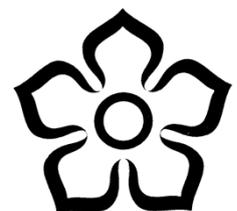




Leicester's Climate Emergency Conversation

Proposals for discussion - November 2019



Leicester
City Council

Contents

Introduction	3
Leicester's Climate Emergency Conversation	3
How to join the conversation	3
Terms used in this document	4
Part 1: Why have we declared a climate emergency?	6
Part 2: How is the climate changing?	7
Part 3: How will life in the city need to change and what should we do about it?	8
At home	8
Travel and transport	13
Our choices as consumers	18
Waste	22
At work	26
Land use, green space and development	31

Introduction

Leicester's Climate Emergency Conversation

On 1st February 2019 Leicester City Council declared a climate emergency. The declaration is an acknowledgement that:

- climate change is happening, and threatens the wellbeing of everyone in Leicester and worldwide
- the speed and scale of global and local action to tackle the problem needs to be dramatically increased.

In its declaration, the council committed to developing a new action plan to address the emergency through our own services and projects – to follow on from our recently-completed Sustainability Action Plan. We also want to inspire others to join us and take action too.

Leicester's Climate Emergency Conversation is a 12-week opportunity to raise the issue of climate change and start to map out how the city should respond. Through the conversation we want to involve local organisations, and individuals from all walks of life, in discussing what needs to happen. We believe this needs to include:

1. Understanding how Leicester and daily life here will need to change to respond to climate change.
2. Understanding what the implications will be for individuals and organisations – including the implications for people on low incomes and others who might be more vulnerable.
3. Discussing what action could be taken by the council, other local organisations, individuals and central government to bring about the change needed here.

How to join the conversation

Leicester's Climate Emergency Conversation is taking place from 18 Nov 2019 – 9 Feb 2020. It will involve an online questionnaire, as well as interactive events and activities to provide opportunities for face-to-face discussion. In addition to the events being organised by the council, we are providing a conversation pack for groups to run their own discussion events too. We hope to see lots of groups making use of this to involve as many people as possible.

On the next page is a summary of the conversation activities and how local organisations and the public can get involved.

Activity	Target Audience
<p>Online questionnaire</p> <p>Seeking views on key proposals taken from this document. Available throughout the conversation period on the council's Consultation Hub.</p>	<p>Open to any organisation or individual throughout the 12-week period.</p>
<p>Conversation pack for community discussions</p> <p>For any group of people wanting to run their own discussion event and to feed back the results. This could be a community or campaigning group, a student group, a tenants group, a trade union or employees group, or any other group of people living or working in the city.</p> <p>For a copy of the pack please email sustainability@leicester.gov.uk</p>	<p>Open to any group of people living or working in the city throughout the 12-week period.</p>
<p>Leicester's Climate Assembly</p> <p>A one-day event designed to find out the views of a cross-section of Leicester's population.</p> <p>To apply to take part in this event email sustainability@leicester.gov.uk</p>	<p>Saturday 18th January 2020.</p> <p>To make sure we get a cross-section of people reflecting Leicester's population, there is an application process for this event.</p>
<p>Young People's Climate Assembly</p> <p>A one-day discussion event for city secondary schools, supported by Leicester's Youth Council.</p> <p>Schools interested in taking part should contact Lee Jowett, Environmental Education Co-ordinator at the council. Email lee.jowett@leicester.gov.uk</p>	<p>Monday 27th January 2020.</p> <p>Open to any secondary school based in the Leicester City local authority area.</p> <p>Places available for groups from up to 8 schools.</p>
<p>Dialogue – online discussion forum</p> <p>A moderated discussion platform providing an opportunity for interactive online debate and discussion of ideas. Users can join conversations started by the council or others, or start their own.</p> <p>A link to the Dialogue conversation will be available on the climate emergency page of our website from 16th December.</p>	<p>Open to anyone in the city.</p> <p>Forum opens 16th December 2019</p>

Terms used in this document

We have tried to keep technical terms to a minimum in our proposals, but we've had to use some. Here is an explanation of two key terms used:

Carbon emissions – by this we mean the gases released into the atmosphere which are adding to climate change. The main gas involved is carbon dioxide (CO₂) – hence the term 'carbon emissions'. Carbon dioxide is released when fuels such as natural gas, petrol and diesel are burned.

Carbon emissions can include other gases. The main one of these which is relevant to our proposals is methane. Methane can be released from waste food and other organic matter as it breaks down in landfill sites. It is also released by some farm animals including cows and sheep.

Carbon neutral - when we say in the proposals that Leicester will need to become carbon neutral, we mean that the total carbon emissions caused directly or indirectly by everyone here will need to reduce until they're as close as possible to zero.

Then, we will need to compensate for any remaining emissions. This is also known as 'offsetting' those emissions. This could be by doing something to absorb an equivalent amount of carbon emissions from the atmosphere as the emissions we emit e.g. by planting trees. Other ways could be to generate a surplus of renewable energy, or to pay for other people to do these things on our behalf through a commercial offsetting scheme.

'Net zero carbon' is another term which means the same as carbon neutral.

The term carbon neutral can be applied to a whole city, or to an individual part of it, such as a building or an organisation. Where we have used the term in the proposals, we have made it clear what we are applying it to.

Part 1: Why have we declared a climate emergency?

Scientists now agree that the climate is changing as a result of human activity. Global average temperatures have increased by 1°C from pre-industrial levels and sea levels are rising.

World leaders have set a target in what's known as the Paris Agreement to stop the temperature increase from going beyond 1.5°C. This is what scientists believe is needed to prevent catastrophic impacts.

It will require major changes over the next decade and beyond to stop temperature rise going past this limit. It has become clear that the speed and scale of change will need to be much greater than anything that's been done so far to tackle climate change.

Many people think that if humanity doesn't act decisively now, climate change could threaten the lives of many millions of people as well as much of the world's wildlife. This is why the term 'climate emergency' is now used.

In Leicester, the City Council took the decision to declare a climate emergency for several reasons.

- We believe that climate change poses a very great threat to the wellbeing of present and future residents of the city, and to Leicester's future success and prosperity.
- Cities including our own have been estimated to be responsible for about 70% of worldwide carbon dioxide emissions. We believe that the council and the rest of the city has a responsibility to play our part in tackling the challenge.
- Leicester has a lot to gain from acting decisively now, rather than waiting for other cities and other countries to act first. For example, many of the clean technologies required will make the city a healthier place to live. By adopting them as soon as we can, we think this could help our economy get a head-start in the new emerging low-carbon economic sectors, and the jobs being created in them.
- This could be the last opportunity to put the world on the right path in a planned and manageable way, rather than in a chaotic way which risks causing negative impacts – particularly on the more vulnerable members of society. We think Leicester should plan for change now, not wait for outside events to force change upon us.

Part 2: How is the climate changing?

Records show that global average temperatures have increased by around 1°C from pre-industrial levels already. Sea levels around the UK have risen by an average of 16cm since 1900 and they will continue to rise for centuries, even if we stop creating carbon emissions, due to time lags in the climate system.

For central England, the Met Office is predicting that average summer temperatures could rise by between 1.1 and 5.8°C by 2070 compared to the period 1981-2000 in a 'high emissions scenario'. Hotter summers are expected to become more common, with the chance of seeing temperatures similar to the 2018 heatwave increasing to around 50% by mid-century.

Summers could become drier and winters wetter on average, but with increasing variability. This means that Leicester and the surrounding area will need to cope with more frequent intense rainfall, and also prolonged dry periods.

Amongst the implications of these changes for Leicester:

- More frequent and severe heatwaves could present a risk to health. Children, older people and those with a pre-existing health condition tend to be more vulnerable.
- The risk of overheating and the need for, and expense of, air conditioning in buildings could increase if steps are not taken to adapt them. Public spaces could also be at risk – particularly those with little or no shade or vegetation in the most built-up areas.
- Key infrastructure can also be at risk during heatwaves.
- With more frequent intense rainfall, the city's drains and rivers are expected to come under greater pressure. Steps are already being taken to deal with these pressures in the River Soar corridor and elsewhere. Measures to slow rainwater run-off or disperse it in other ways will also be needed.
- While central England is not expected to be as severely affected by drought as the south-east, there will still be a greater need to conserve mains water to avoid the eventual need for new reservoir capacity.

Globally, sea level rise will increasingly threaten the safety of many millions of people living in lower-lying coastal areas. Changes in weather patterns will affect the productivity and even viability of farmland in some areas, threatening food production.

At the same time, biodiversity is already being affected over large areas and this will intensify. While some species may benefit from changes, a lot more are expected to be threatened by them. Many could be unable to respond quickly enough – resulting in potentially large-scale population reductions and extinctions.

The exact impact of these changes on Leicester are not known, but what we can say is that the city's future is bound up with that of the rest of the world in almost every aspect of life. Through the goods we import, family links between continents and in countless other ways, local interests and global interests are the same.

Part 3: How will life in the city need to change and what should we do about it?

This part of the document presents our proposals for how we think Leicester will need to change if it is to respond to the climate emergency. It is split into six themes.

For each theme we explain the reasons for our proposals. We also suggest some possible actions that could be considered by individuals in the city and organisations including the council itself.

Through the Climate Emergency Conversation, we welcome further ideas and alternative suggestions as well comments on our own proposals.

At home

Background and explanation of our proposals

Heating of homes and the use of electricity for lighting, appliances and gadgets causes about a third of carbon emissions in Leicester from our direct fuel and energy use. So housing will have to change. We think the following things will need to change.

1. Carbon neutral housing

For Leicester to become carbon neutral, housing will need to become carbon neutral too. This will mean changes to heating, insulation, lighting and appliances as well as a lot more generation of renewable energy.

There will be some houses which can't do as much as others. For example, historic buildings won't be able to have solar panels and may not be as easy to insulate. However, others will be able to do more and some will need to be 'carbon positive'. This means they will generate more renewable energy than they need.

2. Replacement of gas heating

Gas boilers will no longer be able to be used for heating because of the carbon emissions they create when gas is burned. Instead, homes will need to be heated, and hot water supplied, using low-carbon alternatives. The main options could be:

- Heat pumps – they use electricity to extract heat from the air or the ground. They are tried and tested and already used in many buildings. They work best when the building is very well insulated. They can struggle and be expensive to run if it isn't. For buildings that are less well insulated, a heat pump could be combined with a small boiler to boost the heating in very cold weather.
- Hydrogen boilers – hydrogen can be used as a fuel in the same way as gas and doesn't produce carbon emissions when it's burned. It's not available at the moment. Central government would need to step in to support zero-carbon hydrogen production and conversion of the gas network.

- Heat networks – Leicester already has many hundreds of homes supplied from underground hot water pipes connected to large neighbourhood boiler houses. Heat and hot water can be generated more efficiently at this large scale. Existing and new heat networks could be an option if they used large scale heat pumps or hydrogen boilers.

Wood-based fuel, known as biomass, and liquid biofuels made from other plant materials are sometimes suggested as alternative low carbon options for heating fuels. We are not proposing these as a solution for Leicester because we have concerns about the environmental impact of creating and transporting them. We are also worried about the risk of air pollution when they're burned.

We believe that the government needs to make decisions about the best way for homes and buildings to be heated in future – and make national plans for the changes needed to move away from gas. We think these plans will need to include proposals for how those on low incomes will be financially supported to make any changes.

At a local level, the council is encouraging the operator of Leicester's existing heat network to draw up plans for introducing low-carbon heating technologies. We also require new developments in the city to connect to the heat network where possible so that it can be expanded. We are proposing to continue to do this. We could start to introduce heat pumps in some of our council housing too.

3. Warm, insulated homes

We believe it will be necessary to make houses and flats very highly insulated to keep people warm with much less heating than a typical house today.

Warmer, low-energy homes will be needed for heat pumps to be effective and affordable to run. They will also be necessary to limit the extra pressure on the electricity grid as gas is phased out. Warmer homes should help to improve health too by reducing damp, draughts and underheated homes.

Making homes warmer will require large-scale programmes to fit draught-proofing, loft or roof insulation, cavity or solid wall insulation and double or even triple-glazing wherever they're not already installed.

The council has already made many of these improvements to council houses in the city. We could continue to invest in insulating council houses. A particular area where there's more we could do is in fitting external insulation to solid-walled houses which don't yet have it.

We are also considering introducing a Selective Licensing Scheme for private rented housing in parts of the city with a high concentration of privately rented property that are in poor condition. The issuing of a license would include an inspection of property and checks would be made to ensure they are in good repair and have adequate heating and insulation. This idea will be the subject of a formal consultation to gain the views of interested parties.

For other housing, we think that the government will need to step in to provide incentives for private landlords, housing associations and private homeowners to invest

in improving their properties. We think that these incentives will need to ensure that those on low incomes can benefit from better insulation along with everyone else.

4. Renewable energy

Even with lots of insulation and a low-carbon heating system, homes will still be responsible for some carbon emissions. This is because electricity from the grid will continue to be generated partly from gas-fired power stations for some time to come. To compensate for this, we think that wherever possible houses and blocks of flats will need to generate as much as possible of their own renewable energy. If possible, some will need to generate more renewable energy than they need, to make up for those which can't generate any (refer to point 1 above).

We think that most houses and flats with a suitable roof area will have to have solar panels. Panels which generate electricity (called photovoltaic or 'PV' panels) will probably be a more popular option in most cases than 'solar thermal' panels generating hot water because many homes no longer have a hot water tank.

The council has already fitted about 11,000 PV panels to council houses and we could continue this until all our suitable houses have them. We estimate that this could take many years to complete and would cost a significant amount of money, but it could make a big difference.

As the number of PV panels continues to go up, the capacity of the electricity grid may need to be increased in places to handle the extra input.

We are not proposing that wind turbines on or next to housing should have a role in powering homes in Leicester. They're usually not very effective with the low wind speeds in an urban area. They could also present a nuisance to neighbours and cause damage to buildings from vibration if they are attached to them.

5. 'Smart' energy controls

A whole generation of new 'smart' technologies is becoming available which provide opportunities to help Leicester become carbon neutral by making energy storage, distribution and use more efficient.

- Smart meters can help people save energy by showing where and when the most energy is used in the home – allowing them to spot excessive use and turn things off.
- Similarly, equipment is becoming available for people to remotely control their heating, lighting, appliances and gadgets.
- For those with PV panels, smart equipment will soon become available to control the storage of electricity from the PV panels in a battery. This could be the battery in an electric car or a battery to store electricity for use in the home. The equipment will also be able to sell the electricity to the grid at times of peak demand. This will make the best use of renewable electricity and generate a profit for the owner.

We propose that all of the above smart technologies should have a role in helping Leicester become carbon neutral by saving energy and supplying renewable electricity to the grid when it's most needed at peak times.

The council could encourage the introduction and uptake of these technologies by trialling them in our own buildings. We are already testing a system for storing electricity from our PV panels at City Hall in our electric fleet vehicles.

6. Keeping cool without air conditioning

As summers become hotter and heatwaves more common homes will be more at risk of overheating. As a result, more air conditioning use could undermine efforts to save energy.

Improved insulation of houses and flats as described under point 3 above will help by slowing down the rate that heat from the sun is transferred through the walls. Some homes will need other measures to cope with heatwaves too though without resorting to air conditioning. Options could include:

- fitting external shutters or shades
- fitting 'solar control' window glass which lets in less heat from sunlight
- planting deciduous trees to provide summer shade without blocking the light in winter.

The council could look at having an expert study done to find out whether tree planting can help prevent overheating in any parts of the city. Refer to the section on Land use, green space and development of the city for more on this.

7. Saving mains water

Periods of drought are expected to be more common in the East Midlands as the climate changes, making it increasingly important to make sure that water is not wasted.

We believe it will be important to save water through straightforward measures including dual-flush toilets and water saving taps, showers and appliances in all homes. Collecting rainwater will need to become the norm for watering gardens.

Refer to the section on Land use, green space and development of the city for details of our proposals for new homes.

Summary of our proposals

Vision for existing homes

- Homes will need to be very highly insulated to keep warm using much less energy. This will mean that fewer people get health problems from cold homes.

- Everyone will need to replace gas heating and hot water with low-carbon alternatives. Most often this will mean using heat pumps. They use electricity to extract heat from the ground or air.
- In areas with denser housing, low-carbon heat networks will be the best answer. These provide heat and hot water to whole neighbourhoods through underground pipes. In the future hydrogen could also replace gas as a fuel for boilers.
- The move away from gas will increase electricity demand. Homes will need to have their own renewable energy like solar panels. These will provide power to the house and owners could get money for selling back excess electricity.
- Houses will need 'smart' systems such as remote control for heating and lighting, and batteries to store extra energy from solar panels. They will also need to be able to charge electric cars.
- Homes will also need to be kept cool without air conditioning, as this uses a lot of energy. This might mean fitting shades and shutters, or planting trees for shade.
- Water use will need to fall, as low rainfall could become more of a problem.

Potential actions for existing homes

Potential actions by the council and other public service providers

1. The council could allocate money to continue improving insulation of council houses, prioritising those solid-walled houses which have not yet been insulated.
2. The council could allocate money to continue installing solar PV panels on suitable council houses.
3. The council could look at the potential to trial further replacement of gas boilers with heat pumps in suitably insulated council houses.
4. Housing associations could look at similar actions for their properties.
5. The council is considering introducing a Selective Licensing Scheme, subject to consultation. This could make sure that private rented homes in parts of the city have adequate heating and insulation.

Potential actions by businesses

6. Landlords of private rented homes could increase the insulation of their properties and install low or zero-carbon heating, along with solar panels where feasible.
7. Heating installers could prepare for the phase-out of gas by moving into low carbon systems including heat pumps and renewables.
8. The operator of the district heat network could make plans for upgrading the district heat network from gas to low or zero-carbon heating systems, so that homes supplied by the network can become carbon neutral.

Potential actions by individuals

9. Most homeowners will need to install more insulation.
10. Homeowners will need to replace their gas boiler with a heat pump or other low-carbon heating system in future.
11. Homeowners could fit solar PV panels if they have a suitable roof area, and a battery to store the electricity they generate.
12. Tenants in poorly insulated or heated housing could ask their landlord to make improvements. The landlord must make improvements if the property is below an 'E' energy efficiency rating.
13. Homeowners could choose water-saving fittings and appliances when replacing these items.
14. Gardeners could install water butts to collect rainwater instead of using mains water.

Potential actions by the government

15. The government could make a national plan for fitting insulation and low carbon heating in homes – including timescales and measures to help house-owners and occupiers during the changeover.

Travel and transport

Background and explanation of our proposals

Transport is responsible for a quarter of the city's carbon emissions from direct fuel and energy use. These emissions come from petrol, diesel and LPG vehicles.

Leicester's population is expected to keep growing, so more people will need to access work and facilities. If changes are not made this will add to Leicester's carbon emissions.

We believe that the way we travel and access the services we need will have to change to tackle the climate emergency. Ultra-low emission vehicles (ULEVs)* will need to be part of the answer. However, we don't think Leicester should rely only on ULEVs to make its travel and transport carbon neutral.

** Ultra-low emission vehicles or ULEVs produce a very low level of carbon emissions. They include electric and hydrogen vehicles. Some models of 'plug-in hybrid' electric vehicle also meet the definition.*

1. A much larger share of journeys taken by walking and cycling

We believe that the role of walking and cycling needs to substantially increase. These zero-carbon modes of travel can help Leicester avoid a rise in congestion as the population goes up. They can also reduce carbon emissions and air pollution. A bigger role for walking and cycling would help to limit the extra electricity demand from electric vehicles to ensure that the grid in Leicester can cope.

Many people in the city don't have access to a car. Making it easier to walk and cycle is a vital part of ensuring that everyone has access to convenient and affordable transport.

The council has been working over many years to promote walking and cycling. This includes providing a high quality network of safe cycle tracks along main roads and through neighbourhoods. We are proposing to continue this work. Upcoming projects include a bike share scheme and more cycle parking in the city. We are also developing walking and cycling routes and networks beyond the city centre.

We've seen positive results from our promotion of walking and cycling so far. However, in common with other UK cities, we have not seen the levels of increase that we think will be necessary. We aim to meet the government target for 2024 of a 10% share of journeys by bike. As such, we will need to look at new ways to increase uptake. We are interested to hear ideas from the public about this.

2. A much larger share of journeys on public transport

For journeys which can't be made by walking or cycling (or walking or cycling only), there needs to be an increase in the role of public transport. This will need to be provided by ultra-low emissions vehicles.

In terms of bus services, the council will need to continue working with the private bus companies. We have previously completed a range of projects to support increased bus use. These include the remodelling of Haymarket Bus Station to increase capacity and the creation of 'bus priority corridors'.

We are proposing to continue with measures to improve bus services and reduce emissions. These include more bus priority measures, connecting services, better links between bus services and other travel modes, more accessible bus stops, the introduction of smart ticketing and expansion of real time information.

We believe that park and ride services will play an important role. We are introducing electric buses for the Birstall Park and Ride site and an option for the future could be to convert the other sites to electric buses. We could also look at the potential for more park and ride services.

The council is considering the introduction of a Workplace Parking Levy (WPL) on employers who provide dedicated parking spaces for staff. Revenue from a WPL would be spent on sustainable transport improvements and a public consultation will be held on the proposals in due course. We are also preparing a new Local Transport Plan (LTP4). This will address the climate emergency by including measures which will reduce carbon emissions. There will be a separate public consultation for LTP4 too.

As with walking and cycling, we believe that a step-change in the role of public transport will be needed. We think there needs to be a focus on making it easier to make journeys by more than one mode without a car. Alongside steps to improve public transport, we think that measures will be needed to manage the demand for, and impact of, private vehicle journeys. This will need to include consideration of car parking, road capacity and access.

We would like to hear ideas from the public about how Leicester can achieve the big increase in the share of journeys by public transport that we'll need.

3. Moving to zero carbon vehicles

In the future all vehicles including private cars, public transport, taxis and business vehicles will need to be zero carbon. In the short term this means moving to ultra-low emission vehicles (ULEVs). We think that electric vehicles will be the main technology that's used. These will be capable of becoming zero carbon when coal and gas is no longer used in the generation of electricity for the national grid. In addition, hydrogen may be needed as a fuel for lorries.

The council has already started to replace our fleet vehicles with electric vehicles where we can. We could look at the potential to speed up this replacement programme. It would require increased spending on our fleet for a number of years. Businesses, other public service providers and residents could also look at replacing their diesel, petrol or LPG vehicles with electric or 'plug-in hybrid' electric vehicles (PHEVs) too.

Grants are available to encourage people to buy electric vehicles and the government could promote quicker uptake by increasing these grants or extending the grant scheme for longer. It could also bring forward the date of 2040 when it is planning to phase out sales of new petrol and diesel cars.

Electrification of the Midland Mainline would also reduce diesel engines travelling through the city.

4. Improved zero carbon vehicle charging and refuelling infrastructure

To support the use of electric vehicles there will need to be a big increase in the number of charging points. They will be needed in public and workplace car parks, at company fleet depots, on-street and at home.

The council has already installed a number of charging points in car parks and has plans to increase this number. We also have a pilot scheme coming up to install on-street charge points. The government provides a grant to support the installation of chargers in homes and businesses, and could support EV uptake by continuing this scheme.

To enable the large scale take-up of electric vehicles we expect that the local grid operator, Western Power Distribution, will need to increase the capacity of the grid in parts of the city. For those with solar photovoltaic panels and electric vehicles there will be an opportunity to use 'vehicle-to-grid' technology. This stores any extra solar energy generated from the panels in the electric vehicle battery, which can also be sold into the grid at times of peak demand. The council is carrying out a vehicle-to-grid trial scheme at the moment.

If hydrogen technology does also play a role, there will also need to be hydrogen refuelling stations developed locally.

5. Greater sharing of vehicles

Some people think that with new transport technologies and online booking systems we may start to see a culture change in which private car ownership starts to reduce. A proportion of people might opt to replace individual car ownership with a combination of walking, cycling, public transport and membership of e-bike share and electric car club schemes for those journeys where a bike or car is necessary. New types of 'demand responsive' transport service could become popular such as pre-bookable bus services and, ultimately, bookable driverless electric vehicle services. This type of shift in attitudes to individual car ownership could help speed up the reduction of carbon emissions from travel.

6. Reducing the need for travel

A further way to reduce carbon emissions from travel is to reduce the vehicle trips that people need to make to access services. This could mean making sure that as many services as possible are available online. Also, ensuring that services and facilities are provided within walking distance of where people live. The council's planning policies already promote key facilities and services in local neighbourhoods. Refer to the Land use, green space and development of the city section for more on this.

Summary of our proposals

Vision for travel and transport

- A much greater share of journeys will need to be made by walking, cycling and public transport. A city-wide network of walking and cycling routes, along with improved public transport, will be among the improvements needed to make this possible.
- Journeys that can't be taken by walking, cycling or public transport will need to be made by ultra-low emission vehicles. These will mainly be electric vehicles, although new HGVs may need to be hydrogen-powered.
- Electric charging-points will need to be widely available across the city. The electricity grid in Leicester may need upgrading to allow this. More solar panels will help provide some of the electricity needed.
- Some electric cars will need to be part of 'vehicle-to-grid' systems. These store surplus renewable electricity from solar panels in electric car batteries. They help the electricity grid by selling it to the grid when demand is high.
- Alternative travel and transport services, such as ride-sharing, electric car clubs and e-bike share could be used more instead of private car journeys.
- Services and facilities will need to be easy to access without car journeys. This includes making them accessible online, and available nearby within communities.

Potential actions for travel and transport

Potential actions by the council

1. The council could continue to invest in infrastructure for walking and cycling. It could also expand existing programmes to encourage people to walk and cycle.
2. Subject to consultation, the council could introduce a Workplace Parking Levy and use the funds to improve sustainable transport.
3. The council could continue to invest in improved public transport. It could consider an increase in the number of Park and Ride sites and convert more of the existing ones to use electric buses.
4. The council could look at further ways to reduce demand for private vehicle journeys. This could mean changing vehicle access to areas, changing parking, and supporting shared transport services.
5. More could be invested in replacing the council's own vehicles with ultra-low emission vehicles.
6. More publicly accessible electric vehicle charging points could be installed by the council.

Potential actions by businesses and other organisations

7. Employers could encourage staff to commute to work on foot, by bike or using public transport. They could also set a policy to reduce carbon emissions from business travel and deliveries.
8. Employers could replace their existing vehicles with 'ultra-low emission' alternatives and install charging points for fleet and staff electric vehicles.
9. Public transport providers could invest in new and improved services with smart ticketing and real-time information. They could also replace their fleet with 'ultra-low emission' vehicles.
10. Local companies could grow and create jobs by designing and building components for ultra-low emissions vehicles.

Potential actions by individuals

11. Individuals could switch to walking, cycling or public transport instead of using a car for journeys where possible.
12. Individuals could join car sharing schemes and car clubs in preference to owning private vehicles.
13. Instead of a petrol or diesel vehicle, individuals could buy an ultra-low emission vehicle.
14. Those with an electric vehicle and photovoltaic (PV) panels could buy 'vehicle to grid' equipment to store and trade their renewable electricity via the vehicle battery.

Potential actions by the government

15. The government could increase the funding available to local government to make improvements to walking, cycling, public transport and electric charging infrastructure.
16. The government could continue and increase the grants provided to individuals and businesses for ultra-low emission vehicles and charging points.
17. The government could end sales of new petrol and diesel cars earlier than 2040, as is currently planned.

Our choices as consumers

Background and explanation of our proposals

As well as the carbon emissions we produce within the city, we are also responsible for emissions elsewhere produced from making and delivering the products and the services we buy in from outside. They could add at least another 40% to the total. For the city to become carbon neutral we have to do something about them too.

1. Becoming informed consumers

Our impact from consumption results from the many weekly decisions we all make about what and how much to buy. We believe that to make progress in cutting the emissions from consumption, we all need to know more about which decisions have the biggest impact and what climate-friendly alternatives to look for.

Businesses are most important here. It is essential that they make information available to customers about the impact of different products, their durability and repairability. Without this, customers can't make informed choices.

Schools, colleges and universities have a role to play too, by giving students a good foundation of understanding about climate change, its causes and the possible solutions.

The council and other public sector organisations who have regular daily contact with the public could also look at what they can do as part of any information they provide. The council already supports schools through the Eco Schools programme. Similarly, local community projects, advice services and charities could have a role.

2. Changing our diets

Estimates suggest that food accounts for 20-30% of carbon emissions worldwide. Most experts believe that current western diets, with their emphasis on meat and dairy produce, are not sustainable because of the energy and resources used for intensive production, the land needed for growing animal feed and the methane generated by

cattle and sheep. (Methane is another gas that adds to climate change, alongside carbon dioxide).

So for Leicester to become carbon neutral, the typical diet will need to change considerably. The average household will ultimately need to consume a lot less meat – particularly beef and lamb – and a lot less dairy produce and eggs. Plant-based ingredients will need to play a much bigger role in a nutritionally balanced diet.

Food transport adds to the problem. Consumption of air-freighted food will need to reduce and an overall reduction of 'food miles' will be necessary.

Food businesses can – and many already are - helping make dietary changes easier for people by offering appetising, nutritionally balanced meat, egg and dairy-free options. They can also look to source ingredients locally where possible and pick 'in season' vegetables and fruit to reduce food miles.

Schools can look to do similar things and for those schools choosing to have their school meals provided by the council, these already include meat-free options and a proportion of fresh seasonal and local ingredients. Vegan menus are available where required. The council's School Meals Service has achieved the Food for Life 'silver award' standard.

Growing some of our own food can make a small contribution to reducing food miles too. It can also help raise awareness about this and other food and environmental issues where it's part of a community project. The council provides allotments and is supporting local growing projects through the Food Plan.

3. Our influence as individuals

Each of us can use our buying power to have an influence on how goods and services are produced. If we ask retailers and service providers for information and consider climate impacts when we're making our choices, this gives a clear message that there's demand for climate-friendly products.

Apart from food, some other products likely to have a big impact include: mobile phones, computers, other electrical goods and clothing – especially 'fast fashion'. Similarly, if we choose to fly that can add a lot to our carbon footprint – particularly if it's long haul. Unless or until zero carbon flights become possible, we will have to fly less.

When we're buying goods, important questions to ask are: "Will it last?" and "Is it designed to be repairable?" because the lowest-carbon product is the one that doesn't need to be replaced too often.

4. The influence of purchasing choices by organisations

Organisations including businesses, the public sector, schools, universities and community organisations are responsible for buying a significant amount of the goods and services coming into Leicester. Like individuals, they have an influence through their purchasing choices on how these goods and services are produced.

The council provides 'sustainable procurement guidance' for our staff and suppliers about environmental standards we expect goods and services to meet. This guidance was written before the climate emergency was declared and could be reviewed to see if it fully addresses the need to reduce emissions.

Proposals for businesses' purchasing are in the At Work section.

5. What is 'carbon offsetting' and does it provide an answer?

Many of us will have been offered the chance to 'offset' the carbon emissions from a purchase we're about to make – such as tickets for a flight – by paying a bit extra. Couldn't we all just pay to offset the emissions from what we buy?

The idea behind carbon offsetting is that the extra we pay funds a project somewhere else which will either absorb an equivalent amount of carbon emissions – often by planting trees – or will reduce someone else's emissions by the same amount – such as by saving energy or generating renewable energy to reduce fossil fuel use. There is disagreement about whether buying carbon offsets is a good way to deal with the impact of our purchases. Criticisms include:

- How do we know that the actions are really cutting emissions? (Although many offsetting schemes offer guarantees)
- By buying offsets instead of looking for alternative low or zero-carbon products, or finding different ways of doing things, we're not influencing suppliers to develop lower-carbon products
- We should be focusing on reducing our own emissions first.

Up to now the council has focused on reducing its own emissions and choosing goods and services which help us to do this. We don't currently pay to offset any of our emissions.

Is there sometimes a case for buying carbon offsets though? If so, is there any merit in considering a local offsetting scheme – which local individuals and organisations could pay into to fund projects in the city?

We would like to hear the public's views about carbon offsetting.

Summary of our proposals

Vision for consumer choices

- All of us will need to become well-informed about the climate impacts of what we buy – so that we can make climate-friendly choices.
- Customer demand for climate-friendly products and services will need to convince shops, manufacturers and suppliers to provide them.

- Customer demand will need to convince manufacturers to produce long-lasting products which can be repaired. Disposable and short-lived products cause extra carbon emissions when they have to be replaced.
- The overall consumption of beef, lamb and other meat, eggs and dairy produce will need to be a lot lower than today. There will need to be much more emphasis on plant-based ingredients. 'Food miles' will need to reduce too.
- Air travel will need to reduce a lot unless zero-carbon flights become possible.

Potential actions for consumer choices

Potential actions by the council and other public service providers

1. Schools could teach pupils about the causes of climate change including the impacts of what we buy.
2. The council could look at how we could help raise awareness amongst the public about consumer choices they could make to reduce their carbon footprint.
3. The council's school meals service could see if there is more it could do to reduce 'food miles' and provide appetising, healthy choices for pupils wanting to reduce or avoid meat, eggs and dairy products.
4. The council could keep supporting local food growing in the new Food Plan through allotments and the Get Growing scheme.
5. The council could lead by example with what it buys. It could see if its 'sustainable procurement guidance' for staff and suppliers needs changing in light of the climate emergency.

Potential actions by businesses

6. Shops and other businesses could provide more information to customers about the climate impact of their products.
7. Food businesses could ensure that they're offering an appetising, healthy choice of options for customers wanting to reduce or avoid meat, eggs and dairy products.

(Refer also to the At Work and Waste sections for more potential actions by businesses.)

Potential actions by individuals

8. Individuals could find out more about the climate impacts of goods and services. They could use this knowledge to reduce the carbon footprint of what they buy.
9. Individuals could create customer demand for climate-friendly products. They could choose long-lasting and repairable products for example and avoid disposable products.
10. Individuals could reduce their dietary impact by eating less meat, eggs and dairy produce. They could also reduce 'food miles' by choosing local and seasonal ingredients and buying less air-freighted food.
11. Individuals could grow some of their own food.

12. Individuals could choose to fly less.

13. Groups of people could set up community schemes such as 'tool banks' to share items that are only needed occasionally.

Potential actions by the government

14. The government could introduce mandatory labelling schemes for the carbon footprint of products.

15. The government could look at how it could encourage the supply of longer-lasting consumer goods.

Waste

Background and explanation of our proposals

Disposal and treatment of waste is a large source of carbon emissions in Leicester. Emissions come from the collection and transport of waste, the energy used to process it, and from the breakdown of waste in landfill sites. When things that could still be used, repaired or recycled are thrown away, more emissions are also produced to make new things to replace them.

The best way to reduce waste, and the carbon emissions it causes, is to follow the 'waste hierarchy'. This says that it is best to prevent waste in the first place, re-use what we can, and then recycle what can't be avoided or re-used. Anything that can't be recycled should be treated to recover energy or resources, for example through Energy-from-Waste or composting plants, with disposal to landfill as the worst option.

If the waste hierarchy is followed it will reduce emissions from collecting and disposing of waste, and from the production of new goods and raw materials.

To reduce these emissions, we think the following things will need to change:

1. Reducing the climate impact of domestic waste

Reduce

Households will need to reduce the amount of waste they produce, firstly by not buying things that aren't needed, and buy items and products that will produce less waste.

This could include buying more second-hand items, products with less packaging and, when choosing things like clothes and electricals, picking products that are designed to last longer and be repaired.

Food waste is particularly important, as a quarter of all food purchased in the UK is wasted, mostly by households. Carbon emissions are released during the production and transport of food. Food waste that is landfilled also emits carbon emissions when it decomposes.

Households will need to change their buying and consumption habits, to reduce avoidable food waste.

Reuse

Attitudes to throwing away things that are not working or are no longer needed will need to change, especially for waste electrical and electronic equipment.

Where possible, people will need to have things repaired or refurbished instead of buying new. Where usable items are no longer needed, they should be sold or donated.

The council already provides a reuse shop operated in partnership with LOROS at its Gypsum Close Recycling Centre, which diverts waste for resale. Opportunities for a second reuse shop could be explored.

Recycle

The council is responsible for organising the collection, treatment and disposal of household waste and recycling. The Council has a good overall recycling and composting rate for a large city, but the council will need to work to further increase this.

There is currently limited scope for changes to the system, as recycling services are provided through a long-term contract. However, the UK Government has recently consulted on their Resources and Waste Strategy, which aims to increase the recycling rate across the UK. The final strategy is likely to require changes to household waste and recycling collections. The UK Government plans to further consult on the strategy in 2020.

The council will need to produce a new Waste Strategy for the city following the final publication of the government's strategy. It will need to look at how to significantly increase recycling rates in Leicester, in line with the government's required changes.

Where food waste cannot be avoided it will need to be composted. More garden waste will also need to be captured and composted. Changes to food waste collection may be required as part of the Resources and Waste Strategy. The council already provides a garden waste service, and this could be more widely promoted to residents.

Expansion of UK domestic reprocessing capacity and end markets for recyclables is critical to improving recycling rates. Industry will also need to use materials and packaging that are easily recycled.

Recover

Whilst some waste could be sent to Energy-from-Waste plants, this should only be done with anything that can't practically be re-used or recycled. Whilst this can be better than simply landfilling waste, burning it does cause carbon emissions.

The majority of household food waste in Leicester is sent to an 'anaerobic digestion' plant. This breaks down the waste to produce biogas and soil conditioner. The biogas is burned to produce electricity. While burning biogas releases carbon emissions, it produces less than if the waste were landfilled.

2. Reducing the climate impact of waste from businesses and other organisations

Businesses and other organisations generate a significant amount of Leicester's waste. Like household waste, the carbon emissions it causes will need to be reduced substantially by following the waste hierarchy and ensuring that resources are continually reused in a 'circular economy'. The means that they will need to start by looking at their production processes, how their services are delivered and their distribution and logistics to find ways of reducing waste at source.

Where waste can't be prevented through efficient processes, it will need to be re-used where possible. This could mean using it within the organisation or finding ways to pass it to other organisations that are able to use it. Food waste from operations will need to be diverted from landfill and sent for composting, or potentially to plants that could use it to produce a 'biogas' fuel. Programmes that redistribute surplus edible food to those in need could also be expanded.

Any waste that can't be re-used should be recycled. All households, businesses and organisations have a Duty of Care to responsibly dispose of their own waste. Unlike households, businesses and organisations are responsible for organising their own waste collections. The council already operates a trade waste facility and could further work to promote this more to local SMEs.

Where waste services are provided by a waste contractor, businesses and organisations will need to ensure the provider collects recyclable materials separately, processes them correctly and recycles as much as possible. Waste from construction work will also need to be reduced, for example through the recycling of the vast majority of demolition waste.

Businesses will have to design, manufacture and sell products that enable these changes. For example, they will need to use more recycled materials, and make their products easier to repair and recycle. This is discussed further in the At Work section.

The council also produces waste from many of its own operations, much of which is already re-used and recycled. Examples of this include re-use of office furniture, recycling of aggregates from road repairs, use of tree waste to make fencing and mulch, and composting of green waste from parks. There is more however that it could do to further avoid, reduce, reuse and recycle its waste just like other organisations. The council should, where possible, take a leading role on this in Leicester, demonstrating good practice and sharing learning.

Summary of our proposals

Vision for waste and recycling

- Households will need to produce less waste. This will mean not buying things that will be wasted, buying products and services that are produced sustainably and re-using and repairing what they already own.
- Businesses and organisations will need to produce less waste. This includes reducing waste from what they make and sell and the services they provide.

Products and packaging will also need to be easier for consumers to re-use, repair and recycle.

- As much waste as possible will need to be recycled. The council will need to support homes to do this through the city's waste collection service. Businesses and organisations will need make sure their waste is disposed of responsibly. Food and garden waste will need to be composted.
- Where waste can't be recycled, it will need to be used for energy instead of landfilled. This includes a small amount of Energy-from-Waste and biogas.
- The council will need to lead by example, to reduce, re-use and recycle waste. The council will also need to educate residents and businesses and promote its existing waste and recycling services.
- The UK government will need to support this through their new Resources and Waste strategy. The council will need to produce a new Waste Strategy for the city based on this.

Potential actions for waste

Actions by the council

1. The council will need to produce a new Waste Strategy. This will need to follow the publication of the UK Government's Waste and Resources Strategy.
2. The council's existing household recycling and garden waste services could be promoted more, to encourage greater use.
3. The opportunity to develop a second reuse shop, to resell items that would otherwise be thrown away, could be investigated by the council.
4. More work could be done by the council to continue to promote the existing trade waste facility to more businesses and organisations.

Actions by businesses

5. Businesses and organisations could reduce the waste generated by their manufacturing, distribution and service delivery processes.
6. Waste generated by businesses and organisations could be re-used or redistributed to other organisations which can use it.
7. Businesses and organisations could ensure that the provider of their waste services is correctly processing their waste and recycling as much as possible.

(Refer also to the At Work section for more potential actions by businesses on sustainable production.)

Actions by individuals

8. People could change buying habits to produce less waste. This could mean buying items that will last longer, have less packaging and can be easily re-used or recycled.

9. Things that people no longer want could be sold or donated, instead of thrown away. Gadgets, appliances, clothes and other things could be repaired instead of buying new things.
10. People could make sure that as much of their household waste as possible is recycled through the council's household waste service.

Actions by the government

11. The government will need to publish the final version of the Waste and Resources Strategy. It could also make sure local councils have the resources and funding needed to improve their recycling, composting and waste reduction services.
12. The government could look at how to support an increase in UK reprocessing capacity for recyclable waste materials and create stronger end markets for recyclable materials.

At Work

Background and explanation of our proposals

Electricity and gas use by organisations in the city is responsible for over 40% of Leicester's carbon emissions from our direct fuel and energy use. Employee commuting and business travel, and transporting goods to and from businesses, also contributes a lot to the city's emissions from transport. The materials used by businesses have a carbon footprint of their own too. As well as reducing carbon emissions, to stay competitive business will need to provide sustainable products and services in order to meet changing consumer demands.

This section covers businesses in the city as well as organisations such as charities, educational institutions and public services including the council and NHS.

1. Carbon neutral organisations

For Leicester to become carbon neutral, businesses and organisations will need to play their part. This will mean changes to heating, insulation, lighting and equipment - and much more generation of renewable energy.

This will require support and funding from central government, and from the Leicester and Leicestershire Enterprise Partnership (LLEP). The LLEP will need to take account of the climate emergency in local strategies, direct national funding to address these issues and lobby central government for the changes that are required.

2. Installing low carbon heating and cooling

Most businesses and organisations are still heated using gas boilers, or gas-powered blowers. Natural gas heating will need to be phased out due to the carbon emissions

from burning it. Instead heating and hot water will need to come from zero or very low carbon sources, such as:

- Heat pumps – these use electricity to extract heat from the air or ground, and are more energy efficient than standard electric heating.
- Hydrogen Boilers – hydrogen could replace natural gas as a fuel if it can be produced using a carbon neutral process. Hydrogen is not yet widely available though.
- Infra-red heaters – these heat a specific area instead of a whole space. They may be a more efficient way of heating large premises like warehouses, where heat is needed only in certain areas.
- Heat Networks – these generate heat more efficiently at a central boiler, and pump it to multiple buildings. More information can be found in the At Home section.
- Electric blowers – in some spaces, if heat pumps are not suitable these could replace gas blowers, but would likely use a lot of electricity so aren't ideal.
- Heat re-use – some machinery and processes produce lots of waste heat. This could be captured and re-used to heat premises.

As discussed in the At Home section, we are not proposing the use of wood-based 'biomass' fuel at a large-scale in Leicester.

Keeping buildings cool will become more important as hotter summers and heatwaves become more common due to climate change. This will need to be done without air-conditioning where possible, to avoid increasing electricity demand further. More information can be found in the At Home section.

3. Energy Efficient Workplaces

Many buildings are poorly insulated, and it will be necessary to improve their insulation to reduce the energy use and cost of heating them. High levels of insulation will be needed for heat pumps to be effective and affordable to run. They will also be necessary to limit the extra demand on the electricity grid as gas is phased out.

Non-domestic properties are often harder to insulate than homes, as there is a much wider range of building types and uses. They often have lower levels of existing insulation too. Solutions will need to be found to allow these buildings to be insulated.

All lighting in workplaces will need to be energy efficient. This will mean replacing halogen and fluorescent lighting with LEDs.

4. Renewable energy

Organisations will continue to have a carbon footprint from electricity use as long as gas is used to generate some of the electricity in the UK. Electricity demand is also likely to increase significantly in the future, meaning that more generating capacity will be needed.

We think that most organisations will need to have renewable energy generation systems installed. Those premises with a large roof space will be especially suitable for solar PV panels, and organisations with a high electricity demand will be able to use the energy on-site. Solar PV panels could also help to generate a financial return for the organisation.

Battery storage systems will be needed in some organisations to store excess electricity generated. These will allow self-generated renewable electricity to continue to be used on site when generation is low and can cut electricity costs.

Organisations which have high electricity demand but are able to vary the time at which they use it could benefit from taking part in 'demand response' programmes. These programmes can pay participants to reduce energy use when demand on the grid is high. As renewable energy is less predictable than fossil fuel sources, these programmes make it easier to utilise renewable capacity as it is produced

'Smart' energy controls will be appropriate for many organisations. This could include monitoring devices and software to show where energy is wasted, or usage could be reduced. More detail on other technologies is available in the At Home section.

5. Travel and transport

Businesses and organisations are also responsible for a lot of carbon emissions from travel. This includes emissions from vehicles they own or rent, employees commuting and business travel, and the transport of goods to or from the business.

The Travel and Transport section explains the overall changes that will need to be made, which businesses and organisations will need to implement.

6. Low-carbon production

Production and manufacturing services which use a lot of electricity and gas can be responsible for a large proportion of many organisations' carbon footprints. This includes energy use for computers and electronic systems used to provide services.

When buying new equipment and machinery organisations will need to choose the most energy efficient options. Existing machinery could also be refurbished to improve its efficiency. Whilst this may lead to a higher initial capital cost, the energy savings should provide pay-back over time.

Where these machines and processes use electricity, this will need to come from renewable sources. This will require organisations to install their own renewable energy technologies as discussed above. Where gas is used for production processes low carbon alternatives will need to be found.

Organisations will also need to look at ways to use behaviour change schemes to help staff reduce carbon emissions and save energy. This could involve using switch-off procedures or educating staff on energy-saving. Incentive schemes and improved facilities could also be used, for example making it easier for staff to walk or cycle to work.

7. Waste

The waste produced by businesses and organisations will also need to be reduced, as waste causes carbon emissions in a number of ways. This is discussed further in the Waste section.

8. Creating low carbon products

Manufacturers will need to design products so that they can be more easily repaired and refurbished, and retailers will need to supply them to consumers. Replacement parts and repair instructions for items will also need to be made available to consumers more easily. The government could support this through legal and regulatory changes to make it easier. Items such as clothes will need to be designed to last for more than one season.

Any organisations purchasing goods, including raw materials, components, ingredients and finished products need to buy them from sustainable sources, and suppliers that are tackling their own carbon footprints. This includes using as much previously recycled material as possible. Packaging materials will also need to change, with all products provided in recycled and recyclable or re-usable packaging. Local organisations will need to use their influence to drive these changes in their own supply chains.

These changes will also be driven by changing consumer demands, as public awareness of and engagement with the climate emergency increases. Demand for products that have been produced sustainably, have a small carbon footprint and can be re-used or recycled easily will increase. Businesses will therefore need to meet these demands to make sure they remain competitive in a changing market.

The council has already brought in sustainable procurement guidelines for its purchasing and can play a role in leading by example, ensuring the guidance is strengthened over time. We are also embedding 'social value' into our contracts, giving us the chance to seek additional outputs through our contracts where appropriate.

9. The public sector leading by example

Many of the largest employers in the city are public sector organisations. These include schools, the NHS and the council. These organisations should help to lead by example through addressing their own emissions.

The council has already invested in increasing the energy efficiency of its own buildings and fitting renewable energy sources. We will look to continue this work.

The council is also the landlord of a large number of business rental units. It could work to further improve the energy efficiency of these premises. Tenants could be engaged on how to reduce energy use and carbon emissions too.

Summary of our proposals

Vision for employers

- Businesses and other employers will need to use low or zero carbon heating and cooling systems and generate their own renewable electricity wherever possible. Workplaces will also need to be more highly insulated to reduce their heating need.
- Business processes and equipment will need to be much more energy and resource efficient. Production processes will need to be carbon neutral – using renewable energy generated on-site where possible.
- All items and materials procured by businesses and organisations will eventually need to come from sustainable sources, for example using recycled materials.
- Customers will expect the good and services they use and buy to be sustainable and zero carbon, so businesses and organisations will need to achieve this to stay competitive.

Potential actions at work

Potential actions by the council and other public service providers

1. The council could invest in improving the energy efficiency of the business premises they own and rent out, and educate tenants about energy savings and carbon reduction.
2. More could be invested in improving the energy efficiency of the council's and other public sector organisations' own buildings. This could include investment in more renewable energy systems.
3. The council could apply for more funding to support to local businesses and organisations, particularly SMEs, to increase the energy efficiency of their premises.

Potential actions by businesses

4. Employers could replace gas heating with low carbon alternatives such as heat pumps or connect to district heating networks. They could also improve building insulation.
5. More solar PV panels or other renewable energy systems could be installed by employers. Where appropriate they could also install battery storage systems to make full use of energy generated on-site.
6. Employers with high electricity demand could sign up to demand-response programmes where they are available.

7. Existing machinery and equipment could be replaced with more efficient alternatives by employers. They could also replace machinery using gas or other fossil fuels with electric alternatives.
8. Organisations could design, manufacture and sell products that use sustainable materials, and are designed to be re-used and repaired.
9. The Leicester and Leicestershire Enterprise Partnership (LLEP) could integrate the climate emergency into their strategies, direct national funding to the climate emergency and lobby government for more support.

Actions by individuals

10. Individual staff could encourage their employers to take action on the climate emergency, for example through staff incentive schemes and behaviour change programmes.

Actions by the government

11. The government could make a national plan for moving to low or zero-carbon heating and provide funding and support to employers.
12. Support and funding could also be provided by the government to improve other aspects of energy efficiency in businesses and organisations premises.

Land use, green space and development of the city

Background and explanation of our proposals

The quality of new development in the city, the management of green space and tree cover and planning for future land use and infrastructure will all be important to enable Leicester to become carbon neutral and to adapt as the climate changes.

With the city population predicted to continue growing, an estimated 29,104 homes will need to be built by 2036 (1,712 dwellings per annum between 2019-2036) along with more employment sites, schools, community facilities and infrastructure. This could add to Leicester's carbon footprint and affect its vulnerability to a changing climate unless steps are taken to make sure that development is carbon neutral and adapted to future conditions.

The proposals below set out how we think Leicester will need to change in terms of land use, green space and development if it is to become carbon neutral and adapt to the changing climate. They are aspirational and may not necessarily be achievable within the current constraints and limitations of the planning system, the property market and other factors. They are presented to prompt discussion and gain views on what might need to happen, both locally and in terms of action by national government, to bring about the changes we think are needed.

1. Making new homes and other new buildings carbon neutral and climate-adapted

We will need the levels of carbon emissions generated by new development of all kinds to reduce as quickly as possible, to the point where all new buildings are designed and built to be carbon neutral wherever possible. This will include very high levels of insulation, generation and use of renewable energy and an end to the use of gas for heating and hot water in new buildings. Refer to the At Home and At Work sections for more details.

Wherever possible, new buildings will also need to be designed for a changing climate:

- to keep cool without aircon where possible during more frequent heatwaves
- to use less mains water in response to prolonged spells of dry weather
- to be located and/or designed to protect occupants from the risk of flooding, and
- to reduce the pressure on the drainage and river system during intense rainfall by dispersing rainwater runoff in other ways (known as 'sustainable urban drainage systems' or SuDS).

While the design features and the technologies needed to create carbon neutral, climate-adapted buildings already exist and are being successfully used in buildings today, they do currently add to the cost of construction. This is hindering their wider uptake. The affordability of new housing is an acknowledged issue and developers are not confident that customers will be prepared or able to pay more for a low carbon building - despite it being cheaper to run. There are also currently other constraints within the planning system on all new development, including the need to make sure that development remains viable. This may impact on the ability of the council as Local Planning Authority to make low carbon, climate-adapted design a requirement on all developments coming forward.

For carbon neutral, climate-adapted development to become the norm, we believe that changes to minimum standards for new building will have a role to play. This is discussed below in point 5.

In the meantime, the council and other public service providers such as the NHS could all aim to set an example with their own developments immediately. Projects would cost more up-front, but the resulting buildings would be cheaper to operate and the future cost of upgrading them to be carbon neutral – which will be necessary for existing buildings - would be avoided. The cost of retrofitting buildings is typically much more than the extra cost of building them to be carbon neutral in the first place.

Similarly, where the council releases land onto the market for new development by private developers or others, there is the potential to seek a commitment from the developer to build to low carbon standards, as part of any sale or development agreement. The council has already done this successfully on some sites. In the current market it could result in a lower sale price for the land being realised by the council, which results in less capital income and therefore potentially less for spending on other projects. It would, however achieve significant and lasting emissions reductions.

2. Use of low-carbon building materials

The impact of new buildings on climate change goes beyond just the carbon emissions generated when construction is finished and they are in use. Research has shown that the emissions caused by the manufacture and transport of the building materials – such as cement and steel - is very significant too. Use of timber can also add to climate change and destroy wildlife through deforestation if it's purchased from companies who operate irresponsibly.

For these reasons, we believe that the climate change and other environmental implications of choices for construction materials will need to be given much more careful consideration. Less energy-intensive alternatives to concrete, steel and other products will need to be favoured, or suppliers found who manufacture using renewable energy. Responsibly-produced 'sustainable' timber is already widely available and its increased use could in fact be positive for climate change by 'locking up' carbon in the structure of new buildings to offset some of the other emissions caused by the building. We welcome views on how these changes to choices of materials could come about outside of the planning process.

The council has a long-standing policy of using only proven sustainable timber and is looking at what other environmental standards it should apply to its own developments. The use of low-carbon alternative construction products could be prioritised, as could the potential to make more use of sustainably sourced timber.

3. Development designed for zero carbon travel

The location of new development, the design of footpaths, cycleways and roads on the site and the inclusion of facilities such as cycle parking, bus stops and electric vehicle charging points will all affect how straightforward, safe and convenient it is to travel to and from the development using low or zero carbon modes of travel.

Development needs to be designed for a city in which ultimately all travel and transport must be by zero carbon modes. This will mean that homes, employment sites and public facilities will need, for example:

- more space for cycles and e-bikes,
- nearby bus services, with stops on or near the development, and
- enough electric vehicle charge points.

The council's planning policies in the Core Strategy already address some of these issues and the public will be able to comment on the proposed policies for the new Local Plan (see point 5 below). Even in the event that the Local Plan is able to develop and adopt such policies it should be noted that they will need to be balanced against other, sometimes competing, considerations in the planning system too.

4. Maintaining and adding to tree cover and green spaces

Trees in Leicester are estimated to be storing about the equivalent amount of carbon dioxide as the city generates in a 7-8 month period (826,000 tonnes). It is also estimated that if all of the suitable land in the city without trees was planted up, the

extra carbon dioxide absorbed over a 25 year period (279,000 tonnes) would be equivalent to about 2-3 months' emissions.¹ This suggests that an urban area like Leicester with limited space cannot rely very much on tree planting to offset our emissions, even if people were prepared to see much or all of Leicester's open green space covered in trees. However, it doesn't mean that we shouldn't look after and increase our tree stock.

As the biggest owner of green spaces and trees in the city, the council already has a Tree Strategy through which we maintain our existing tree stock, replace trees and plant more where we can. In response to the climate emergency, we propose to continue to do this, and to investigate how we can best target our planting to get the most benefits for the city including:

- Increasing biodiversity and providing beautiful spaces for recreation
- Limiting the impact of more frequent heatwaves by increasing summertime shade and reducing heat build-up
- Reducing flood risk by slowing down rainwater run-off - to stop rivers and drains being overwhelmed during intense rainfall
- Reducing people's exposure to air pollution
- Absorbing carbon emissions to the extent that we reasonably can.

Despite limited scope to absorb carbon emissions by new planting, due to the constraints on land we have available in the city, we propose to look for opportunities to increase our tree stock through the Tree Strategy. We will consider carbon storage as one of the factors when we decide which tree species to plant.

Aside from trees, Leicester's green spaces store relatively little carbon in other vegetation (only 3% compared to 97% in the trees) but they have an important role, like trees, in reducing the impacts as the climate changes: limiting heat build-up during heatwaves and slowing the run-off of rainwater to protect from flooding.

As well as managing a network of public open spaces across the city, the council has planning policies to protect green spaces and to make sure that new development includes an appropriate amount of green space and trees. Developers are also encouraged to consider including 'green roofs' in their designs and these can provide at least some of the benefits of green space at ground level for wildlife, flood risk reduction and heatwave protection.

The council as Planning Authority will continue to apply its planning and conservation powers to protect existing trees and a network of green spaces, and to make sure that new trees and green spaces are provided as part of development where appropriate and possible. Refer to point 6 below.

¹ Based on the results of research by Sheffield University and on Leicester's estimated city-wide carbon dioxide emissions for 2017 published by the Department of Business, Enterprise and Industrial Strategy (BEIS).

5. Planning policies and building standards to address the climate emergency

National minimum standards for energy efficiency and carbon emissions from new buildings are set by the government through the Building Regulations and the council applies planning policies (consistent with the National Planning Policy Framework or NPPF) to make sure that development addresses climate change. Current policies in the Core Strategy for the city cover areas including: energy efficiency, renewable energy, district heat networks, transport and accessibility, flood risk and open space.

The council is currently preparing a new Local Plan which will seek to include policies for land use and development to address climate change. We will be publishing a draft of the new Local Plan for consultation and if you would like to be notified when the consultation starts please email planning.policy@leicester.gov.uk.

The government is currently consulting on proposals to raise energy efficiency and low carbon standards in the Building Regulations from 2020, as a stepping stone to a new Future Homes Standard from 2025. Details are available on the [GOV.UK website](#) where the consultation is open until 10th January 2020.

Summary of our proposals

Vision for land use, green space and development of the city

- All new buildings will need to be designed and built to be carbon neutral. This means they will need to be very highly insulated and use low-carbon heating instead of gas heating. Renewable energy such as solar panels will need to be installed.
- New buildings will need to keep cool in hotter weather without using air conditioning, as it uses a lot of electricity. They will also need to use less water. To reduce the risk of flooding they will need to disperse heavy rainfall without overwhelming drains and rivers.
- Building materials made with much less energy, or with renewable energy, will need to be used. To prevent deforestation, all timber used for construction will need to come from sustainably managed forests.
- Travel to and from new developments will need to be easy, convenient and safe on foot, by bike and on public transport. There will need to be charging points for electric vehicles too.
- Tree cover will need to be maintained and increased where possible. New planting will need to provide for recreation, wildlife, flood prevention and respite from heatwaves. It will also need to absorb carbon emissions.

Potential actions for land use, green space and development of the city

Potential actions by the council and other public service providers

1. The council, NHS, schools and other public service providers could lead by example in their own building projects. They could allocate money to make them as close as possible to being carbon neutral.

2. When selling land for development, the council could seek an agreement with the developer for the new buildings to be as low-carbon as possible.
3. The council and other owners of green spaces could plant more trees to help keep the city cooler during heatwaves and safer from flooding as the climate changes. More trees can also absorb some carbon emissions.
4. The council could make sure that the new Local Plan addresses the climate emergency.

Potential actions by businesses

5. Developers could more actively market the advantages of low-carbon homes and offices to create more customer demand. Low running costs are a particular advantage.
6. Construction companies could train more of their workforce to build to very low carbon standards. The industry needs to be ready for all buildings to be built this way.
7. Businesses commissioning new premises could specify high standards of energy efficiency, low carbon emissions, renewable energy and facilities for bikes and electric vehicles.

Potential actions by individuals

8. Those looking to buy a new-build home could ask developers for details of the energy efficiency and reduced carbon emissions of their properties for sale, to show that there is customer demand for higher standards.
9. Anyone can read the council's consultation draft Local Plan when it is published and comment on its policies for addressing climate change. They can also comment on the government's proposals for the Future Homes Standard.

Potential actions by the government

10. The government needs to make sure that its proposed Future Homes Standard and changes to the Building Regulations will raise carbon-saving standards quickly enough.