

Creating a world  
fit for the future



# Leicester Carbon Neutral Roadmap Summary

Produced on behalf of Leicester City Council

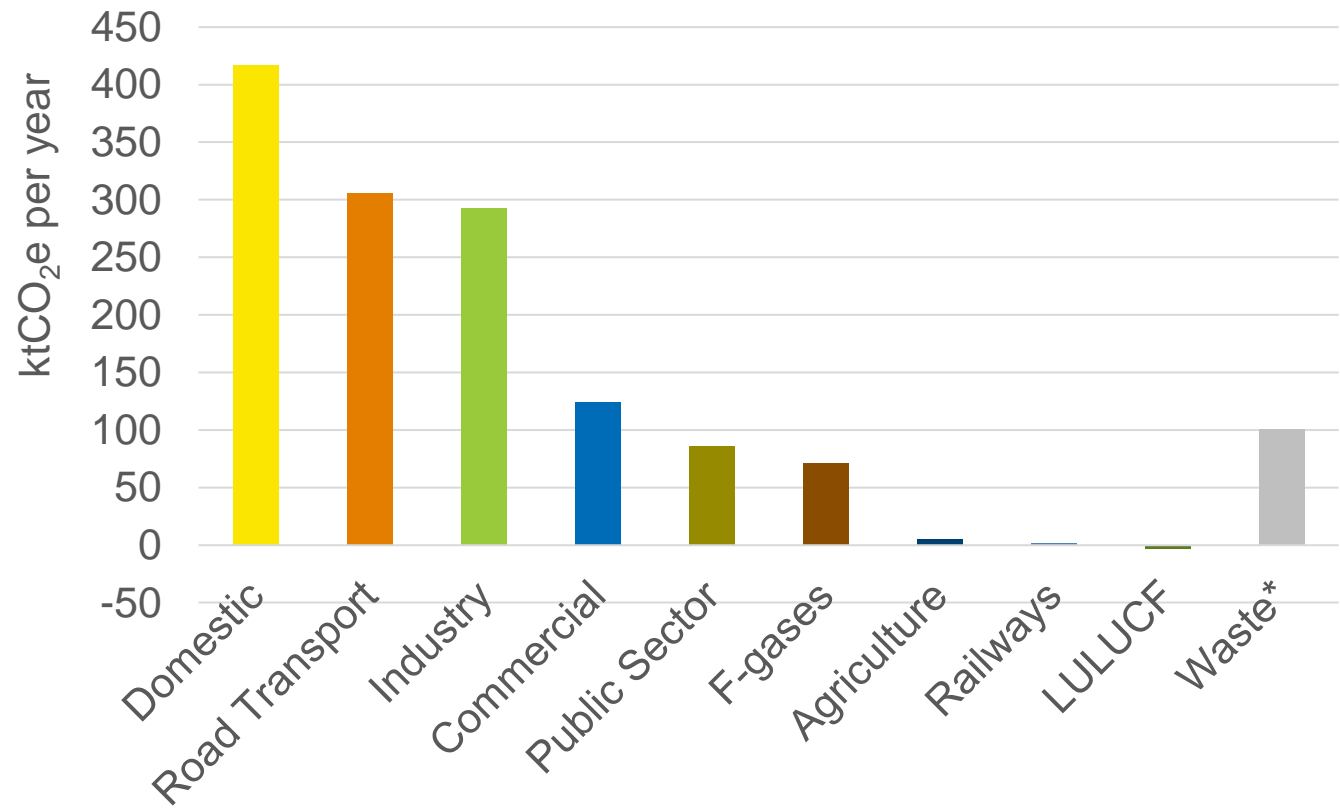
[www.ricardo.com](http://www.ricardo.com)

© Ricardo Energy & Environment 2022

# Current sources of greenhouse gas (GHG) emissions in Leicester



GHG emissions in Leicester (2019)



\* Waste is reported for information but not within the scope of the Roadmap

Note that LULUCF stands for 'Land Use, Land Use Change and Forestry'

Looking at this data another way, the major priorities are...



**ELECTRICITY**



**HEAT**



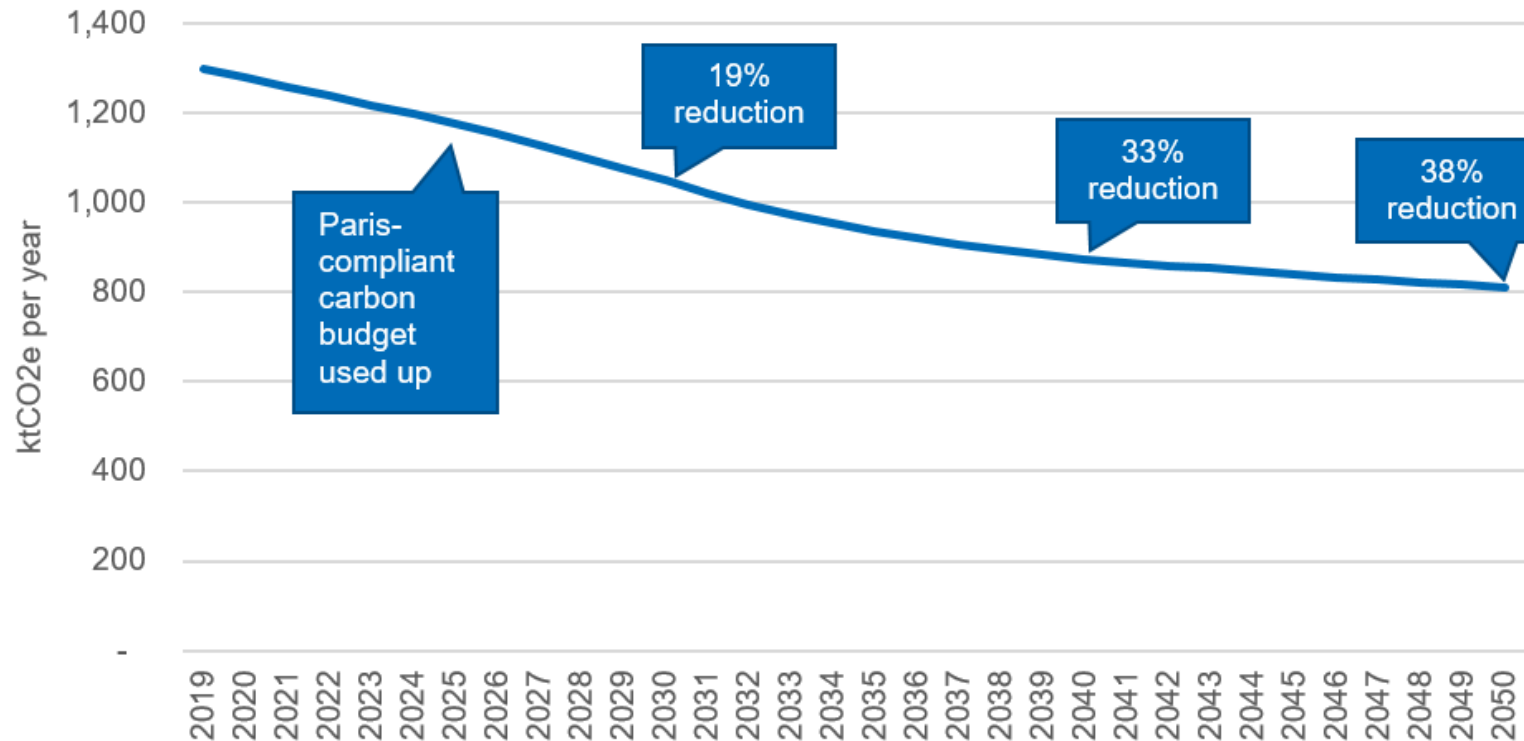
**CARS/VANS**



**... and everything else**

## The 'Business-As-Usual' (BAU) scenario for Leicester

GHG scenario modelling has been used to evaluate the impacts on Leicester's emissions of changes that are considered most likely to occur between now and 2050, if **no further action is taken**. This is the BAU scenario.



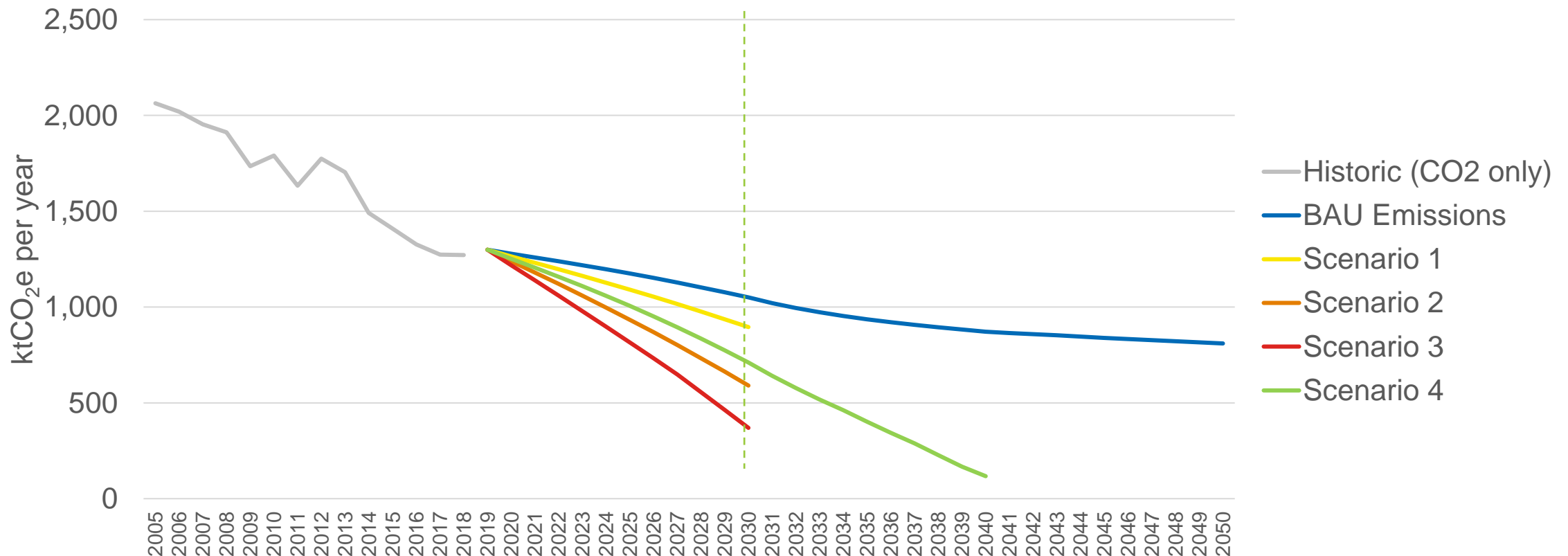
In this scenario, the **2030 ambition is not met** – in fact, according to the CCC, the UK as a whole does not have sufficient policies in place to reach net zero by 2050.

# Raising the level of ambition

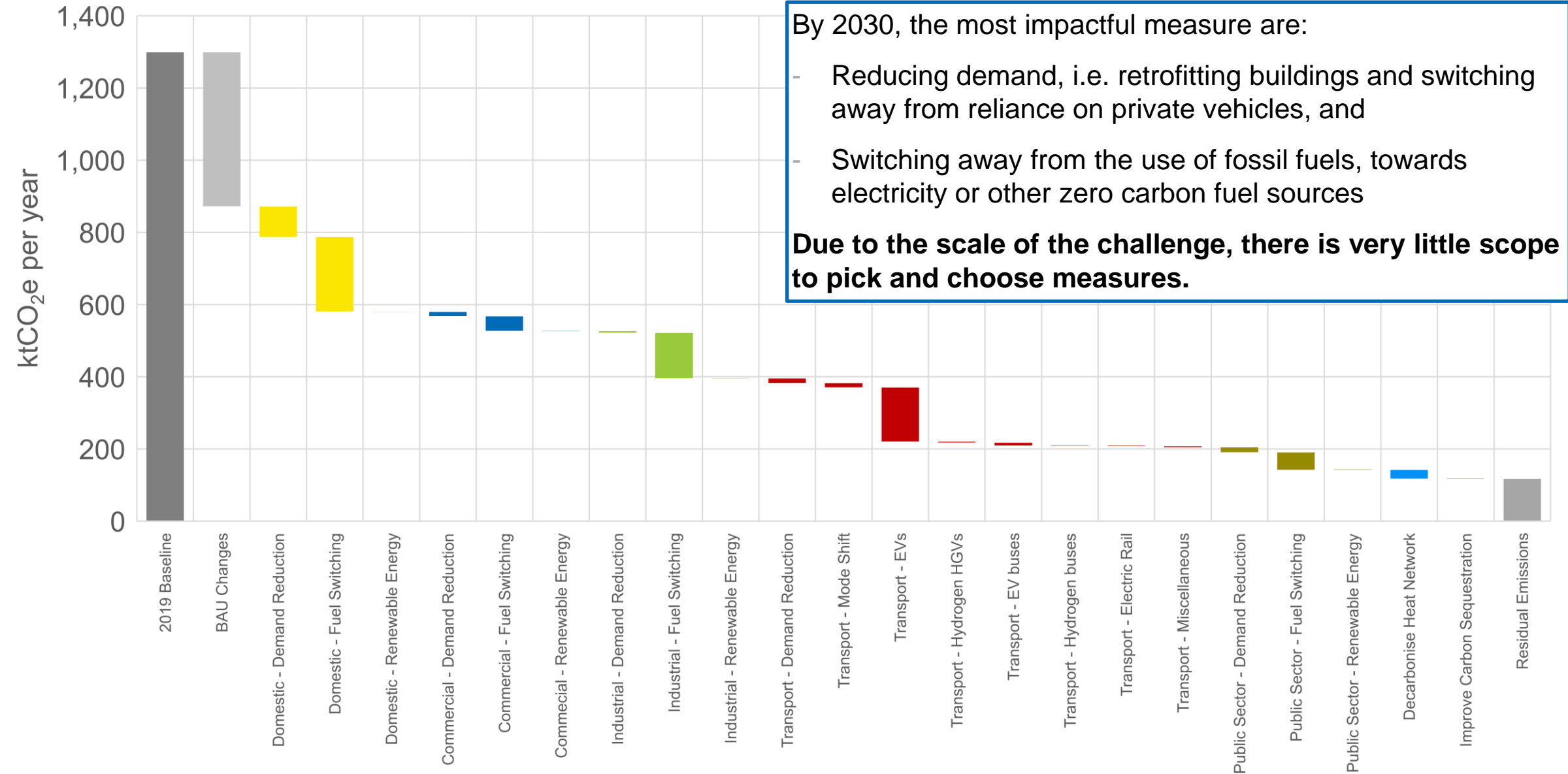
**Four additional scenarios** were modelled for Leicester representing higher levels of ambition than the BAU

- Scenario 3, which gets closest to net zero by 2030, does so by prioritising:
  - (1) demand reduction**
  - (2) electrification**
- These are the core themes of Leicester's strategic pathway to reach carbon neutrality

Comparison of different GHG emission scenarios modelled



# Impacts of mitigation measures in Scenario 3 for Leicester



# In practical terms, Leicester aligning with the most ambitious scenario would involve...



Approx. **12,000**  
**heat pumps**  
installed per year  
*Current total: <1000*



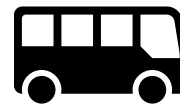
**50%** of journeys to be  
**walking or cycling**  
(or more use of public transport)



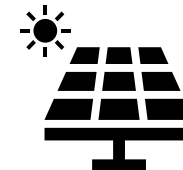
Up to **100%**  
electric cars, vans, and buses  
*Current total: <1%*



Minimum **65,000**  
buildings to undergo energy efficiency  
**retrofits**

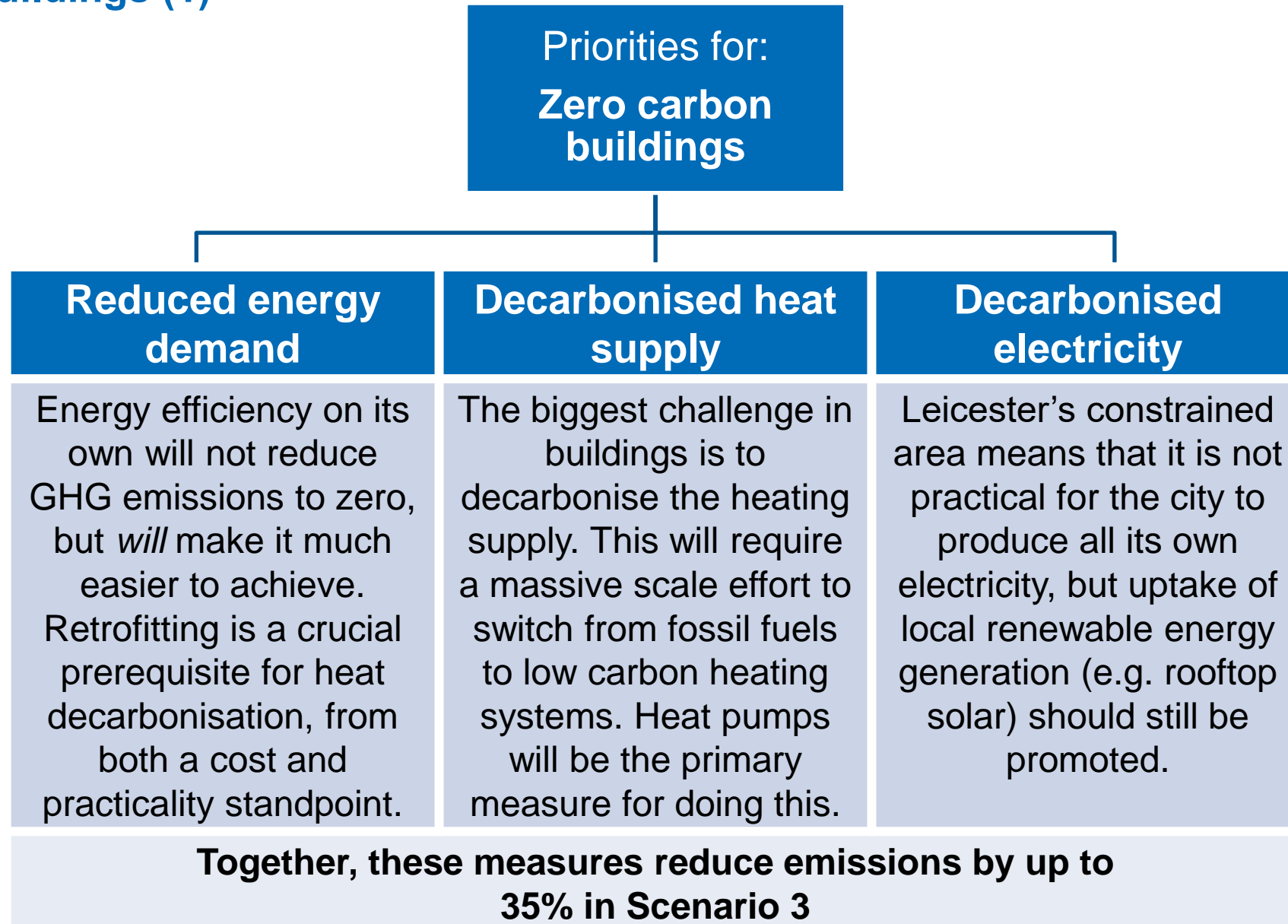


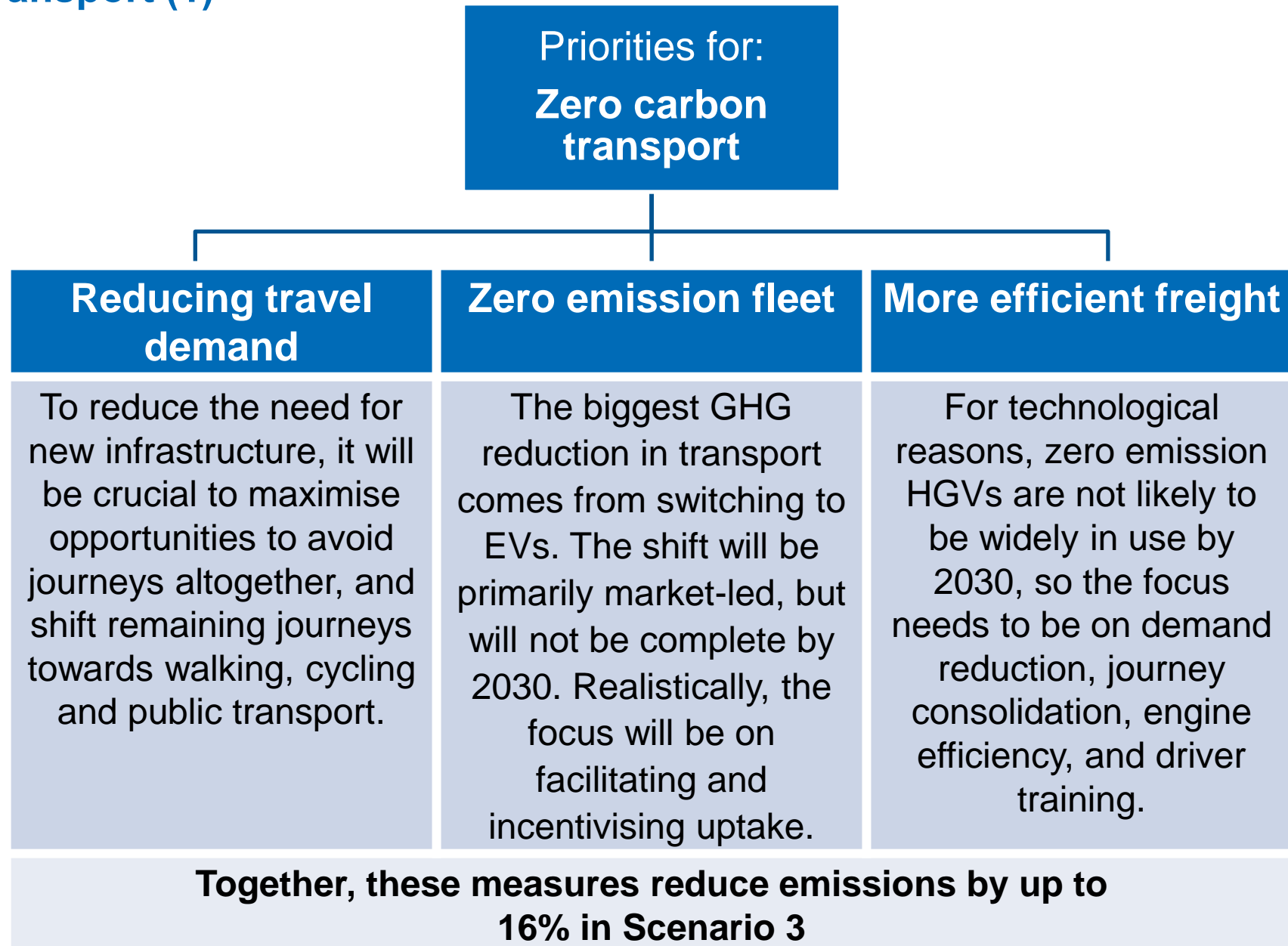
**3x increase**  
in use of public transport  
(or higher rates of walking and cycling)

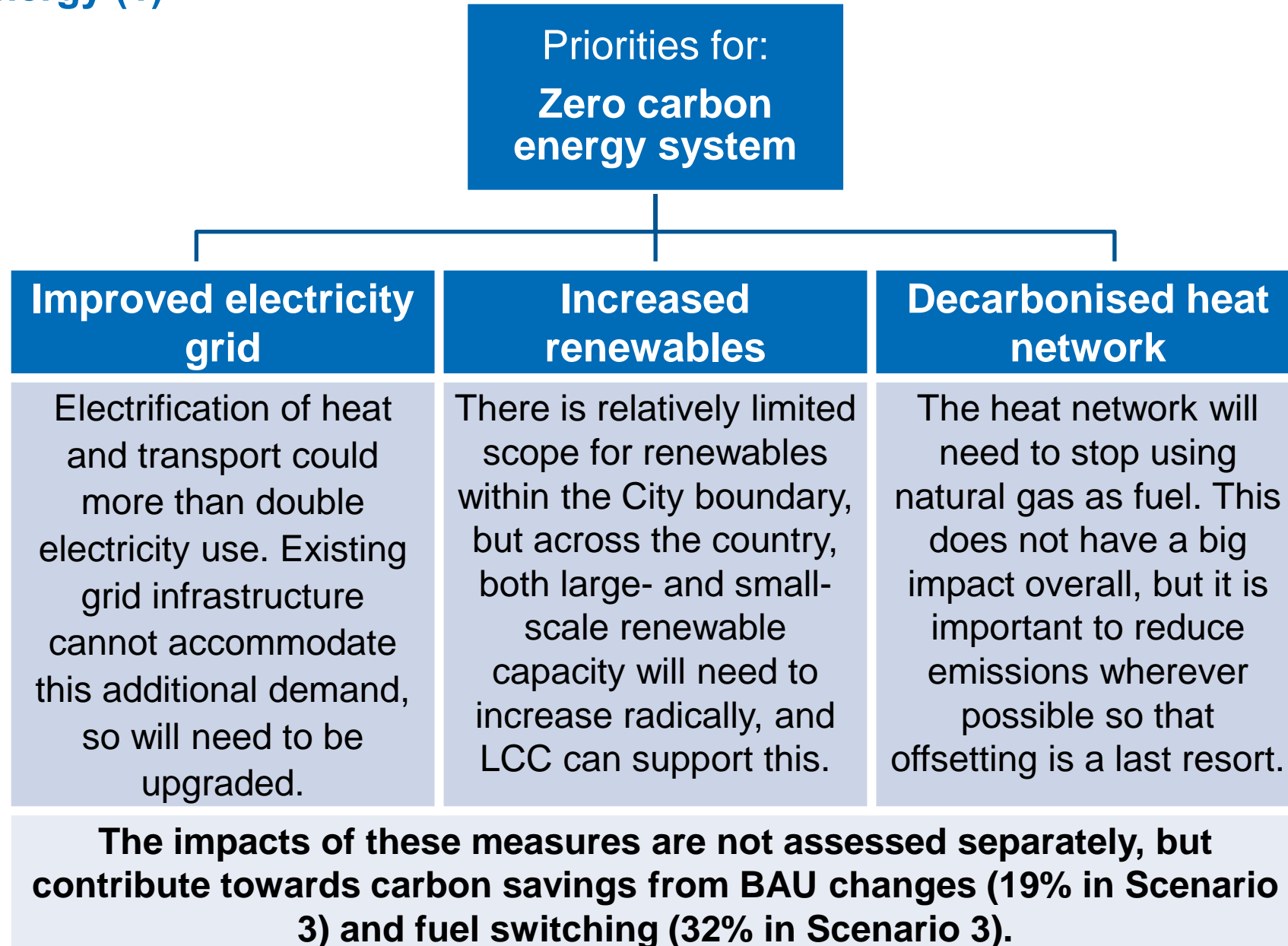


Approx. **6,000**  
**solar panel**  
installations each year  
*Current total: 4,600*

... and **no further increase** in energy demand or **GHG emissions** from any source







# Sources of Leicester's residual emissions

Even under the most ambitious scenario, 29% of today's annual emissions will remain by 2030.

The figure on the right shows some examples, and indicates how these can realistically be reduced.

In order to achieve net zero emissions by 2030, some form of carbon offsetting measures would inevitably be required.

## HGVs



- Reduce demand where possible
- Potential solutions could include hydrogen, electrification or sustainable biofuels

## Industrial heat



- Work with businesses to understand the energy end uses and possible technological alternatives
- Promote R&D and pilot projects

## F-gases



- Future regulations to encourage refrigerants with lower GWPs
- Demand reduction and technology breakthroughs

## Rail



- Collaborative push for rail electrification in Leicester and surrounding lines

# Options for addressing residual emissions

## Key options:

1. Measures within Leicester: tree planting and other nature based solutions (but scope is limited)
2. Measures outside Leicester:
  - a. Nature-based solutions, directly undertaken by LCC with partners
  - b. Large scale renewables, directly undertaken by LCC with partners outside the city or
  - c. Purchasing carbon offsets.

## Examples of nature-based solutions include:



Protecting existing carbon sinks (e.g. greenfield sites), while also protecting ecosystems, natural habitats and biodiversity



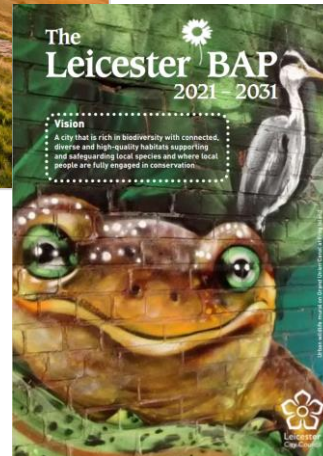
Implementing best practices on Council-owned land (e.g. parks) and working with other local landowners and communities to do the same



Increasing tree cover where possible and ensuring that it is sustainably managed in the long term



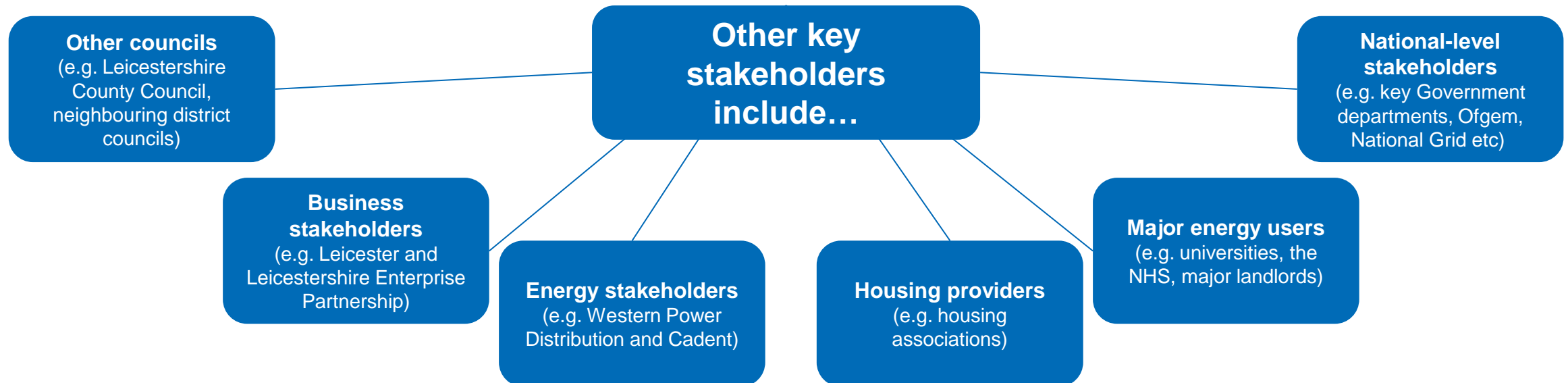
Releasing Council-owned agricultural land for alternative uses (e.g. woodland or rewilding projects)



# Working with Government and engaging with stakeholders

Considering the scale of ambition, and the scale of costs involved, it is clear that LCC cannot achieve net zero alone, and will need support from the Government. Some of the most important requests will be to...

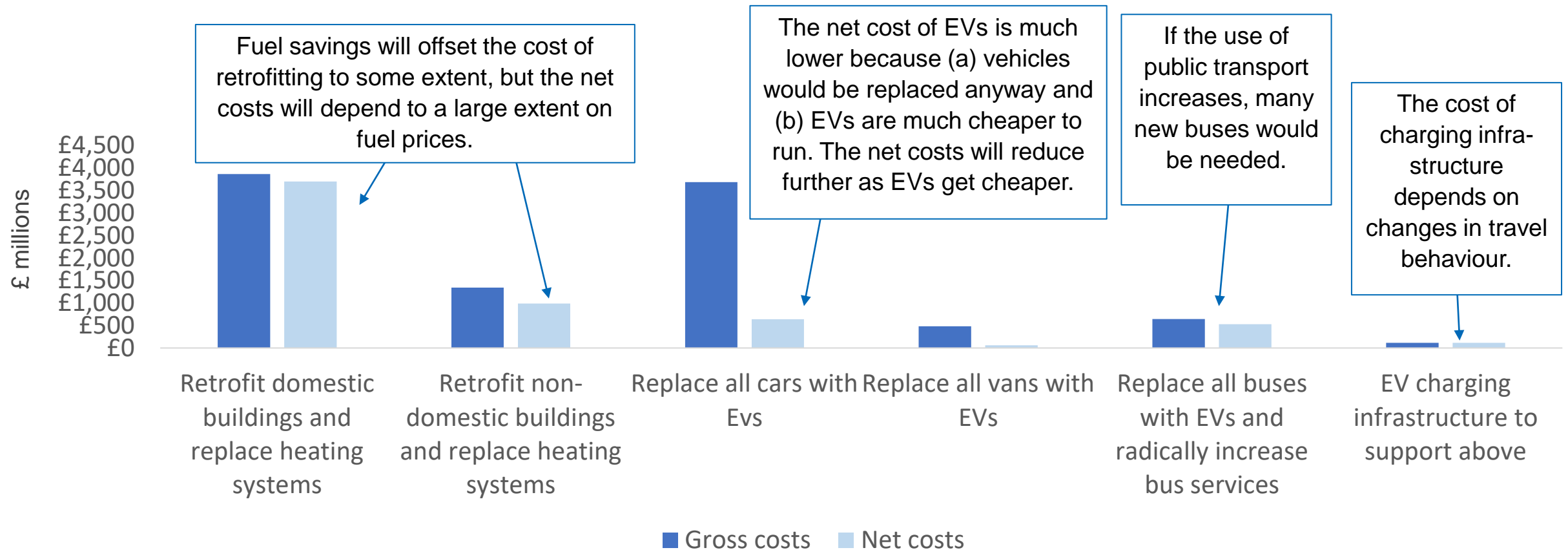
- 1 Ensure that national-level programmes and funding are sustained and stable
- 2 Remove barriers to those pursuing further levels of ambition
- 3 Re-allocate funding away from projects that increase emissions
- 4 Provide additional funding to support new climate mitigation activities
- 5 Promote jobs and (re) training opportunities in low carbon sectors
- 6 Help to ensure that there are robust supply chains to deliver the measures



Topic	Description
<b>Approach to offsetting</b>	Decide whether to put effort and resources towards offsetting the residual emissions, or whether to focus on emissions reductions within the City itself (which would almost certainly make reaching net zero by 2030 impossible).
<b>Decarbonisation of heat network</b>	Decide what the role of district heating will be in the route to carbon neutrality, and whether it is worth expanding, given that it is unlikely that the heat network can decarbonise by 2030.
<b>Local vs. large-scale renewables</b>	If there are limited resources available to deliver or promote renewable energy projects, decide whether to focus resources on renewables within Leicester or outside of the City. Onshore wind and large-scale PV are the cheapest options, although they have a larger impact on the landscape.
<b>Role of hydrogen</b>	Decide to what extent the city wishes to invest in continuing to upgrade the gas grid, given that it will be necessary to phase out fossil fuels.
<b>Gas grid upgrades (subject to decision on hydrogen)</b>	<p>This is subject to a decision first being made on the role of hydrogen, which could potentially utilise the existing gas grid.</p> <p>The Government has announced that they will decide on the role of hydrogen to heat buildings in/around 2026, so it may be necessary to wait until the national picture is clearer.</p>

# Potential investment costs for Leicester

Examples of 'big ticket' items include:



***Remember: the costs of action are much less than the costs of inaction!***

## Conclusion

Whilst there are a huge number of actions that will need to be taken to transition to carbon neutrality, they can be simplified into four main areas:



Start  
mainstreaming  
carbon neutrality  
considerations  
into all activity



Accelerate activities to  
reduce emissions  
immediately



Plan for larger  
emissions reductions  
longer-term



Increase visibility of action on carbon neutrality to enhance  
support and buy-in