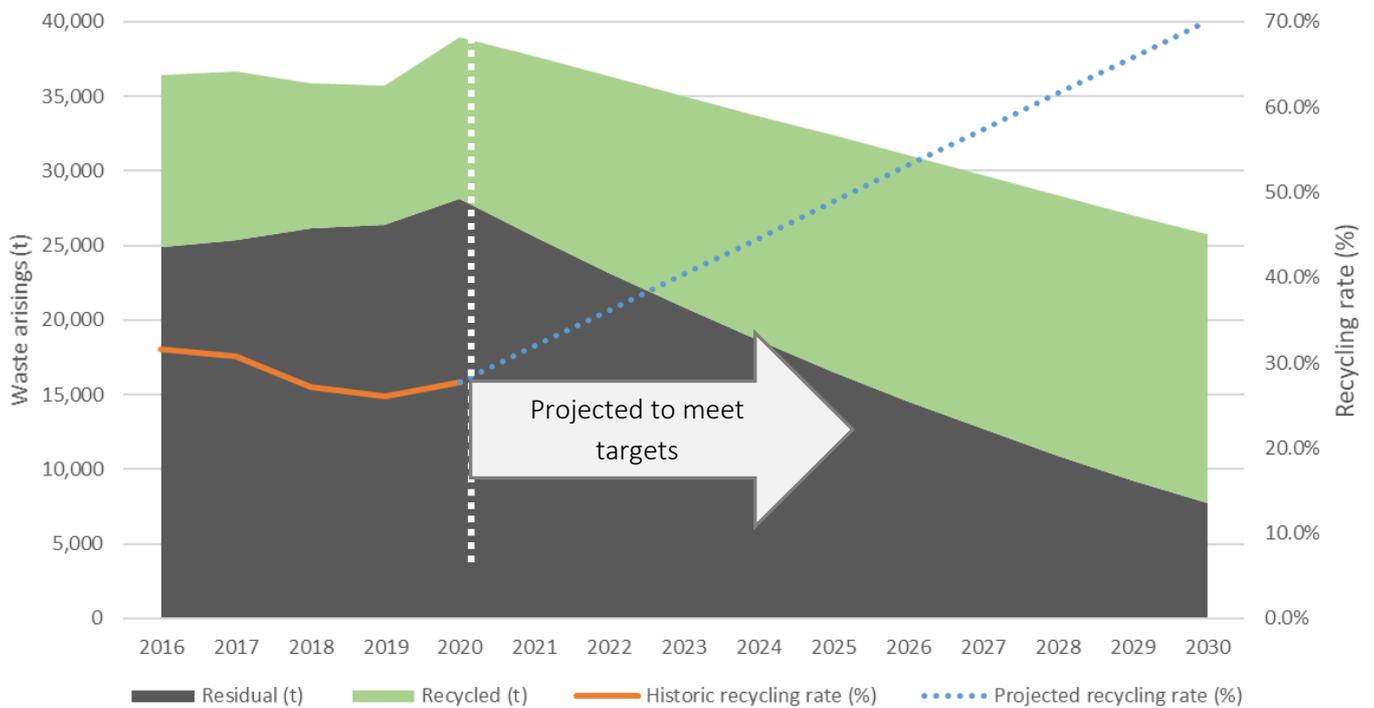


Figure 25: Domestic waste arisings and recycling rates including targets to 2030

This shows that while total waste arisings would fall 33% from 38,998 t in 2020/21 to 25,732 t in 2030/31, residual waste would fall from 28,164 t in 2020/21 to 7,720 t in 2030/31: a 73% reduction. These projections lead to the following waste collection and recycling monitoring targets.

SECTOR: WASTE
CURRENT LEVEL: 39.0 kt TOTAL WASTE ARISINGS IN 2020/21
MONITORING TARGET: 25.7 kt TOTAL WASTE ARISINGS IN 2030/31
NEXT YEAR INCREMENT: 1.3 kt TOTAL WASTE ARISNG REDUCTION
DATA SOURCE: DCC
DATA AVAILABLE: ANNUALLY

SECTOR: WASTE
CURRENT LEVEL: 27.8% RECYCLING RATE IN 2020/21
MONITORING TARGET: 70% RECYCLING RATE IN 2030/31
NEXT YEAR INCREMENT: 4.2% RECYCLING RATE INCREASE
DATA SOURCE: DCC
DATA AVAILABLE: ANNUALLY

Devon’s waste targets²³ include reducing waste collected per head to 416 kg per head per year by 2030 and recycling at least 60% of household waste by 2025 and 65% by 2035. Exeter’s waste per head (296 kg per head in 2020/21) is already lower than the Devon wide 2030 target. Meeting the CCC’s trajectory gives a projected 183 kg per head in 2030.

The CCC recycling rate trajectory for Exeter is below the Devon wide target of 60% recycling in 2025 (49%), but reaches 65% in 2029: well before the 2035 Devon wide target.

In practice, changes to recycling are driven by changes to local authority collection regimes, which in turn, will be dictated by the Environment Act 2021. The Act requires mandatory changes to local authority waste collection. However, the extent and timing of these changes is still uncertain and, if implemented by central government, is out of the control of local authorities.

3.5.2 Waste disposal

Exeter disposed of its residual waste in landfills up to 2014. The city now sends its residual waste for disposal at the Exeter ERF. The plant uses waste to generate electricity for the national grid. Reduced fossil inputs to the ERF reduces emissions so increasing plastic recycling rates will be an important factor in cutting the plant's emissions. The plant has the ability to export heat. The use of heat increases the efficiency of energy recovery from the waste and reduces CO₂ emissions: the more heat used, the lower the emissions. Promoting heat use in the Liveable Exeter schemes in Water Lane and Marsh Barton will be important in this respect.

SECTOR:	WASTE
CURRENT LEVEL:	NO HEAT EXPORT
MONITORING TARGET:	HEAT EXPORT TO THE LIVEABLE EXETER DEVELOPMENTS IN THE VICINITY OF THE ERF
NEXT YEAR INCREMENT:	UNKNOWN
DATA SOURCE:	DCC
DATA AVAILABLE:	ANNUALLY

Ultimately, the installation of CCS is required. The Sixth Carbon Budget requires the installation of CCS on all UK energy from waste plants between 2040 and 2045.

SECTOR:	WASTE
CURRENT LEVEL:	NO CARBON CAPTURE AND STORAGE
MONITORING TARGET:	INSTALLATION OF CCS ON MARSH BARTON ERF BY 2030
NEXT YEAR INCREMENT:	UNKNOWN
DATA SOURCE:	DCC
DATA AVAILABLE:	UNKNOWN

3.6 F-gases

Fluorinated gasses (F-gases) account for a small percentage of UK GHG emissions (3% in 2018) and, although released in small volumes, they can have a global warming potential (GWP) up to 23,000 times greater than CO₂. The four F-gases included in the UK emissions inventory are hydrofluorocarbons (HFCs) (accounting for 94% of GHG emissions in 2017), sulphur hexafluoride (SF₆) (4% in 2017), perfluorocarbons (PFCs) (2% in 2017) and nitrogen trifluoride (NF₃) (less than 1% in 2017).

The largest source of emissions of HFCs (77%) is the refrigeration, air conditioning and heat pump sector (RACHP). Emission release is due to refrigerant leakage from appliances during use and at disposal. Current regulation outlaws refrigerants of various types, mandates inspection regimes and testing and sets a cap on the amount of HFCs that can go on the market. Cuts to the cap every 3 years give a 79% reduction from 2015 levels in 2030. Beyond this, the CCC identifies F gas replacement with lower GWP F gases as the main emission reduction measure. The Balanced Pathway reduces F gas emissions by 81% in 2050. Achieving this 81% reduction in a linear decrease by 2030 requires a reduction of 9% of current emissions each year, every year.

The National Atmospheric Emissions Inventory (NAEI)²⁴ provides estimates of HFC emissions. NAEI emissions are apportioned to Exeter based on non-domestic electricity consumption²⁵. Given the range of uses (RACHP, fire-fighting, blowing agents/propellants, electrical switchgear, metal production, etc), local usage will vary and the apportioned value is therefore subject to significant uncertainty.

Although the estimated 28.9 kt CO₂e emissions from F-gases in Exeter are a minor part of Exeter’s footprint (7%), under a net-zero scenario, the decarbonisation of other sectors means that, left unchanged, the F-gas contribution will play an increasing role. In addition, the future deployment of tens of thousands of heat pumps across the city has the potential to increase F gas emissions. Ensuring that the release of F gases are as near to zero as practical will be important in ensuring that the city achieves the emissions reductions that the deployment of heat pumps should secure.

Emissions reduction in the F-gas sector is driven by national and international legislation and there is therefore relatively limited scope for Exeter to accelerate emission reduction from F-gases. Local trading standards bodies enforce air conditioning inspections (which are required for any system with a rated output of over 12 kW). More proactive enforcement of these air conditioning inspections may be a route to lower emissions.

Display Energy Certificates (DEC) and Energy Performance Certificates (EPC)^{xxviii} record air conditioning equipment with capacity of over 12kW. These suggest that 85% of Exeter’s above 12 kW air conditioning capacity is in 6 organisations/buildings as shown in Table 12. More detailed information on each system can be found in individual building air conditioning inspection certificates and reports.

Table 12. Air conditioning capacity in Exeter listed in DECs and EPCs

Source	Organisation	Location	System rating kW	%
DEC	RD&E	Wonford	3,067	49.1%
DEC	Crown & County Court	Southernhay Gardens	613	9.8%
DEC	Royal Mail	Osprey Road	525	8.4%
DEC	ECC	RAMM & Civic Centre	459	7.3%
EPC	Various	Exebridge Centre	318	5.1%
DEC	SWAS	Eagle Way	316	5.1%
DEC & EPC	Others		951	15.2%
Total			6,249	100.0%

^{xxviii} For references see Buildings section

Identifying these organisations/buildings enables a targeted approach to a year on year reduction in HFC leakage rates by encouraging a reduction in the requirements for air conditioning through improved building performance, minimising refrigerant leakage from existing equipment through good maintenance and encouraging the use of very low GWP refrigerants when replacing refrigerant or installing new equipment. However, there are likely to be thousands of other air conditioning units across the city with capacity less than 12 kW.

With most F gas emissions coming from RACHP equipment the number, size and refrigerant type of units probably represents the best proxy measure for local emissions. However, air conditioning certification is only required every five years, giving a long time lag. In addition, reducing these measures locally will not necessarily lead to a reduction in the apportioned NAEI emissions if non-domestic electricity consumption remains the basis for apportionment.

SECTOR:	F-GASES
CURRENT LEVEL:	28.9 THOUSAND TONNES CO₂ EMISSIONS (2019)
MONITORING TARGET:	ZERO CO₂ EMISSIONS BY 2030
NEXT YEAR INCREMENT:	2.6 THOUSAND TONNES CO₂ EMISSIONS REDUCTION
DATA SOURCE:	BEIS LOCAL AUTHORITY CO₂ STATISTICS
DATA AVAILABLE:	ANNUALLY

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4 Conclusions

Greenhouse gas emissions in Exeter are on a downward trajectory. Emissions of 717 kt CO₂e in 2008 declined by a third to 476 kt CO₂e in 2019 and it is likely that the city will meet a 2020 target of a 30% reduction from 1990 levels (516 kt CO₂). Changes to date are due largely to the reduction in the carbon intensity of the national electricity grid, which gives a 64% reduction in emission from the power sector (with most generation plant located outside Exeter). The city is missing 2020 sector targets for emission reduction from buildings and transport by factors of 6 and 4 respectively. Looking ahead lack of progress in these sectors is particularly concerning, with growth in the city leading to increases in emissions in recent years. The city needs to make significant progress in reducing emission from buildings and transport to deliver net zero.

Extrapolating the current trend from 2016 suggests emissions in 2021 will be 448 kt CO₂e. Continuation of the current trend without local GHG reduction relies on unrealistic grid decarbonisation (implying a zero carbon grid electricity in 2026). While it may be realistic to assume current trend estimates for 2021 can be achieved with grid decarbonisation, by 2030 a 28% reduction from non-power sectors would be required to continue the current trend to 2030 while still leaving residual emissions of 291 kt CO₂e in 2030 and cumulative emissions of 3.7 Mt CO₂e over the decade. A linear decline in emissions from 2021 to zero in 2030 would yield cumulative emissions of 2.2 Mt CO₂e. The current trend, which itself requires significant non-electricity emissions reduction, exceeds this amount in 2026.

The monitoring targets show the scale of the changes needed to meet the 2050 targets set out in the Sixth Carbon Budget by 2030. These include:

- Over 1,200 PV installations each year every year to 2030, compared to 36 in 2020, a six-fold increase in the long run average installation rate.
- Installing loft insulation in 25,400 homes by 2030 or 2,800 homes each year every year to 2030.
- Insulating the walls of 13,500 homes by 2030 at the rate of 1,500 every year.
- Putting 4,600 heat pumps in homes every year to 2030, there are currently 449 heat pumps in Exeter's homes.
- Connecting an extra 11,200 homes to heat networks by 2030; over 1,200 each year.
- Improving the energy efficiency of 260 non-domestic buildings every year to 2030 and switching 270 every year to low carbon heating.
- Reducing driving in Exeter by 10 million kilometres each year, every year to 2030.
- Continuing the exponential growth in electric vehicles ownership (aiming for 317 in 2021) and putting in an additional 81 charging points in every year to 2030.
- Increasing cycling rates 3.7 million kilometres annually (equivalent to 70% of the current total level) with matching increases in walking.
- Achieving a 1.3 kt (3.3%) annual reduction in household waste generation each year, every year and a 4.2% annual increase in recycling rates each year, every year to 2030.
- Capturing and storing CO₂ emission from the Exeter energy recovery facility by 2030.

It has not been possible to identify data sources or specific proxy measures for the industry and f-gas sectors and some more specific targets have yet to be determined and therefore do not currently have data sources or incremental targets. The monitoring process needs to address these shortcomings.

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Terms of Reference for Scrutiny Committees

Membership

The membership of all committees is determined by the Council at its Annual Meeting. The membership may be varied during the year only with the consent of the Council.

Scrutiny Functions & Procedures

Scrutiny Functions

1. The aims of the Scrutiny process are to:-
 - add value to Council business and decision-making;
 - hold the Executive to account;
 - monitor the budget and performance of services;
 - assist the Council in the development of policy and review the effectiveness of the implementation of Council policy;
 - review relevant central government policy development and legislation to assess the impact on the City and make recommendations to Executive.

Scrutiny Programme Board (“SPB”)

2. The purpose of the Scrutiny Programme Board is to manage scrutiny in a way that ensures the functions of overview and scrutiny are fairly balanced across all aspects of the Council’s work, with a view to improving services, reducing inequalities and improving outcomes for the people of Exeter. The Scrutiny Programme Board will meet on a bi-annual basis.

Role of the Scrutiny Programme Board

- To set priorities for the annual scrutiny work programme;
- To ensure that work is allocated fairly across the two scrutiny committees and reflects all aspects of the Council’s work by providing oversight and direction to the committees’ work programmes;
- To ensure corporate and cross cutting business is dealt with by the relevant committees;
- To review performance against the relevant corporate priorities and inform work programmes as appropriate;
- To receive for information, and oversee implementation of, recommendations made by each of the two Scrutiny Committees;
- To plan and oversee implementation of the process for annual Budget Scrutiny;
- To produce an annual scrutiny report to Council (in conjunction with the scrutiny committees);
- To review national best practice and guidance in relation to scrutiny and recommend any changes to the way scrutiny is undertaken as a result.

Membership

The Scrutiny Programme Board will consist of one member nominated by the Leader (who shall not be a member of the Executive) together with the Chairs and Deputy Chairs of each of the two scrutiny committees.

Chair - the Chair of the Board will be from the group in administration.

Deputy Chair - the Deputy-Chair will be from the main opposition group.

Role of the Scrutiny Committees

The relevant scrutiny committee will:

- hear call-ins, Councillor's call for action and petitions;
- approve the creation of time limited working groups for issues within its remit;
- monitor performance against the relevant corporate priorities;
- receive finance and performance reports;
- agree recommendations to Executive, Council and partner organisations;
- agree appointments of co-opted representatives;
- monitor the forward plan;
- review new and developing legislation to assess its impact on the city;
- consider and introduce schemes to involve the public in developing policy;
- work with national, regional and local organisations to promote the interest of local people.

Strategic Scrutiny Committee

Responsibility for

- Relevant policies in the Exeter Plan
- Corporate Health & Safety
- Response to Central Government's Policy Making
- Climate change and sustainability
- Council wide/strategic matters
- Hear call-ins relevant to the role of the committee

Partnership links

- Growth Board
- Joint Committee for Heart of the South West
- Heart of the South West Local Enterprise Partnership

Membership - There are fourteen members of the Committee including the Chair and Vice Chair. None shall be members of the Executive Committee.

Chair - The Chair will be nominated and elected at full council and will be a member of the Scrutiny Management Board.

Deputy Chair - The Deputy Chair will be nominated and elected at full council

Urgent Decisions - The Chair with relevant responsibilities will be consulted on urgent decisions to be made.

Customer Focus Scrutiny Committee

Responsibility for:-

- Corporate Performance Monitoring
- Financial Performance Monitoring
- Annual Budget Setting Process

(Amended March 2020)

- Service specific/operational matters
- Hear call-ins relevant to the role of the committee

Partnership links

- Health and Wellbeing Board
- Exeter Community Safety Partnership
- Strata

Membership - There are fourteen members of the Committee including the Chair and Vice Chair.

Chair - The Chair will be nominated and agreed by full council and will be a member of the Scrutiny Programme Board.

Deputy Chair - The Deputy Chair will be nominated and agreed by full council

Urgent Decisions - The Chair with relevant responsibilities will be consulted in relation to Urgent decisions to be made within the Scrutiny Committee's terms of reference.

Excluded matters

The following matters cannot be considered by a Scrutiny Committee:

- any matter relating to a planning decision;
- any matter relating to a licensing decision;
- any matter relating to the business of the Audit & Governance Committee;
- any matter relating to an individual or body if s/he/they have, by law, a right to a review or right of appeal;
- any matter which is vexatious, discriminatory or not reasonable to be included in the agenda for, or to be discussed at, a Committee meeting .

The Monitoring Officer in consultation with the Chair (or Deputy Chair in the chair's absence) of the relevant Committee will determine whether a matter is an excluded matter.

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