

# WM2041 – Five Year Plan 2021-26

*Executive Summary*



**West Midlands  
Combined Authority**

**DRAFT**

The logo for WSP, consisting of the letters 'WSP' in a bold, orange, sans-serif font. The background of the entire slide is a faded aerial photograph of a city skyline at sunset, with several construction cranes and modern buildings visible. One building in the foreground is labeled 'symphony hall'.

This summary of the first five year plan sets out how the West Midlands Combined Authority area can start to deliver net zero carbon emissions by 2041. It covers:

1. Summary of the Summary
2. Background
3. Where are we now?
4. Stakeholder Engagement & Data Review
5. Sectoral Analysis
6. Carbon Modelling Results
7. Delivery Plan
8. Jobs and Skills



## The Five Year Plan – Summary of the Summary

In 2019 the West Midlands Combined Authority (WMCA) set the region a target to be net zero by 2041 and stay within the ambitions set out by the Paris Agreement.

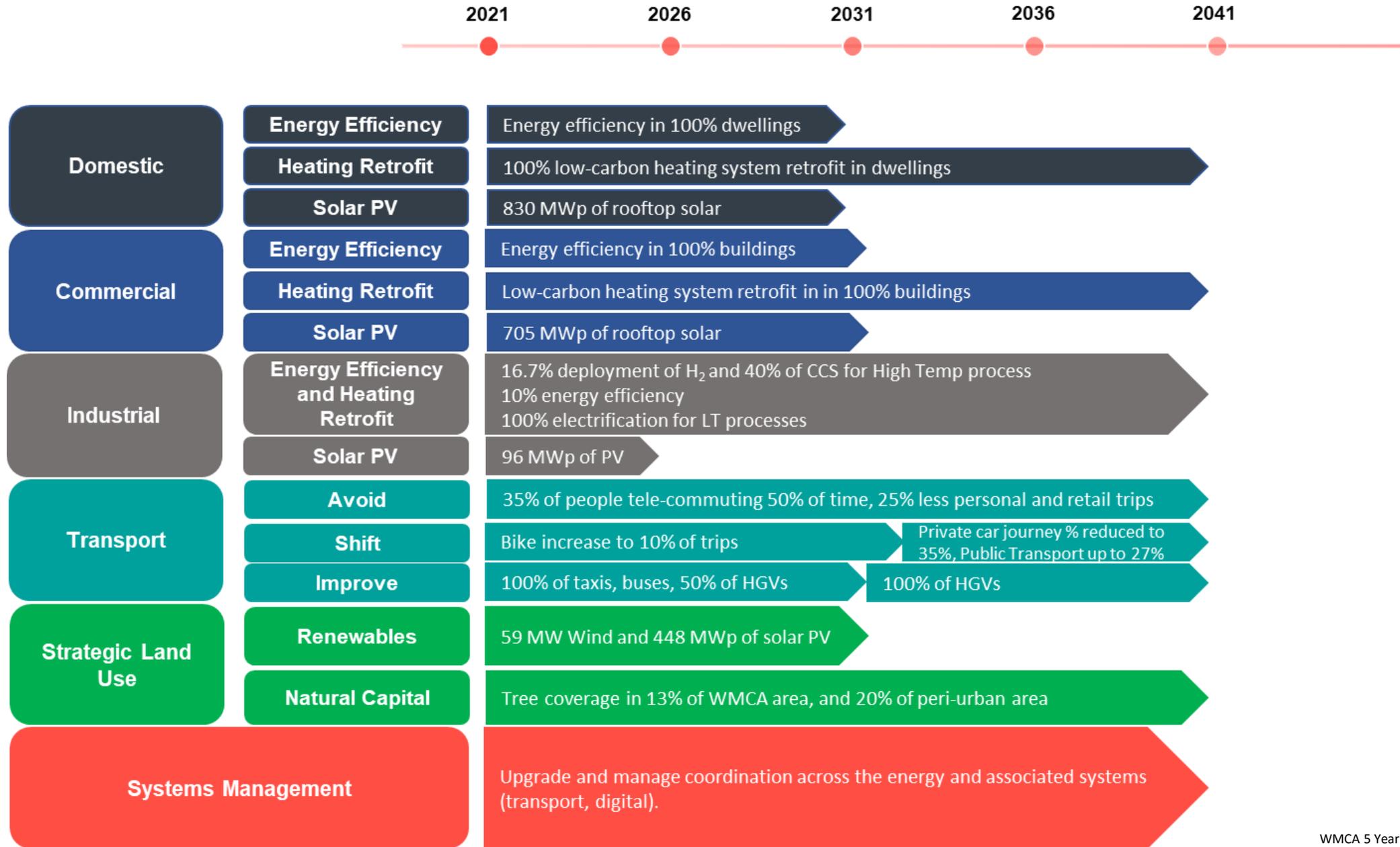
This is the first five year plan to demonstrate how the region could deliver the 2041 target and it shows:

- Under a highly ambitious ‘Accelerated’ scenario, goals in domestic, commercial, industrial, transport and land use sectors could deliver a **28% reduction by 2026 (against 2020) and net zero by 2041**. The “Accelerated” scenario is recommended to be used as the standard to set the delivery goal ambitions.
- When considering current efforts and actions and the scale and pace required, the region **is currently not on target for the 2026 or 2041 targets**.
- The **change in delivery pace required is huge and unprecedented**. It requires collaboration and delivery across all sectors well beyond current efforts.
- Delivery of this five year plan to move the region to a net zero carbon society will represent **an investment in the region’s future** and create a better West Midlands.
- Although action and investment within the region and by WMCA is crucial, the goals will require **devolution of powers, additional government investment and action by the public**.
- Gross extra investment required under the ‘Accelerated’ scenario is **£4.7bn by 2026**. However, net investment will be much lower due to operational savings.
- 41% of delivery is related to technology, 16% requires behaviour changes and 43% is a combination of both. (Taken from Committee on Climate Change, Sixth Carbon Budget)
- Delivering the ‘Accelerated’ scenario could create **21,000 jobs by 2026 and 72,000 by 2041**.

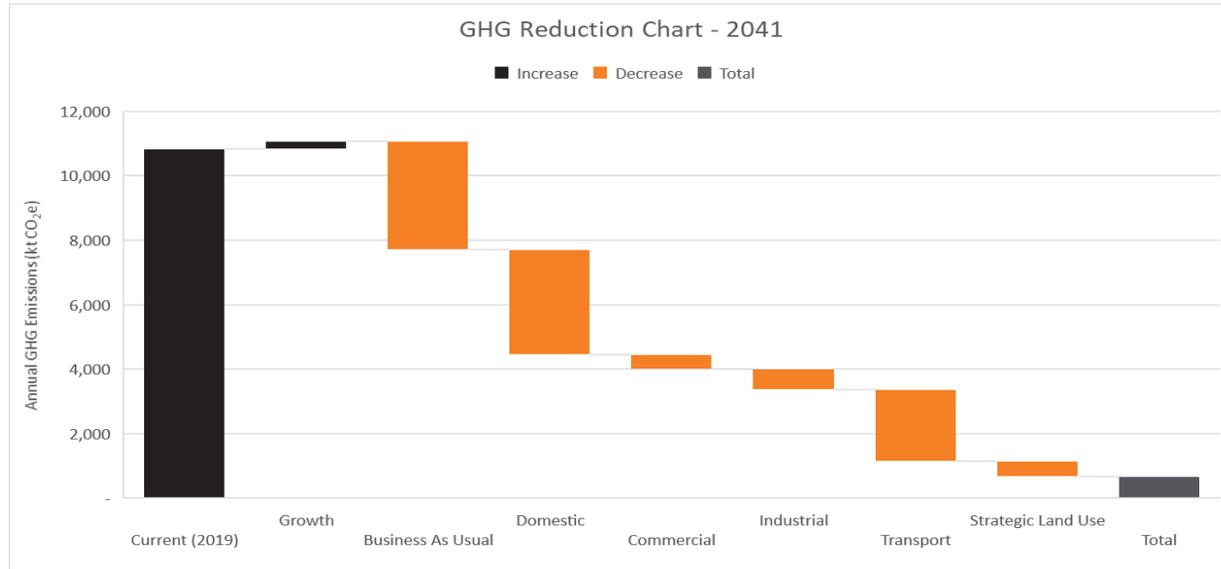
To set the region on course to deliver the net zero target by 2041, WMCA have identified key priorities for delivery, working with regional stakeholders. These include:

1. Set up a **Regional Retrofit Taskforce** to work with stakeholders to unlock investment that could deliver energy efficient homes for up to 289,000 dwellings, with installation of low carbon heating in 278,000 at a total cost of £3.6bn, reducing energy bills, eliminating fuel poverty and creating jobs.
2. Unlock potential investment of £70m in land based renewables and £483m on rooftop PV across sectors by 2026.
3. Energy Capital will support local authorities, LEP's and regional stakeholders to undertake and implement local area energy planning and enable net zero energy systems and renewables delivery.
4. Be a **pathfinder for energy devolution and regulatory change** to drive competitiveness of the region's industrial and commercial sectors to position it as a global leader in the net zero transition as a key driver in the WM industrial strategy.
5. Support changes in the way we travel through reduction in car usage from 67% of trips to 59% by 2026, and a much higher modal share of public transport and cycling: 6.7% and 4.1%, respectively. Transport for West Midlands will continue to work with local authorities to deliver improvements to **active travel and public transport** as set out in the existing Local Transport Plan (LTP), Movement for Growth, as well as producing a new LTP aligned to WM2041.
6. Implement its **Zero Carbon Homes Routemap** which provides clear actions and targets for reducing operational, embodied and whole life emissions for new residential development.
7. Work with stakeholders to secure inward investment that supports green growth, including a battery **Gigafactory** and electric vehicle charging facilities, powered by clean energy infrastructure.
8. Launch a **Net Zero Business Pledge** to enable businesses in the region to become champions and understand how they can play their part.
9. Establish a regional natural capital board to produce a **natural capital plan for the West Midlands** to increase forestry cover from 1.5 to 13% at a cost of £60m by 2026.
10. Work with stakeholders to develop and drive **behaviour change initiatives** across the region.
11. Work with colleges, universities and employers to develop the skills and training programmes required to provide the work force for the net zero transition.

# Timeline of Actions under 'Accelerated' Scenario



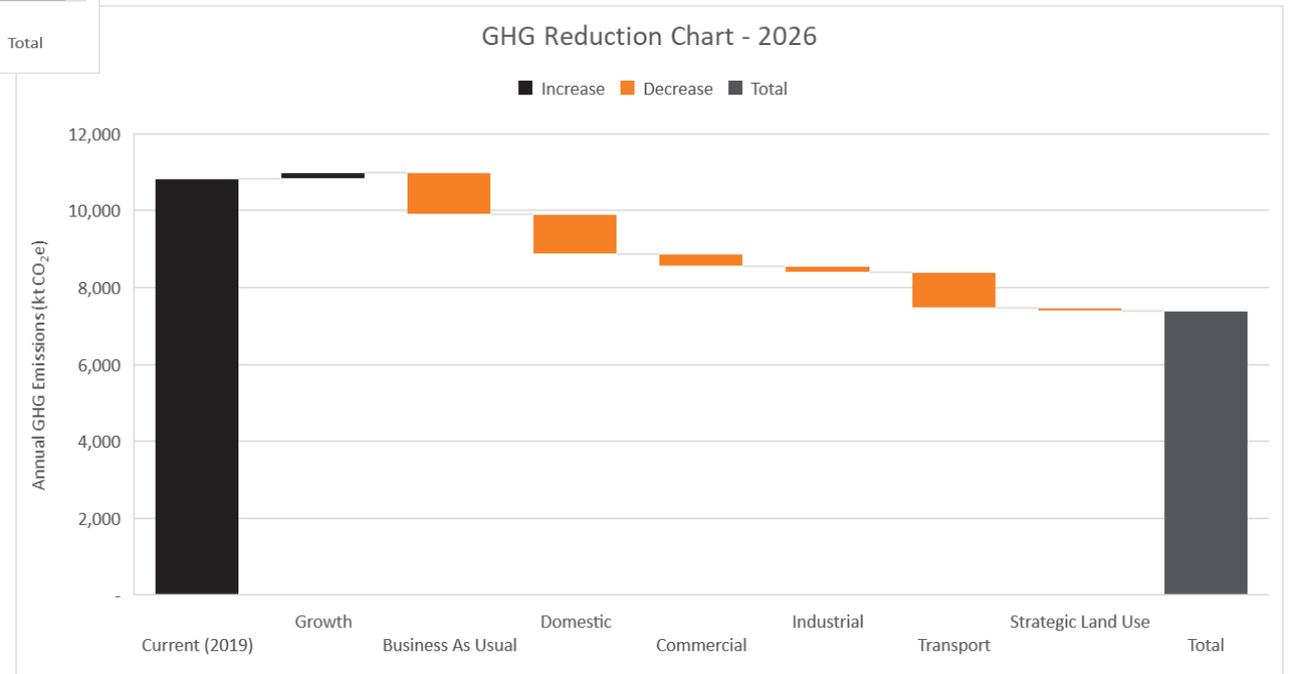
# Carbon modelling results for 2041 and 2026 (Accelerated Scenario)



✓ Modelling shows implementing all goals gives **>95% reduction by 2041 – net zero is realistic**

The ‘accelerated’ scenario results in a **28% reduction to 7.8 MtCO<sub>2</sub> per year by 2026** (against a 2020 baseline).

Carbon modelling shows that there is a **gap between what is technically possible and socially tolerable** and the Tyndall target of 4.9MtCO<sub>2</sub> per year by 2026 .



# Background



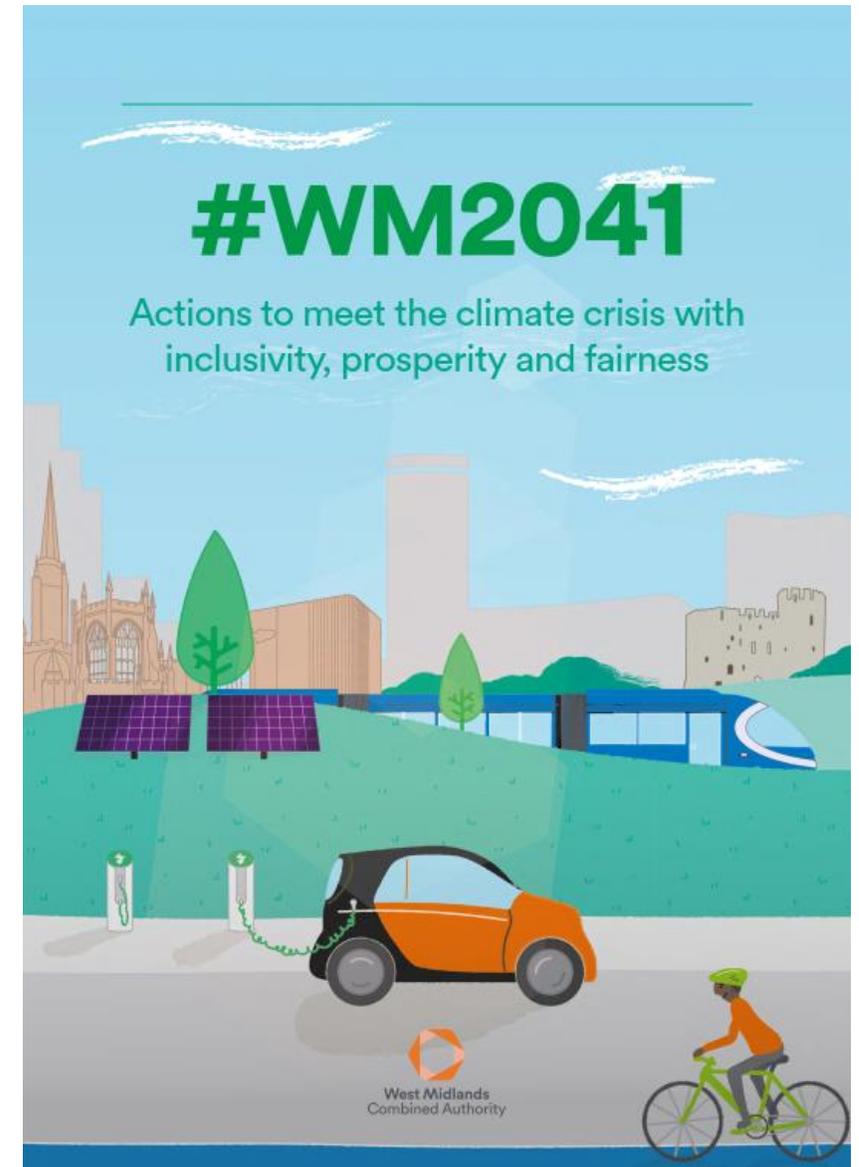
# Background

Following the approval of the **'WM2041: A Programme for Implementing an Environmental Recovery'** in June 2020, the WMCA and stakeholders committed to producing five-year delivery plans with interim carbon budgets and other metrics in support of delivering the **net zero carbon target for the West Midlands by 2041.**

The aim of this first Five Year Plan (FYP) is to provide clear guidance on the types of measures that will need to be implemented in the 2021-2026 timeframe to reach net zero by 2041.

The West Midlands Combined Authority and stakeholders, must understand where and how investment is required in programmes of delivery and policy changes to support the 2041 target.

The West Midlands Combined Authority also needs to understand how this should be sequenced and the combination of approaches that will need to be taken to get them to a position of net zero by 2041.



# #WM2041 – Goals and Principles

The original WM2041 plan (published in January 2020) suggested that becoming zero carbon needed to take account of wider social, economic and environmental principles. These are:



1 Invest in the resilience of our places



3 Create places and connections that help us to meet the climate challenge



2 Change our economy without leaving anyone behind



4 Use our industrial past to create a new future



5 Decouple prosperity from the consumption of energy and resources

# Alignment with the UN Sustainable Development Goals

- Investing in mitigating and adapting to climate breakdown is essential for the future of the WMCA region.
- The WMCA is committed to a model of **inclusive growth** which judges economic activity by the quality of its outcomes for people and place, aligned with UNSDGs.

1. Unite people across the region by creating common cause and **addressing inequalities**



2. Make space for **sustainable transport**



3. Invest in **comfortable homes and buildings**



4. Build wealth, and recycle it throughout the region through **skills and community ownership**



# The first Five Year Plan (FYP) aims to:



**Evidence Based spatial plan**

Provide an **evidence based spatial plan**, linking up WM2041 and local authority delivery plans, projects and investment programmes.



**Common vision for stakeholders**

Create a **common vision for stakeholders** across the West Midlands with a strategic plan, policies and outline of practical devolution opportunities to deliver WM2041.



**Different existing and potential new routes to delivery**

Outline **different existing and potential new routes to delivery** and where this is best led by communities, the public sector, the private sector, or a mixture.



**Funding sources, financing and investment**

Outline the **funding sources, financing and investment** to deliver the FYP.



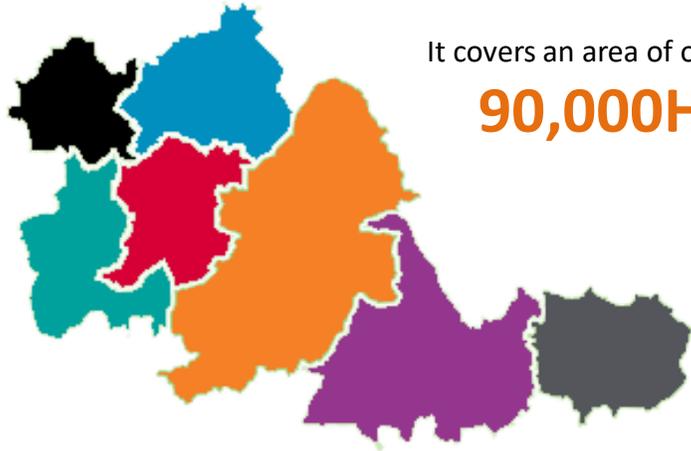
**A step change**

Represent a **step change** in the way the region works together to deliver against environmental priorities for an inclusive, prosperous and fair transition.

# Where are we now?

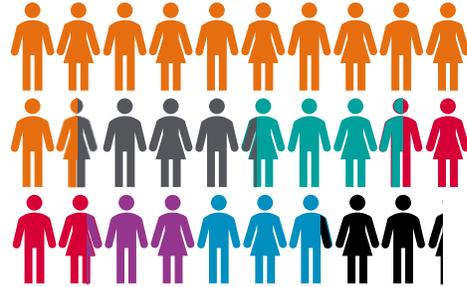


# About the West Midlands Combined Authority region



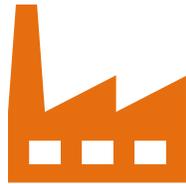
It covers an area of over **90,000Ha**

Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall, Wolverhampton



**2.9m** people in **1.15 million** homes

**88,600** businesses across the seven authorities



**78,400** businesses employing fewer than 10 people with a similar number turning over less than £1million

**1,000** businesses employing more than 100 people with a similar number turning over more than £10million



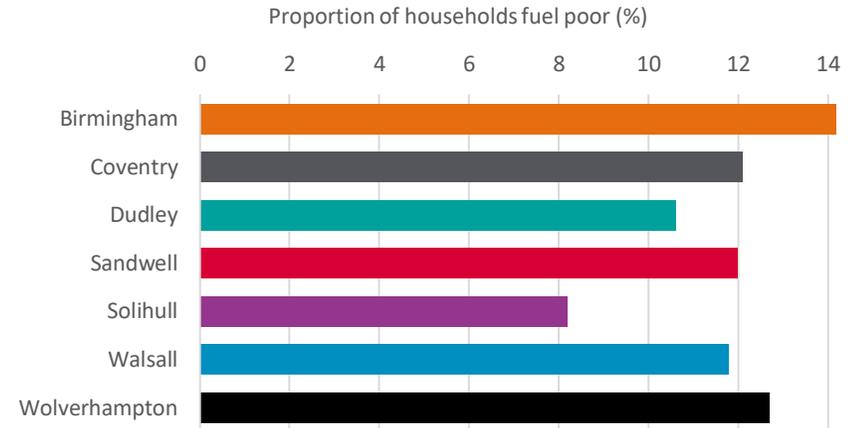
**1.4 million cars** registered in the West Midlands Combined Authority



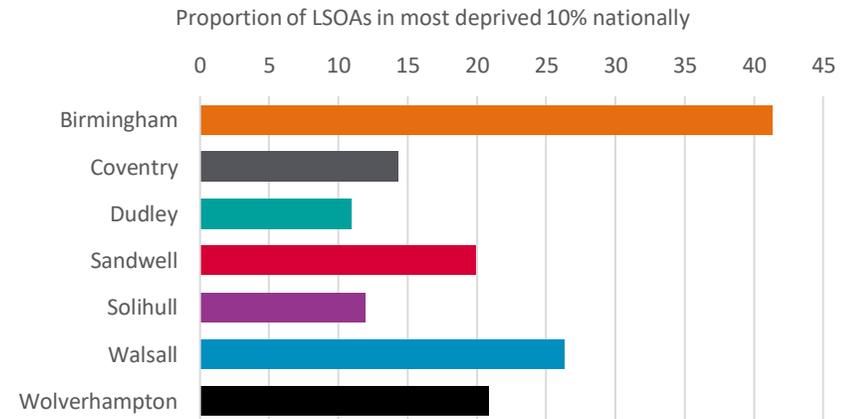
**75 million vehicle miles** taking place annually in the West Midlands Combined Authority. Over 60% of all journeys are made by car.



**455 public EV chargers** in the West Midlands Combined Authority of which **97** are 'rapid'

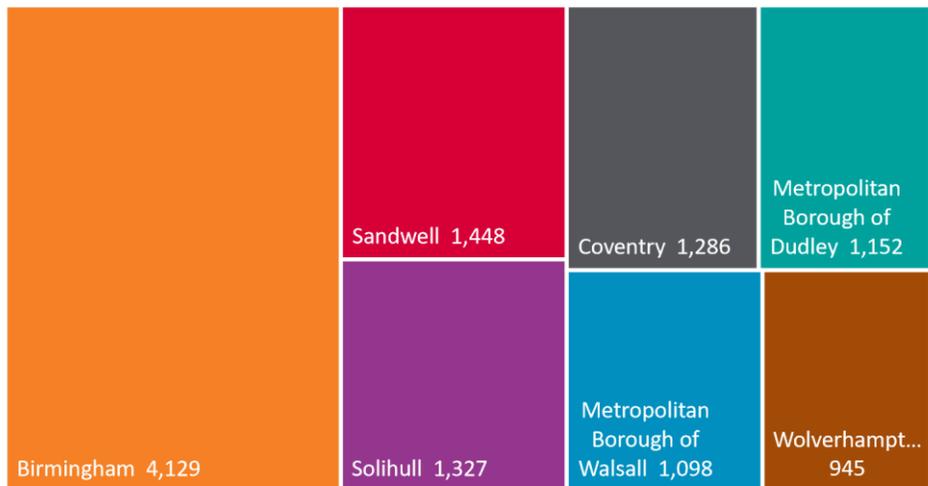


There is significant **variation across the seven local authorities** including the levels of fuel poverty (the national average for fuel poverty is 10.3%) and in the indices of multiple deprivation



# GHG Emissions in the West Midlands Combined Authority

2018 Share of GHG Emissions (ktCO<sub>2</sub>)

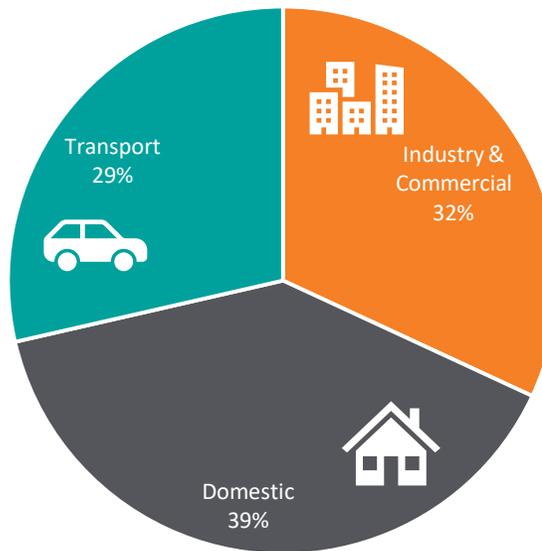


**11,385 ktCO<sub>2</sub>** emitted across the seven boroughs in 2018



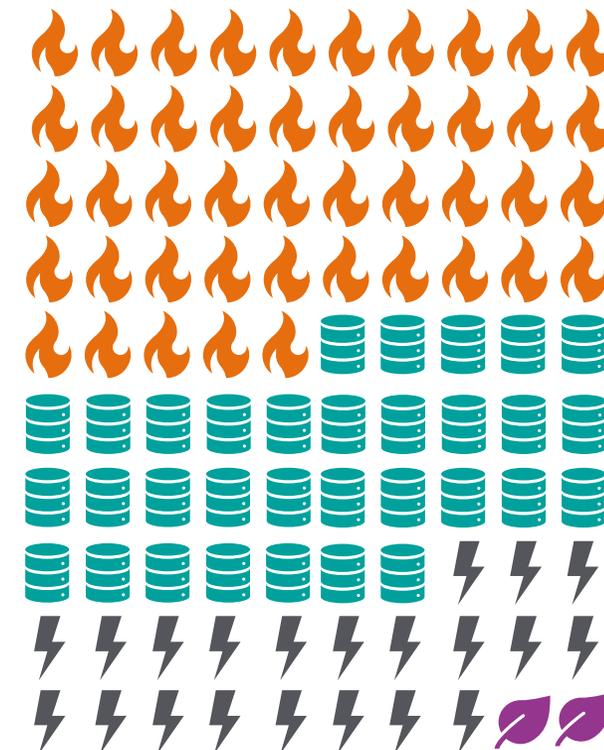
This broadly mirrors the split in energy consumption for 2018 of **50,238 GWh**

Energy Use by End User

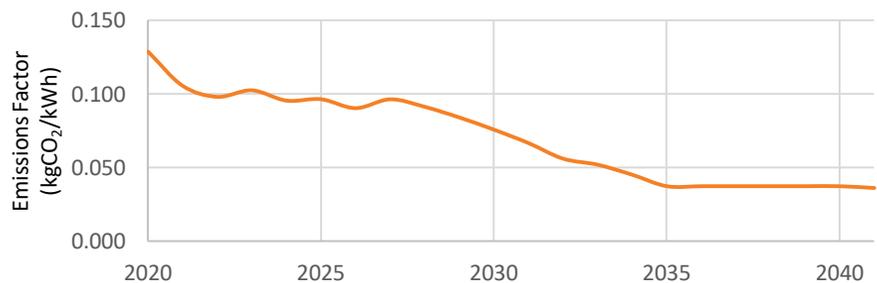


Energy consumption is split evenly between Domestic, Commercial & Industrial and Transport

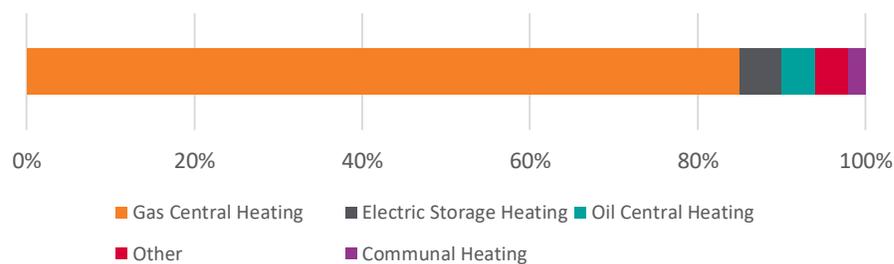
45% of energy consumption is gas, 32% from petroleum products, 21% from electricity and 2% from other sources



Projected Decarbonisation of Electricity



UK Heating Appliances in Homes (%)

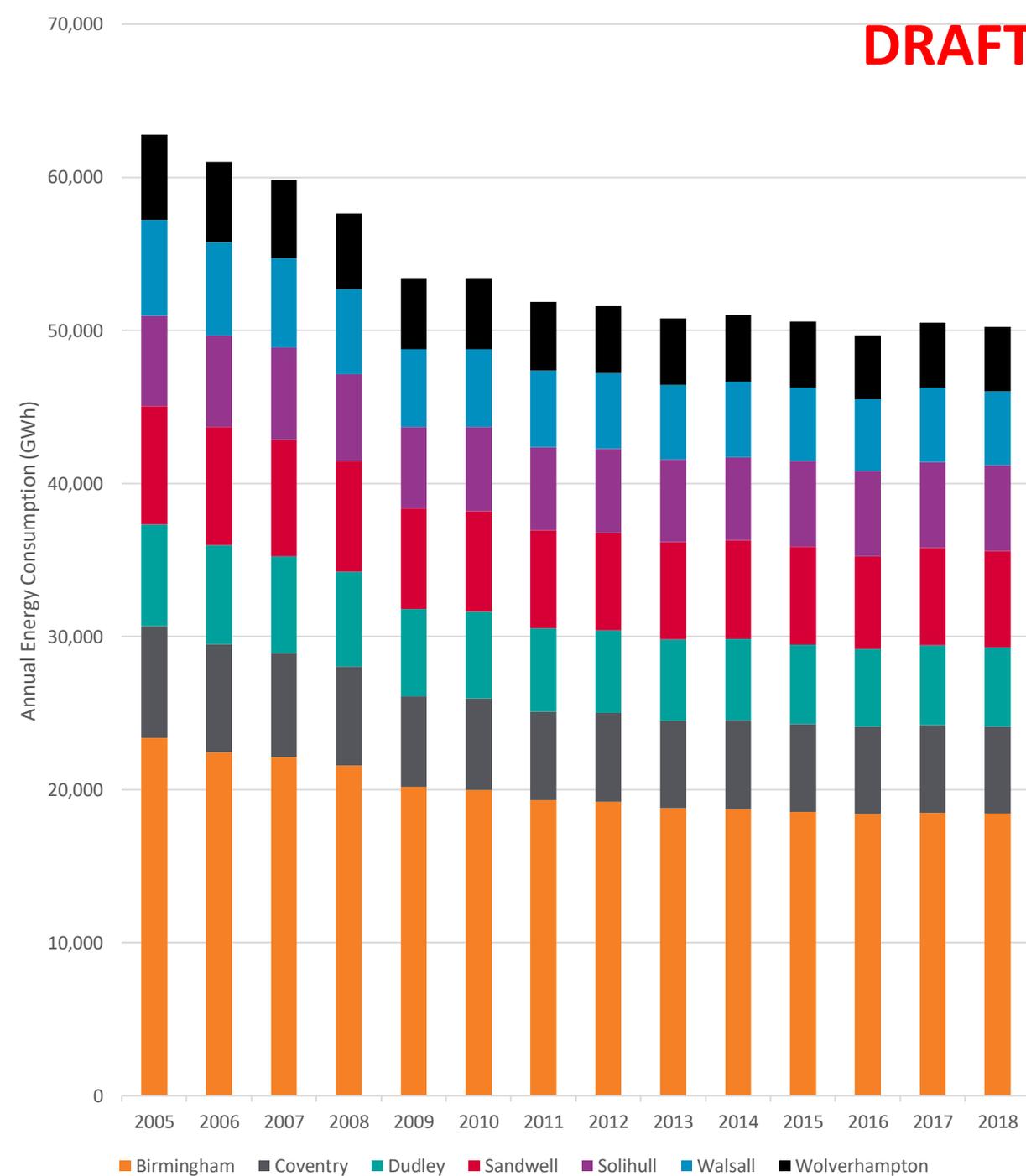


The vast majority of gas consumption is for space, water heating and cooking whereas petroleum is almost completely used for transport.

# West Midlands Combined Authority area energy consumption

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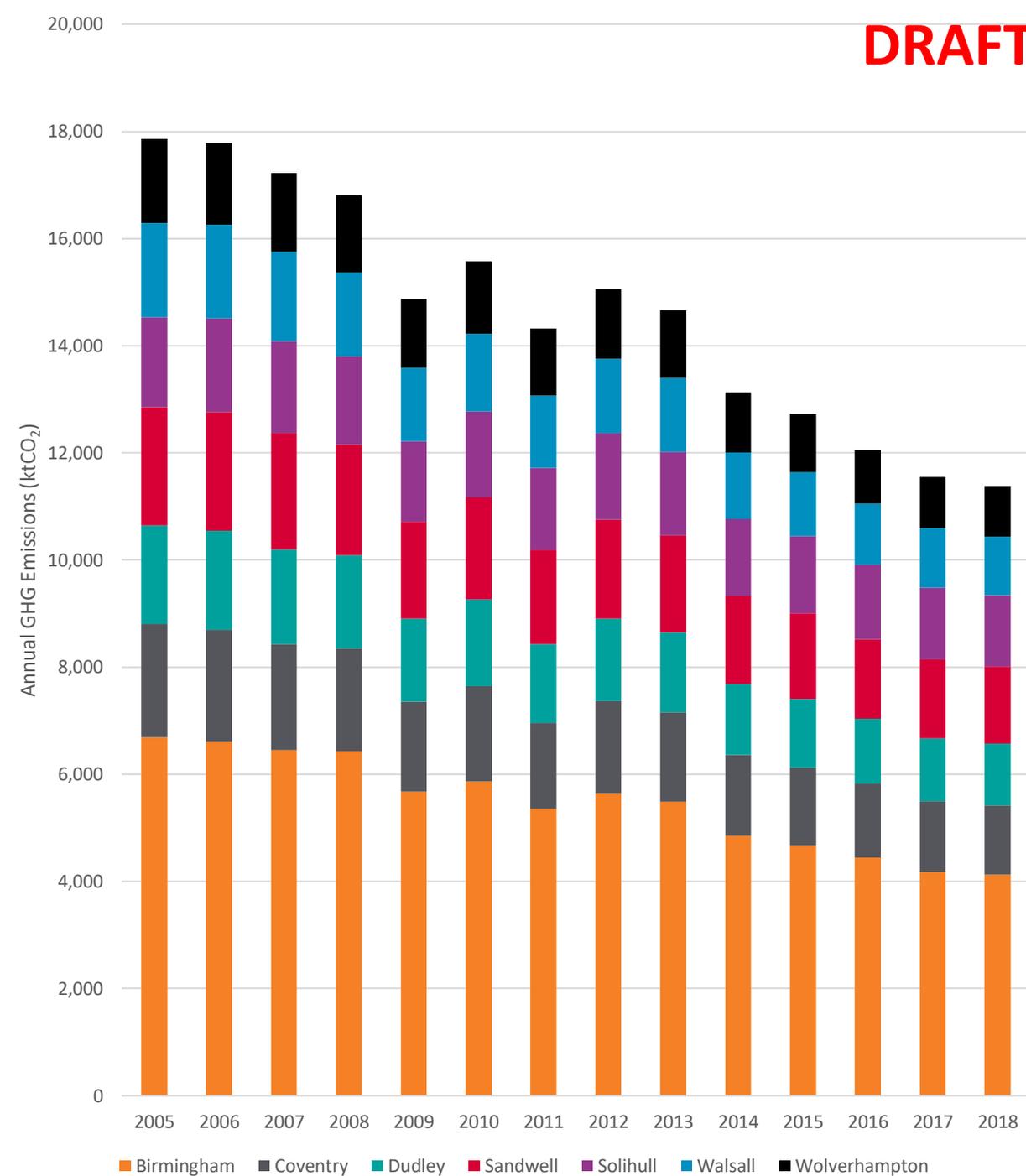
- Energy consumption in the region is around 50,000 GWh per annum
- This has fallen by 20% since 2005
- The share is split between domestic (39%), commercial/industry (32%) and transport (29%)
- 45% of this natural gas, 21% electricity and 32% petroleum



# West Midlands Combined Authority area GHG Emissions

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- Greenhouse gas emissions in the West Midlands Combined Authority around 11 MtCO<sub>2</sub> per annum
- This has fallen 36% since 2005, mainly due to the decarbonisation of electricity
- The split of emissions by end-user is:
  - domestic (34%),
  - commercial/industry (30%) and
  - transport (36%)
- The split of emissions by fuel is:
  - natural gas (37%),
  - electricity (22%) and
  - petroleum (36%)



# The region is doing a lot already

## Wolverhampton

- Council own emissions net zero by 2028 and LA wide by 2041
- New Cross Hospital 6.9MW solar array
- University research programmes for the built environment



Wolverhampton

## Walsall

- Council own emissions net zero by 2050



Walsall

## Birmingham

- Council own emissions net zero by 2030.
- Authority-wide net zero by 2030.
- Clean air zone from summer 2021
- Leading energy expertise - Birmingham Energy Institute at University of Birmingham, Tyseley Energy Park, Energy and Bioproducts Research Institute (EBRI), Energy Systems Catapult
- EV charging infrastructure rollout



Birmingham

## Dudley

- Low carbon place project
- LED streetlighting completion



Dudley

Sandwell

## Sandwell

- Council own emissions net zero by 2030 and LA wide by 2041
- Town centre heat network



## Solihull

- Council own emissions net zero by 2030 and LA wide by 2041
- Town centre heat network
- Airport net zero by 2033
- JLR net zero by 2030

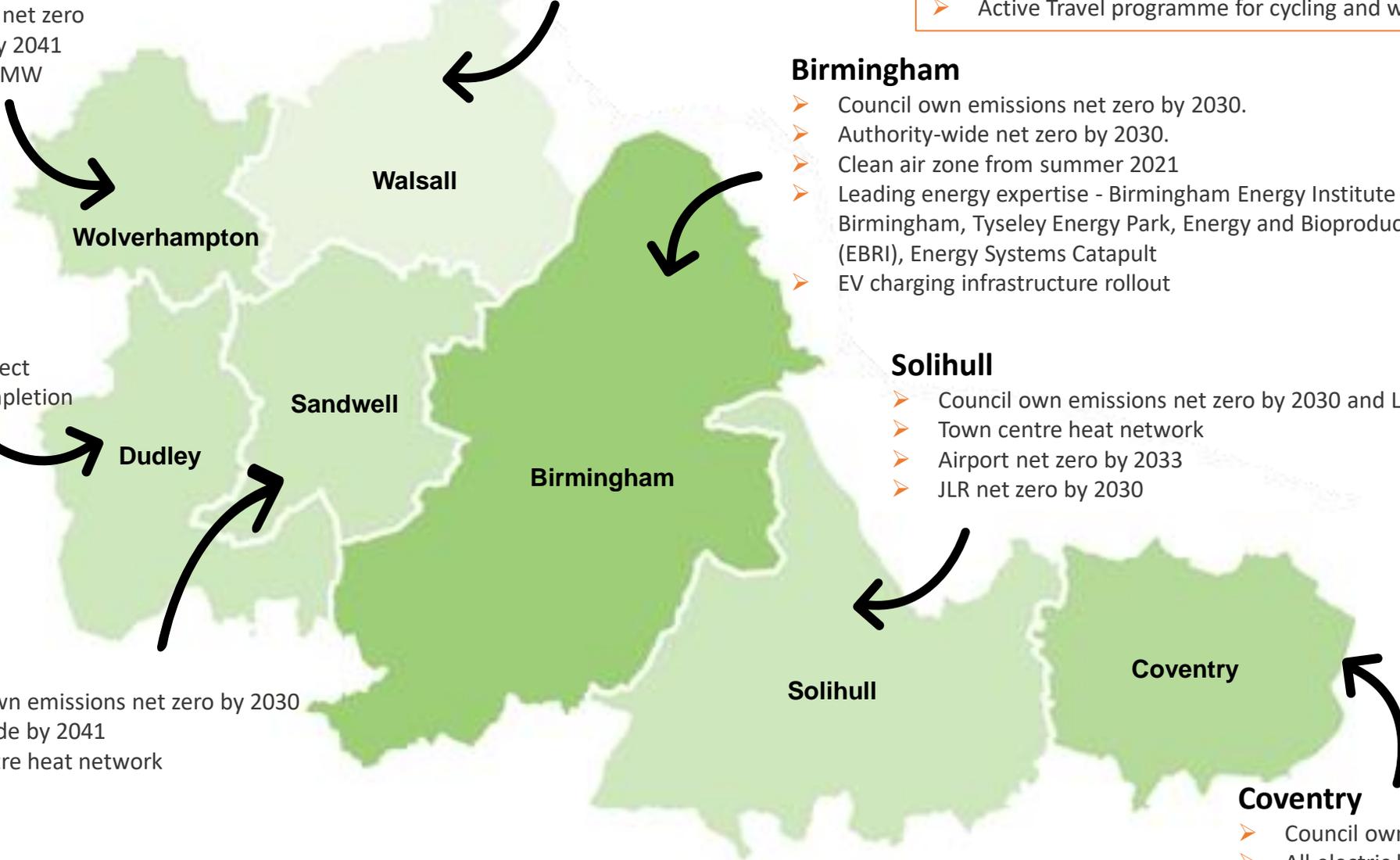


Solihull

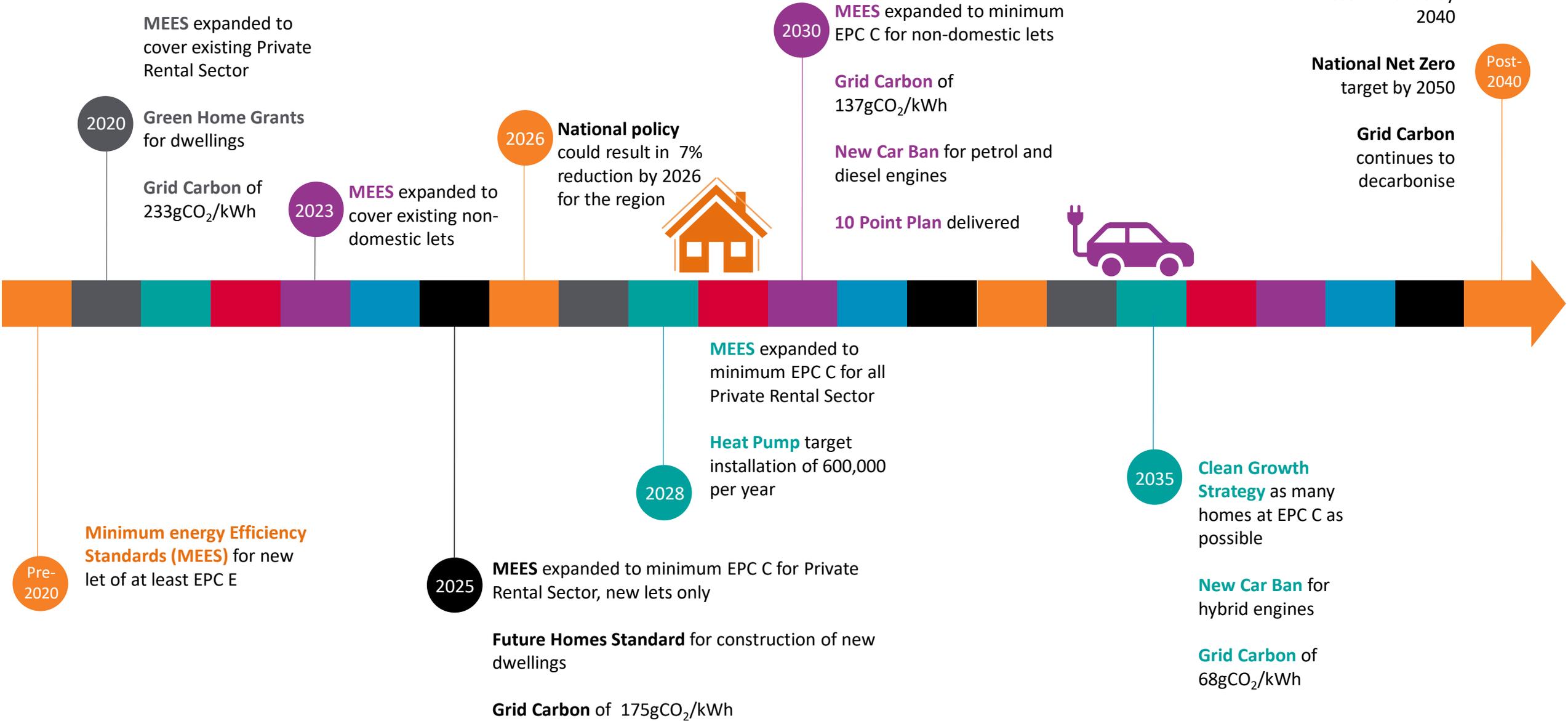
Coventry

## Coventry

- Council own emissions net zero
- All electric bus city by 2025
- EV charging infrastructure rollout



# National Policy Timeline



# Stakeholder Engagement & Data Review



# The Role of WSP...



**240 individuals** actively engaged

**97** different organisations



## Methods of engagement:

- Regular progress meetings;
- One to one virtual meetings;
- Surveys;
- Presentation at an existing West Midlands network or meetings; and
- Virtual Workshops (specifically to present on the WM2041 Five Year Plan).

‘We know and understand that the green agenda is a priority and the direction of the broad ambitions however there is limited precision on the details and so unfortunately little gets done’

Consideration of people’s mindset is important; ‘they are generally supportive of climate change until they either have to change their ways or spend money’

‘Current committed actions will only move the dial a little’ – there is a need to go beyond business as usual

# Key Findings from Stakeholders

## Interventions

- Energy efficiency, alternative modes of transport and alternative fuels need to be the focus.
- Recognition of the importance of nature-based solutions, which should go beyond just tree planting.
- Interventions should not just be technological – behavioural change is key.
- There are a variety of existing commitments around net zero, and varying degrees of implementation that need to be included.

## Jobs and Skills

- Engagement and alignment between educational institutions and employment providers is key.
- The partnerships and delivery mechanisms are already in place.
- Low carbon jobs and skills is still in its infancy with limited confidence and understanding of what the ‘Green Recovery’ actually means in terms of jobs and skills.
- Renewable energy and automotive skills perceived as most important, by most respondents.

## Delivery Mechanisms

- Integration and alignment across the region is vital – we all have a role.
- Local authorities need to have a central role in delivering and supporting private organisations.
- Importance of having a regional approach with the West Midlands Combined Authority.
- Engagement and collaboration with suppliers and wider industry seen as key to delivery.
- Behaviour change and acceptability of interventions and how they are delivered is important.
- There is a need for support through the planning system and consistent policy on land use.

## Resources

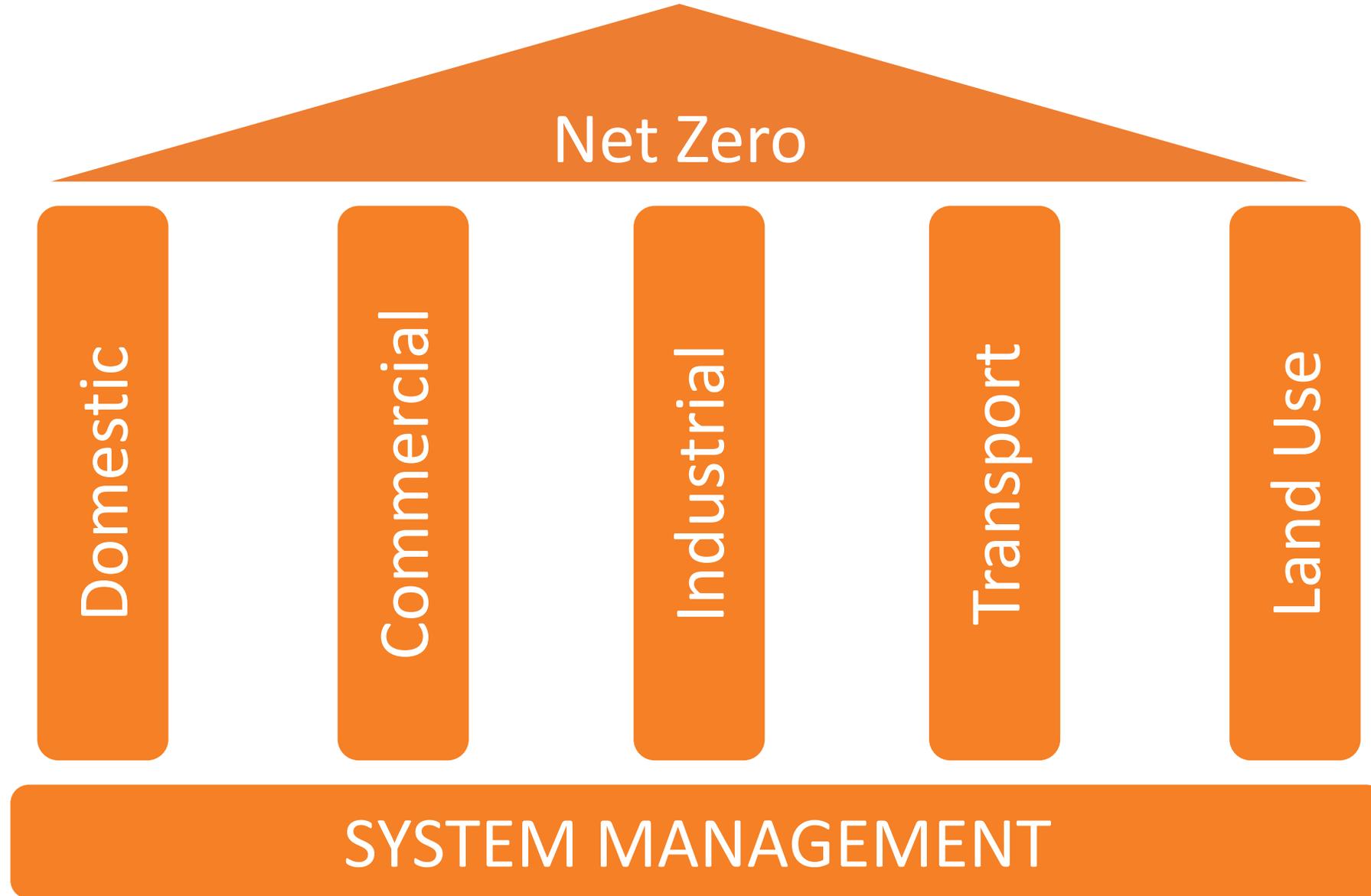
- Main barriers – access to finance & funding structure, followed by regional powers & infrastructure.
- Clear structures and avenues for funding for each intervention would instil confidence.
- There is a need for national grid to be able support energy efficient transitions.
- The plan needs to include real costs, practicalities, accessible funding options and constraints.
- Concerns were raised around paybacks and how much time these might take to be realised.

# Sectoral Analysis



West Midlands  
Combined Authority





# 15 Main Goals

These are the 15 main goals that have come through stakeholder engagement and modelling of carbon reduction. \*

1	Domestic energy efficiency retrofit	Domestic
2	Domestic heating retrofit	
3	Domestic solar PV	
4	Commercial energy efficiency retrofit	Commercial
5	Commercial heating retrofit	
6	Commercial solar PV	
7	Industrial energy efficiency & fuels	Industrial
8	Industrial renewables	
9	Avoiding travel	Transport
10	Shifting travel	
11	Improving passenger service fleets	
12	Improving freight fleets	
13	Improving private vehicles	
14	Land use (renewables)	Land Use
15	Land use (natural capital)	

## Co-benefits of delivery

- Lower energy bills & eliminate fuel poverty
- Reduce inequalities

- Boosting regional competitiveness
- Retain energy spend within the region
- New business opportunity & economic growth

- Cleaner air
- Better physical & mental health

- Adapting to climate change
- Enhancing biodiversity
- Better physical & mental health

\*The areas of waste and offsetting are not considered in this analysis

# Delivery Scenarios

Three delivery scenarios, **moderate**, **accelerated** and **maximum**, have been considered to show what would be required to reach the 2026 and 2041 targets. A ‘West Midlands Carbon Calculator’ tool has been developed and will be available for people to create their own scenarios for reaching net zero.

**Moderate**       2026       2041

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Very High															
High															
Medium															
Low															

Sector delivery levels for each goal are mainly set at ‘Medium’ or ‘Low’ but are still beyond the business as usual delivery pace.

**Accelerated**       2026       2041

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Very High															
High															
Medium															
Low															

A much more rapid and aggressive delivery pace across sectors, with most set at a “High”. Energy efficiency and fuel switching for industry is medium as the majority of technologies required are at an early stage of development. Due to its much smaller scale, solar PV in industrial buildings has been set at a very high level.

**Maximum**       2026       2041

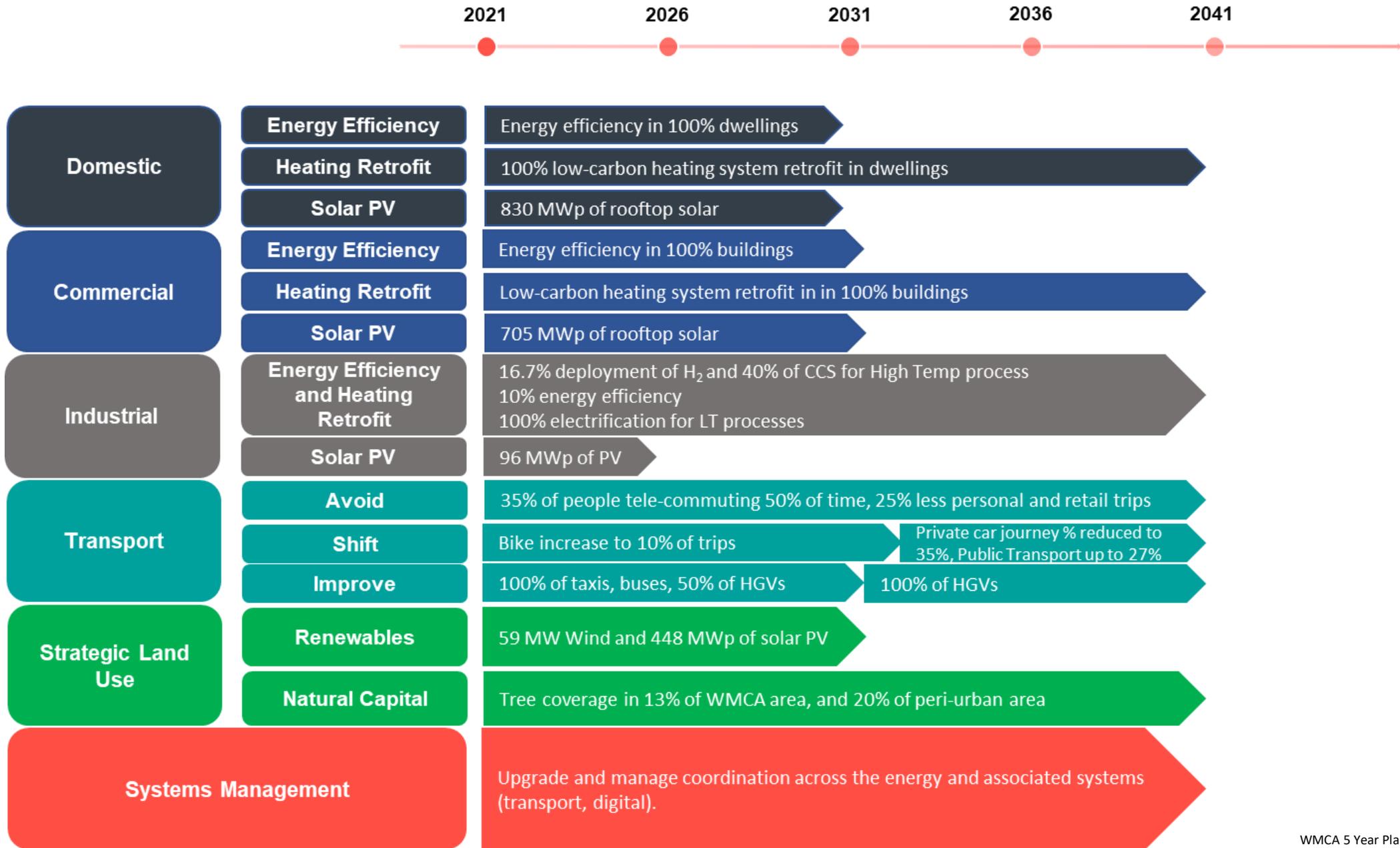
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Very High															
High															
Medium															
Low															

This is the **reference scenario for the plan – it is hugely ambitious.**

This scenario was developed to illustrate what would be required to meet the 2026 target. It is at the limit or beyond what it is technically possible, even ignoring legislative competence and finance restrictions. It would require large behaviour change from people and could create unintended consequences for a just transition. For this reason, it has not been used, but can be explored by those seeking to understand what is required.

# Ambition and Timeline under 'Accelerated' Scenario to 2041

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# Goal 1 – Energy Efficiency Retrofit



# Goal 2 – Heating Retrofit



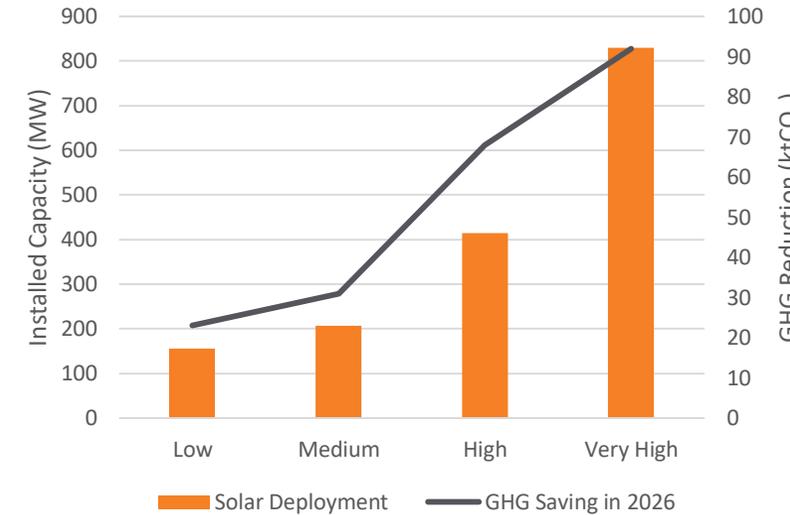
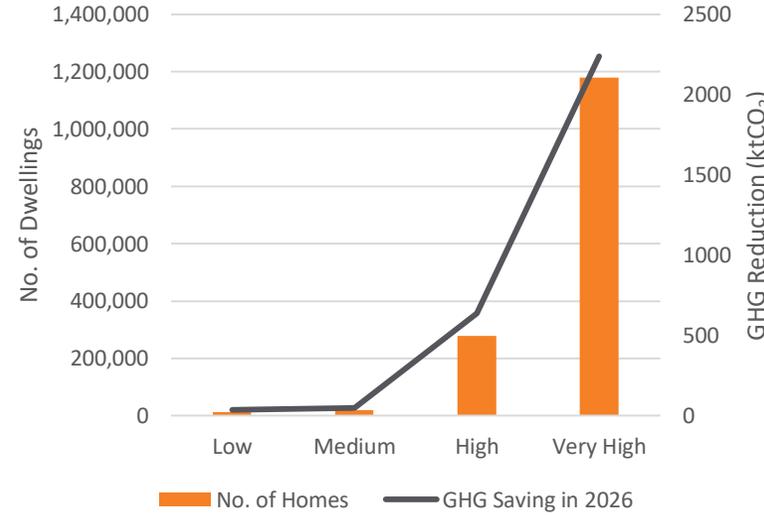
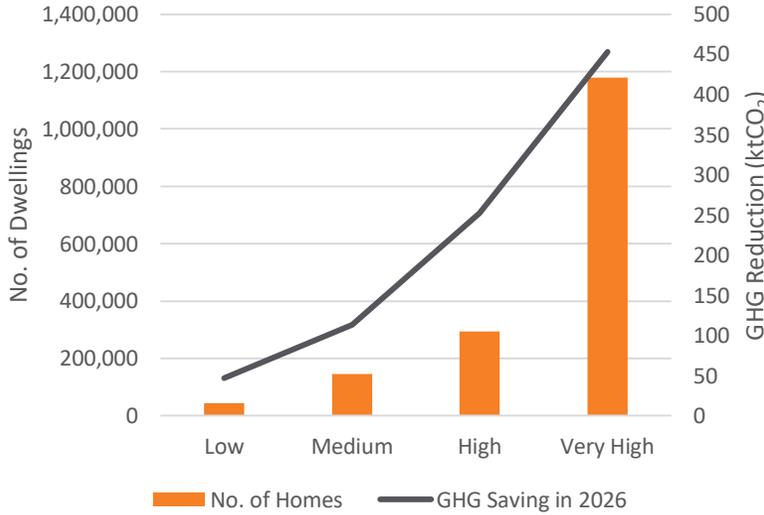
# Goal 3 – Solar PV



The installation of specific measures including **smart meters, smart thermostats, cavity and solid wall insulation, loft insulation, double glazing and behaviour change.**

Alongside energy efficiency measures, the installation of renewable heating (nominally air source heat pump) to provide heating and hot water. Hydrogen as an alternative after 2026.

Microgeneration within homes consisting primary of rooftop solar. Photovoltaics will be the vast majority. Could include storage but this doesn't change the carbon impact.



Goal Level	Deployment to end of 2025	<CO <sub>2</sub> 2026
Low	43,500 dwellings	47kt
Medium	146,000 dwellings	113kt
High	289,000 dwellings	252kt
Very High	1,178,260 dwellings	453kt

Goal Level	Deployment to end of 2025	<CO <sub>2</sub> 2026
Low	14,000 dwellings	37kt
Medium	20,000 dwellings	51kt
High	278,000 dwellings	639kt
Very High	1,178,260 dwellings	2,238kt

Goal Level	Deployment to end of 2025	<CO <sub>2</sub> 2026
Low	156MW of PV	23kt
Medium	207MW of PV	31kt
High	415MW of PV	68kt
Very High	830MW of PV	92kt

# Goal 4 – Energy Efficiency



# Goal 5 – Heating Retrofit



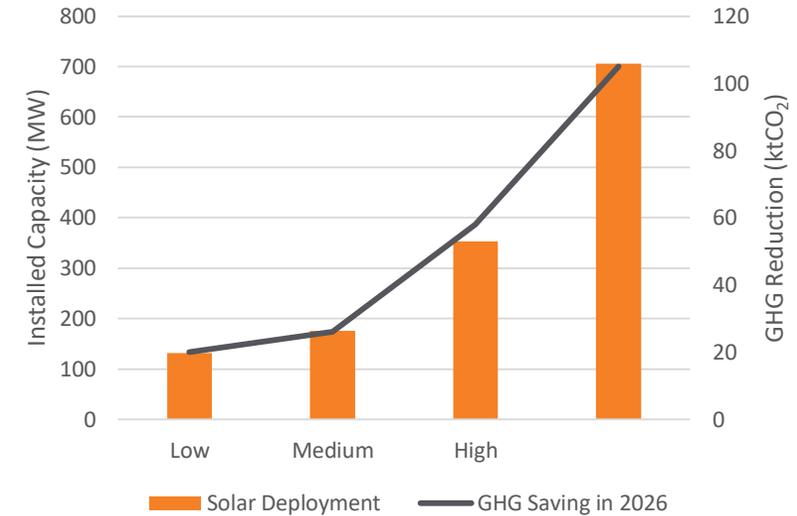
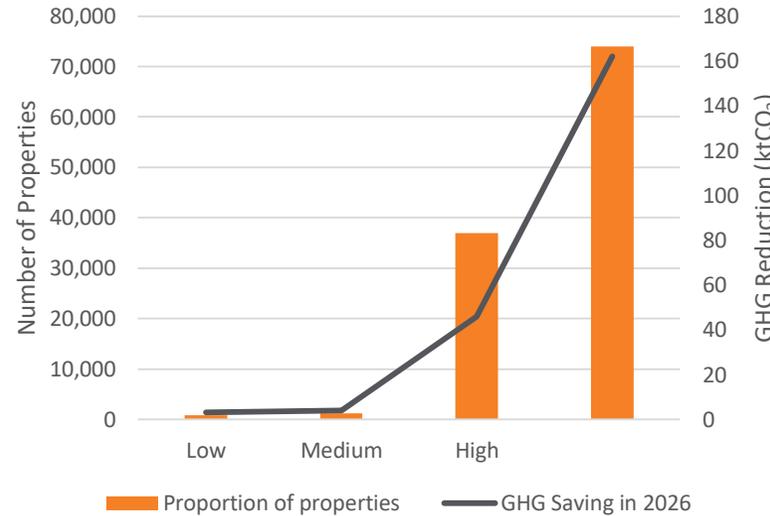
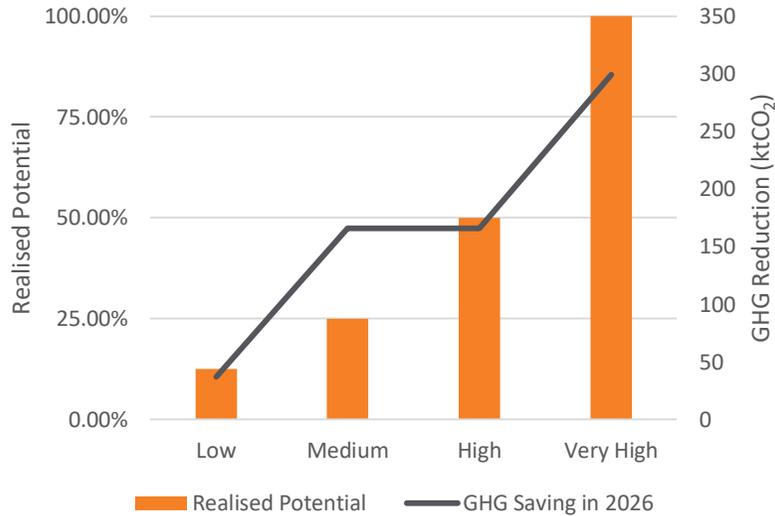
# Goal 6 – Solar PV



Energy efficiency measures applied to offices, retail and other commercial property types, as identified in the Building Energy Efficiency Surveys

Applied to a 26,000 retail and 18,000 offices (excluding industry). Replacement of fossil fuel boilers with nominally air source heat pumps. Heat pump COP of 2.75

Rooftop Solar PV on commercial properties. Photovoltaics will be more beneficial in the shorter term as the grid is still comparatively high carbon



Goal Level	Deployment to end of 2025	<CO <sub>2</sub> 2026
Low	12.5% potential	37kt
Medium	25% potential	166kt
High	50% potential	166kt
Very High	100% potential	299kt

Goal Level	Deployment to end of 2025	<CO <sub>2</sub> 2026
Low	870 buildings	3kt
Medium	1246 buildings	4kt
High	37,000 buildings	46kt
Very High	74,000 buildings	162kt

Goal Level	Deployment to end of 2025	<CO <sub>2</sub> 2026
Low	132 MW of PV	20kt
Medium	176 MW of PV	26kt
High	353 MW of PV	58kt
Very High	705 MW of PV	105kt

Proportion of savings in 2026 (at High goal level) →



# Goal 7 – Energy Efficiency & Fuels

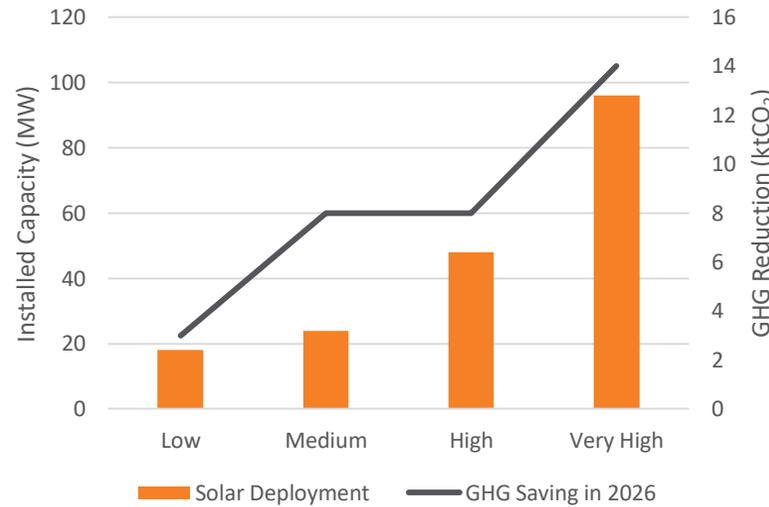
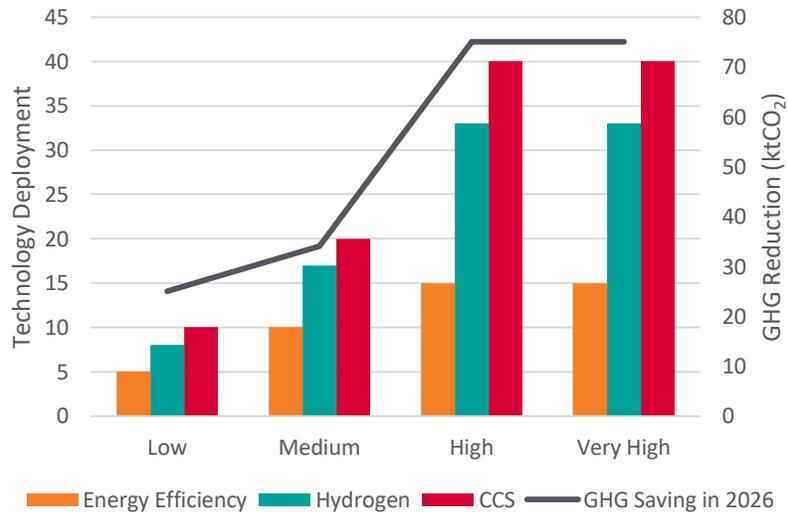


# Goal 8 – Renewables



Covering steel and iron, mineral products, chemicals, mechanical / electrical engineering, vehicles manufactures, textiles, food and beverages, printing, paper and other industries.

Rooftop Solar PV on industrial properties. Other opportunities such as waste to energy also likely, but not captured here.



Goal Level	Description	<CO <sub>2</sub> 2026
Low	5% EE, 8% H <sub>2</sub> , 10% CCS	124kt
Medium	10% EE, 17% H <sub>2</sub> , 20% CCS	114kt
High	15% EE, 33% H <sub>2</sub> , 40% CCS	126kt
Very High	15% EE, 33% H <sub>2</sub> , 40% CCS	126kt

Goal Level	Description	<CO <sub>2</sub> 2026
Low	18 MW of PV	3kt
Medium	24 MW of PV	8kt
High	48 MW of PV	8kt
Very High	96 MW of PV	14kt

Proportion of savings in 2026 (at High goal level) →



### Goal 9 – Avoiding travel



### Goal 10 – Shifting travel



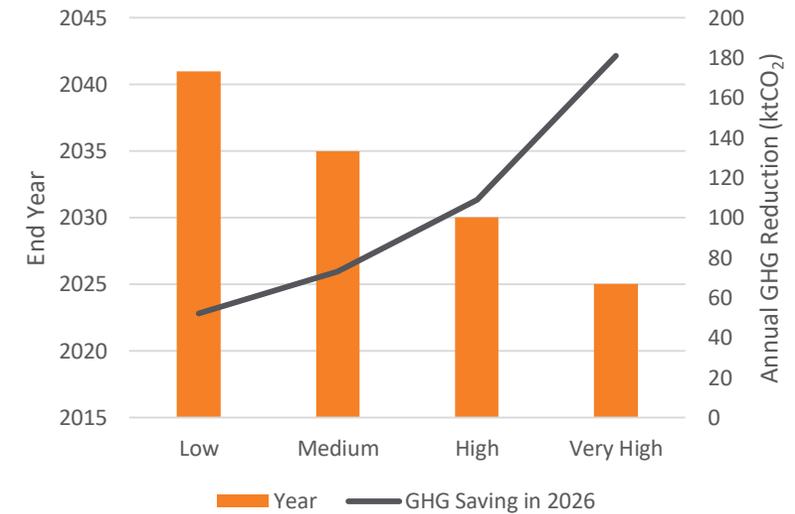
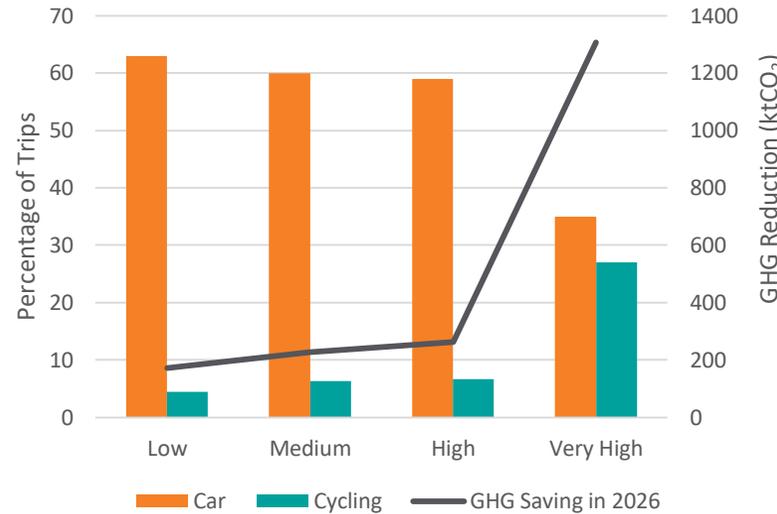
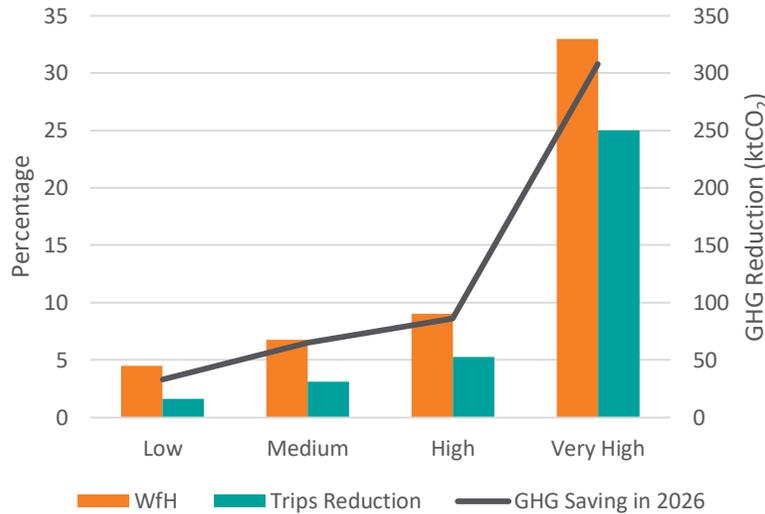
### Goal 11 – Improving passenger service fleets



Increased take up of working from home or working at local hubs. 5-10% work from homes (pre-pandemic levels). Reduction in travel by 25% for retail and business (excluding commuting)

Long term strategy shift in travel in line with city regions such as Munich, Stuttgart and Dusseldorf, where car use accounts for typically 35 - 45% of all journeys, compared to 67% in WMCA.

Mandate the electrification of 21,300 taxis and 2,300 buses throughout the region.



Goal Level	Description	<CO <sub>2</sub> 2026
Low	4.5% people/1.6% red.	33kt
Medium	6.75% people/3.1% red.	65kt
High	9% people/6.25% red.	86kt
Very High	35% people/25% red.	308kt

Goal Level	Description	<CO <sub>2</sub> 2026
Low	Car: 63%, PT: 4.5%, B: 2%	171kt
Medium	Car: 60%, PT: 6.3%, B: 3.1%	228kt
High	Car: 59%, PT: 6.7%, B: 4.1%	262kt
Very High	Car: 35%, PT: 27%, B: 10%	1,306kt

Goal Level	Description	<CO <sub>2</sub> 2026
Low	2041 Target	52kt
Medium	2035 Target	73kt
High	2030 Target	109kt
Very High	2025 Target	181kt

Proportion of savings in 2026 (at High goal level)



## Goal 12 – Improving freight fleets

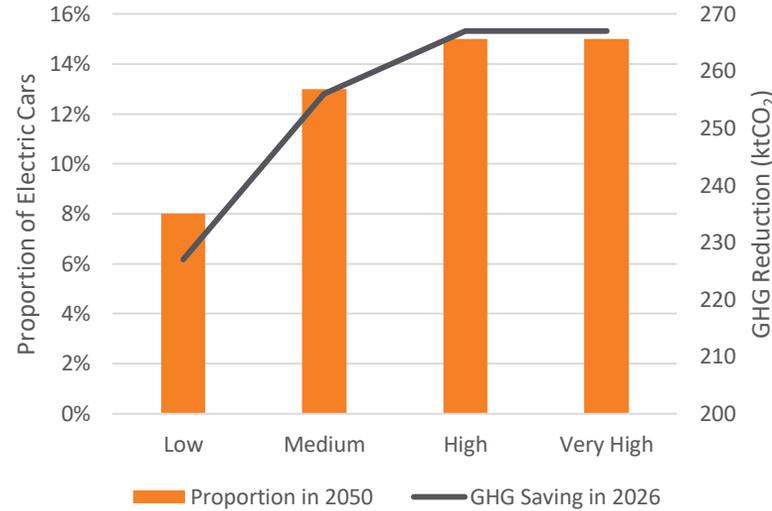
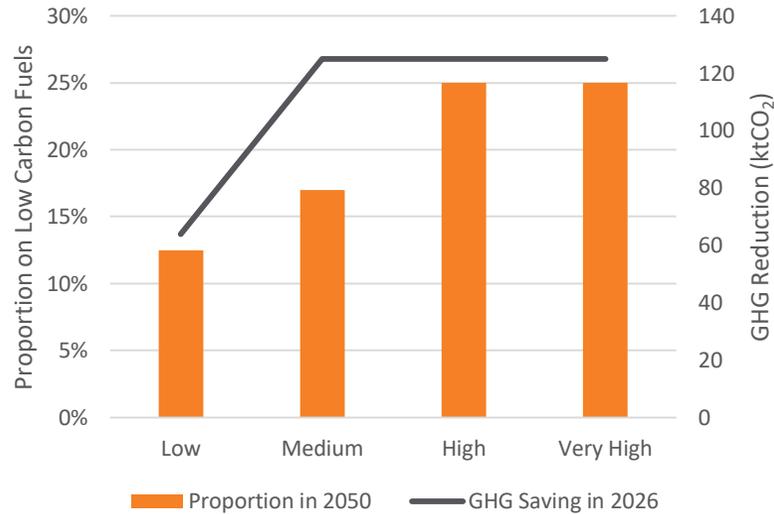


## Goal 13 – Improving private vehicles



In line with Midlands Connect Tool, consider the decarbonisation of HGVs nationwide. Assumed electrification, but realise the solution may be a mix of technologies

An accelerated uptake during the 2020s, ahead of the 2030 ICE Ban, will increase carbon savings in the shorter term. The CCC projections were used as trajectories.



Goal Level	Description	<CO <sub>2</sub> 2026
Low	12.5% of HGVs	64kt
Medium	17% of HGVs	125kt
High	25% of HGVs	125kt
Very High	(Same as High)	125kt

Goal Level	Description	<CO <sub>2</sub> 2026
Low	8% by 2026	175kt
Medium	13% by 2026)	219kt
High	15% by 2026	219kt
Very High	(Same as High)	219kt

Proportion of savings in 2026 (at High goal level) →





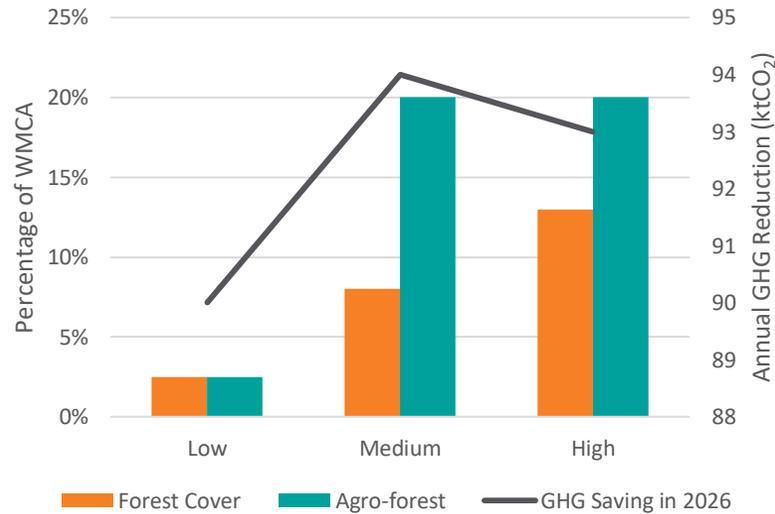
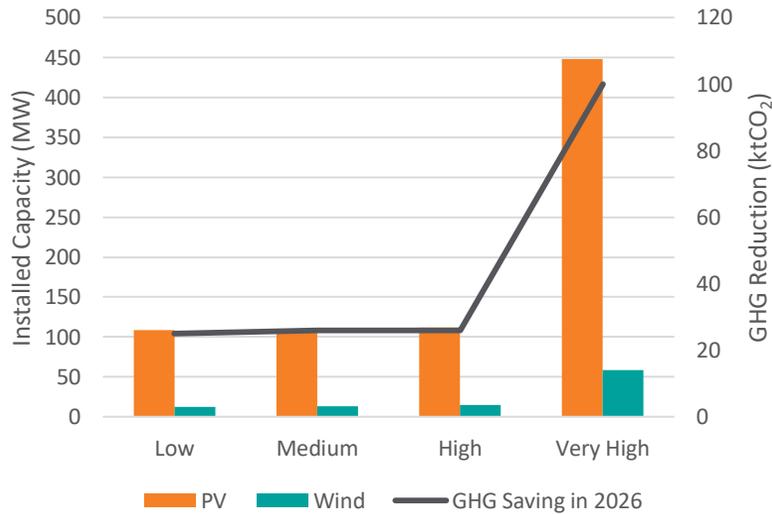
## Goal 14 – Renewables

## Goal 15 – Natural Capital



Utility scale Solar PV and Wind across the region on poorer quality land.  
GIS mapping has been undertaken to understand what area is most suitable.

Enhancing natural capital to sequester carbon. While reducing carbon will be one of the benefits. Wider ecological benefits should be realised as part of this effort.



Goal Level	Description	<CO <sub>2</sub> 2026
Low	109 MW PV / 12.5 MW Wind	25kt
Medium	110 MW PV / 13 MW Wind	26kt
High	112 MW PV / 15 MW Wind	26kt
Very High	448 MW PV / 59 MW Wind	100kt

Goal Level	Description	<CO <sub>2</sub> 2026
Low	– 1 tree per person/2.5% forest cover	15kt
Medium	8% forest cover/20% peri-urban areas	20kt
High	13% forest cover/20% peri-urban areas	32kt
Very High	(Same as High)	32kt

Proportion of savings in 2026 (at High goal level) →



# Marginal abatement cost curve (MACC) of 'Accelerated' scenario to 2041

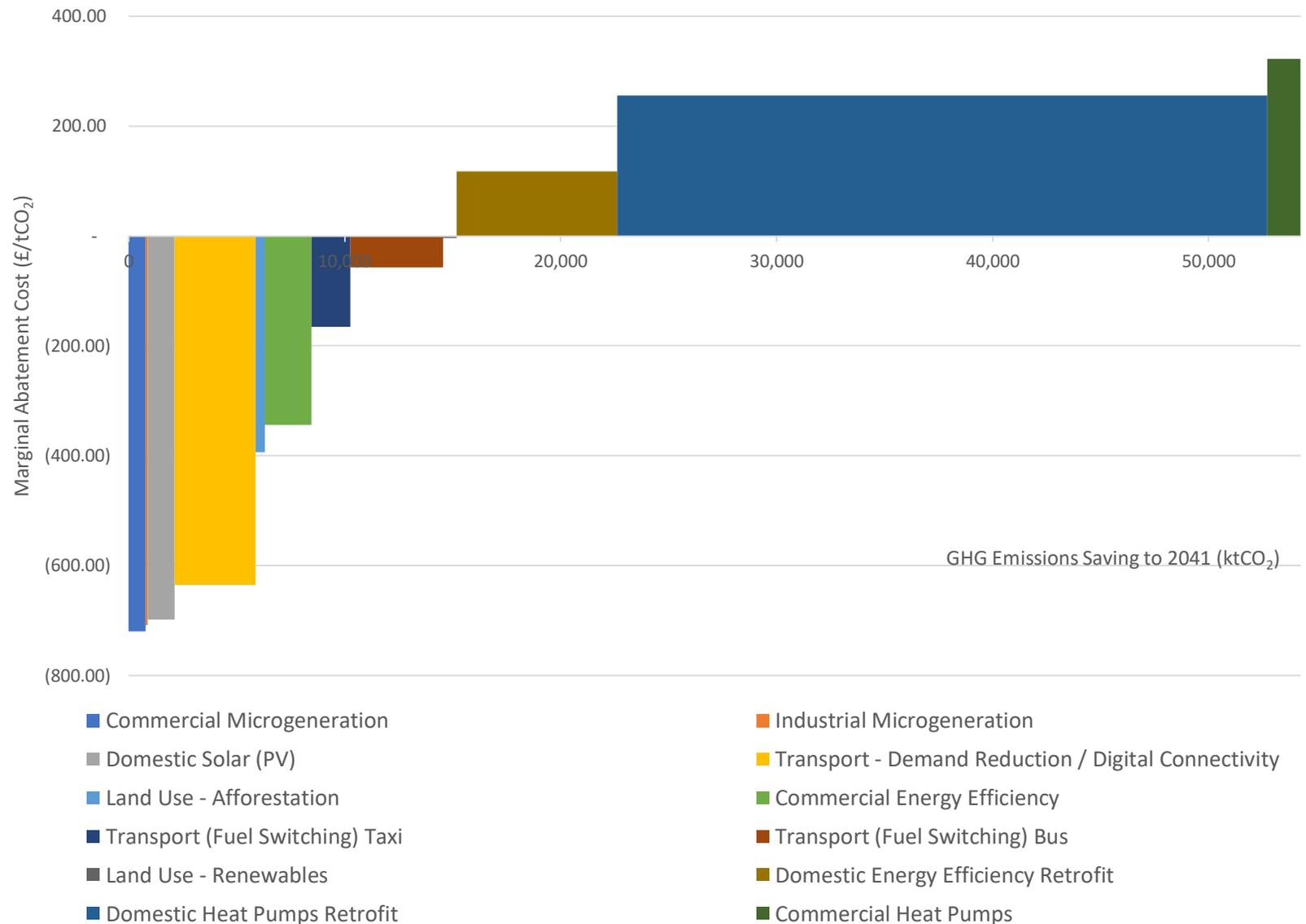
The MACC indicates broadly which measures will be more or less cost effective in terms of emissions reduction. These are ranked left to right.

Economic modelling goes to 2041 to allow time for payback beyond 2026, those some measures may have savings well beyond that.

Areas below the x-axis are those where there is a commercial return on investment; while the width of the bar indicates the potential carbon saving that could be achieved.

Costs do not include the start-up and management of the programme itself (e.g. the resource/ staffing requirements, business case development etc). In addition the investment and savings may be attributed to different parties.

The MACC provides the basis for further business case development, highlighting key projects and roles for the WMCA.



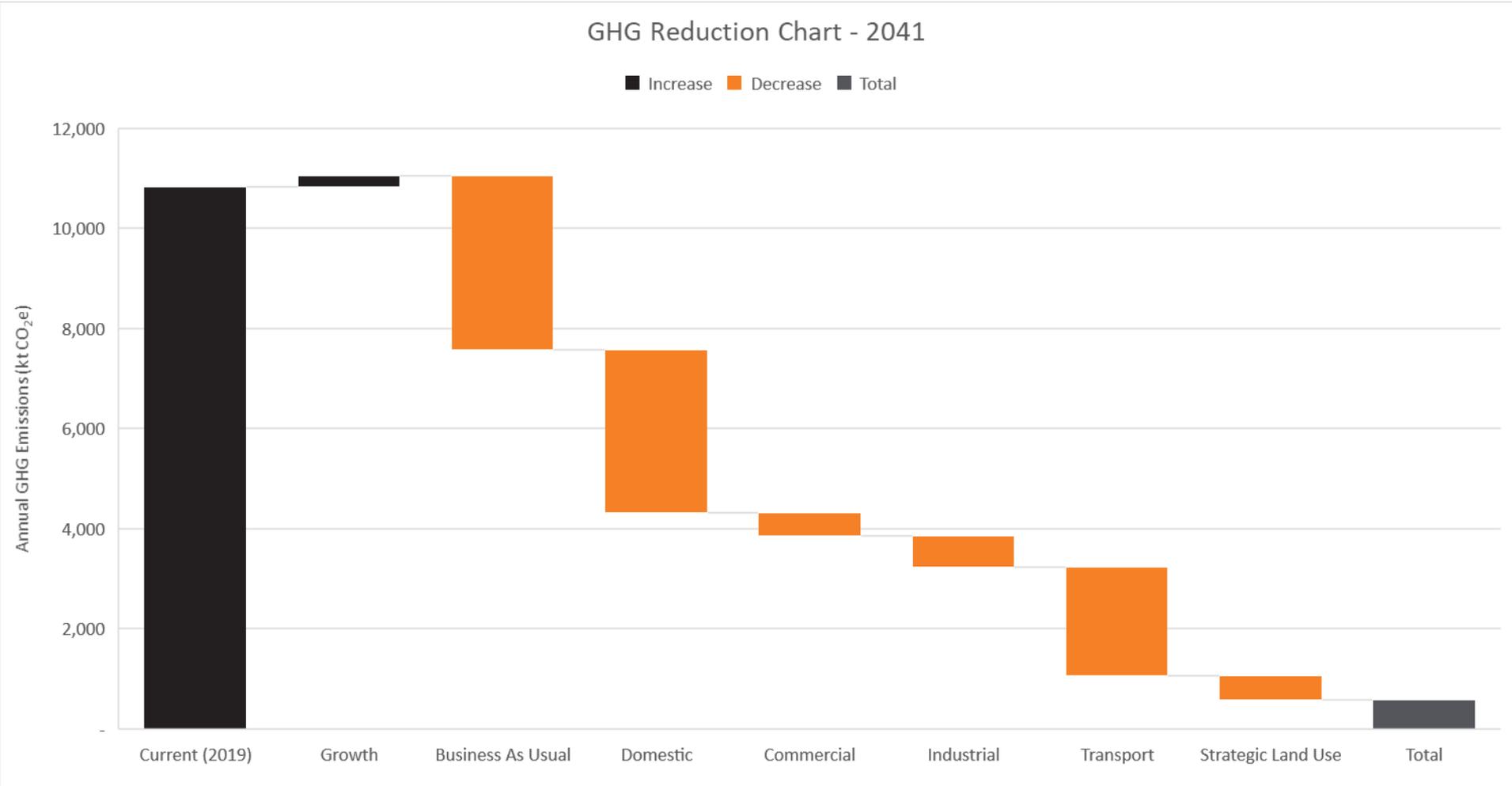
## Summary of investment required and delivery outcome

No.	Measure	Investment to 2026
1	Domestic energy efficiency retrofit	£1,250m
2	Domestic heating retrofit	£2,390m
3	Domestic solar PV	£330m
4	Commercial energy efficiency retrofit	£183m
5	Commercial heating retrofit	£80m
6	Commercial solar PV	£135m
7	Industrial energy efficiency & fuels	Unquantified
8	Industrial renewables	£18m
9	Avoiding travel	£45m
10	Shifting travel	Unquantified
11	Improving passenger service fleets	£178m
12	Improving freight fleets	Unquantified
13	Improving private vehicles	Unquantified
14	Land use (renewables)	£70m
15	Land use (natural capital)	£60m

# Carbon Modelling Results



✓ Modelling shows the region needs to commit to the central 'Accelerated' scenario to deliver a >95% reduction by 2041 – the net zero target for the region is ambitious but achievable



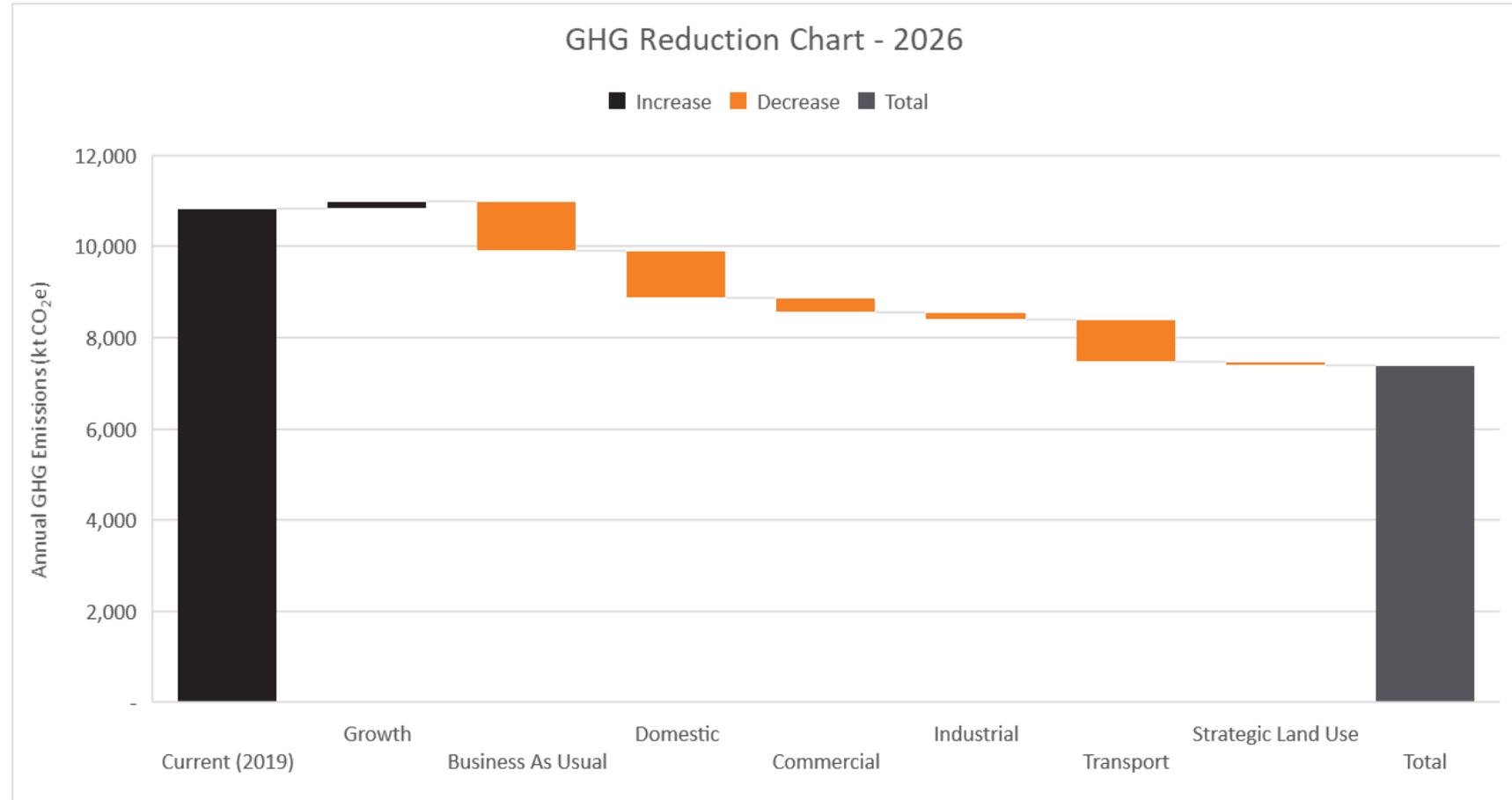
# What does this mean for the first FYP by 2026?

Modelling of the 'Accelerated' scenario shows that a **28% reduction** is possible by 2026.

The region would be emitting **7.8Mt CO<sub>2</sub>** per year.

The suggested Tyndall Centre target for the region to stay within the Paris Commitment is to emit no more than **4.9Mt CO<sub>2</sub>** by 2026.

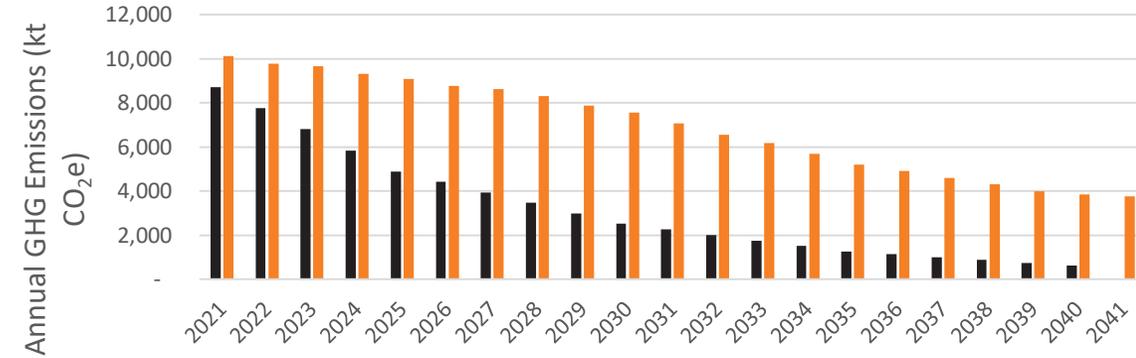
This would require more radical action, some of which are not thought feasible in the timescale due to the sheer scale of delivery and social acceptance of policies that this would require.



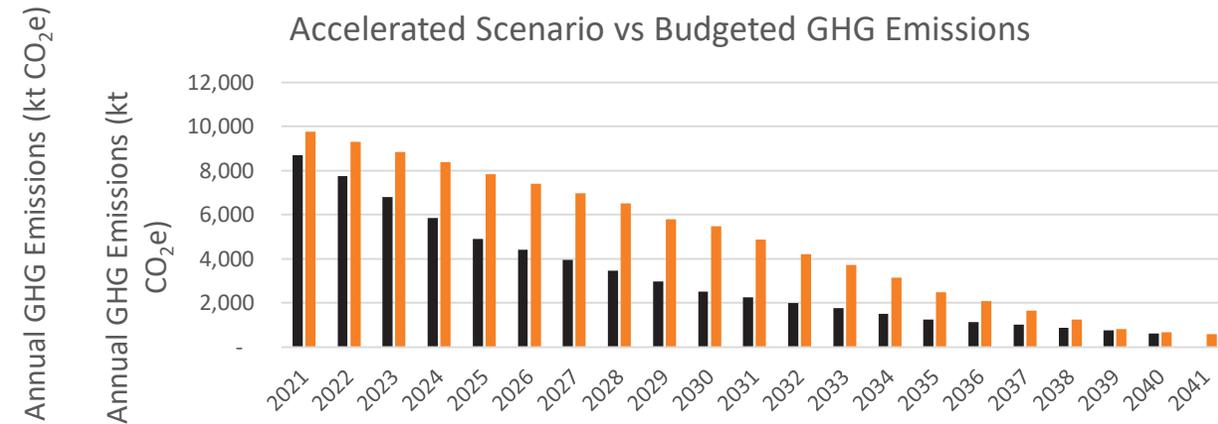
# What we would need to do reach 4.9Mt CO<sub>2</sub> by 2026?

- **Retrofit all 1.1 million homes** by the end of 2025 and install **heat pumps** at each of these dwellings at the same time.
- Retrofit 100% of retail, offices and a range of other non-domestic properties to their **maximum potential**.
- Maximise rooftop solar across domestic, commercial and industrial sites as well as ground mount – **2.1GW potential of solar** to be installed.
- **Electrify** 100% of taxis (21,000 ) and buses (2,300) within the region.
- **Demand management** to encourage reduction in travel, and mode and destination shifting, and to avoid demand rebound.
- **Cutting car share** from 63% of trips to 35%.

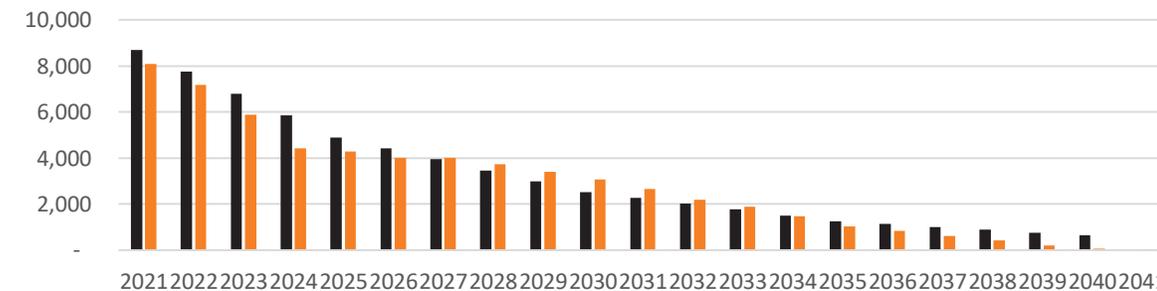
Moderate Scenario vs Budgeted GHG Emissions



Accelerated Scenario vs Budgeted GHG Emissions

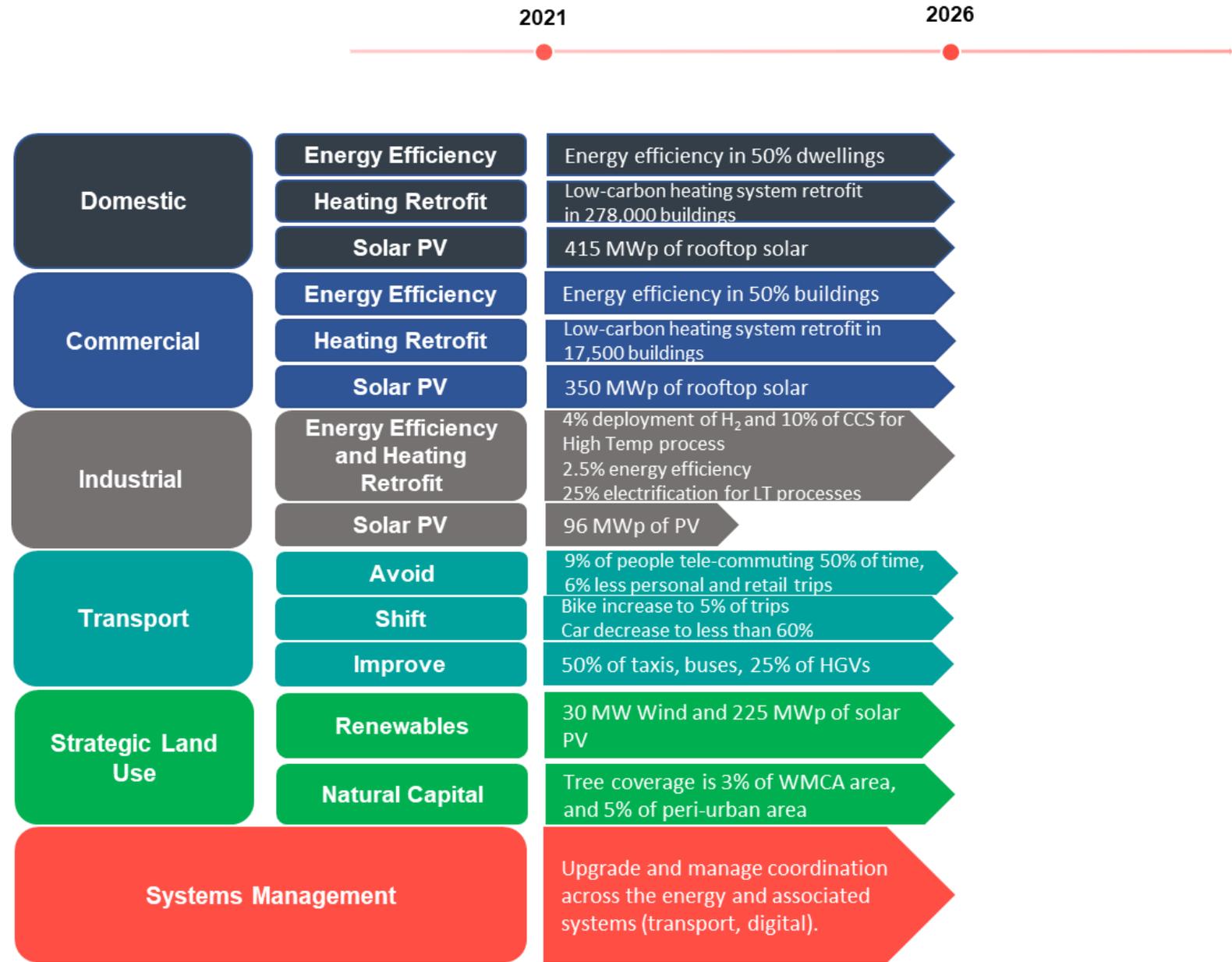


Maximum Scenario vs Budgeted GHG Emissions



# Ambition and Timeline under 'Accelerated' Scenario to 2026

- Given the impetus to decarbonise as soon as possible the report sets out a hugely ambitious but realistic 'Accelerated' to net zero by 2041.
- WMCA recognises the urgency of carbon reduction and will push the region to accelerate net zero delivery in sectors, where feasible, especially where they bring other benefits to people, the economy and our environment.



# What does net zero look like?

Delivering a net zero society will require significant and unprecedented change to how we heat and power our buildings and industry and fuel our transport system. The changes will directly impact people and we need to ensure the transition does not adversely impact anybody.

Where do we need to be...		Where are we now....		
Goal	Deployment required for net zero	Currently installed in West Midlands	Accelerated scenario delivery for 2026	
Domestic	1. Energy efficient homes	1.1m homes (100%)	Smart thermostats at 6% of homes . Smart meters at 31% homes. 27% of homes with cavity walls have them unfilled. 18% of lofts are insulated and easy to treat . 7% of homes do not have double glazing.	289,000 homes
	2. Heating retrofit	1.1m homes (100%)	Almost all homes are on fossil fuel boilers	278,000 dwellings
	3. Solar PV on rooftops	830MWp	Approximately 63MWp to date.	415MWp
Commercial	4. Energy efficiency	100%	Tbc	50% potential
	5. Heating retrofit	74,000 buildings	77% of heating and hot water by gas or oil in offices, similarly 63% of heating and hot water by gas for retail	37,000 buildings
	6. Solar PV on rooftops	705MWp	Approximately 26MWp to date across non-domestic in total	353MW p
Industrial	7. Energy efficiency	15% energy efficiency	Emerging technologies	10% EE, 17% H <sub>2</sub> , 20% CCS
	8. Low carbon heating retrofit	33% deployment of H <sub>2</sub> and 40% CCS for high temp. 100% electrification of low temp	Not yet commercialised technology	17% H <sub>2</sub> , 20% CCS.
	9. Solar PV on rooftops	96MWp	Approximately 26MWp to date across non-domestic in total	96MWp
Transport	10. Avoid	35% people telecommuting 50% of time, 25% less personal / retail trips	5-10% work from homes (pre-pandemic levels)	9% people telecommuting and 6.25% reduction in trips
	11. Improve	100% taxis & buses electrification	~1% of buses	100% electrification by 2030
	12. Shift	Shift to 35% trips by car	65% of trips by car currently	59% trips by car
Land Use	13. Renewables	59MW wind and 448MWp of solar potential	<20MW of solar	15MW wind and 112MWp solar
	14. Natural capital	13% WMCA tree coverage	1% WMCA tree coverage	13% forest cover/20% peri-urban areas

# ALL CHANGE

## Delivery Plan



To enable FYP delivery, the West Midlands Combined Authority will:

**Deliver**

What can the West Midlands Combined Authority lead on or work with others in the region to deliver carbon emissions reduction

**Enable**

How the West Midlands Combined Authority can support others to deliver

**Influence**

Using the West Midlands Combined Authority to influence action by others indirectly

Delivery requires **significant acceleration across all sectors by all stakeholders** if we are to achieve the 2041 target.

- **Local authorities have a key role** to play alongside WMCA and WMCA is seeking joint approaches to deliver at scale and set the conditions for net zero delivery.
- Private and voluntary sector are needed to **collaborate and deliver projects**
- Universities and colleges will need to work with employers to ensure there is no **skills gap**.
- Communities have to come together to meet the challenge and ensure a **just and equitable transition**.
- People will need to make significant changes to their **lifestyles** which will positively impact on their health and wellbeing.

# The Delivery Plan for 2026 - 1/2

	Domestic	Commercial	Industry	Transport
Lead Role and Delivery Route	<p>WMCA to fund business case and Energy Capital lead the work, through Fuel Poverty and Regional Retrofit Steering Group (FRR).</p> <ul style="list-style-type: none"> <li>- Promotion of the campaign and opportunities.</li> <li>- Cross-disciplinary co-ordination team with stakeholders. Managing financial streams</li> <li>- Developing clear single programme for domestic sector and managing and administrating</li> </ul>	<p>WMCA to fund business case and Energy Capital lead the work.</p> <ul style="list-style-type: none"> <li>-Promotion of the campaign and the opportunities to business organisations.</li> <li>-Cross-disciplinary co-ordination team with stakeholders. Managing the financial streams from national government and other incentives</li> <li>-Developing clear single programme for sector and managing and administrating.</li> </ul>	<p>The regional role will be led by Energy Capital, building on the expertise and research developed through work with the Black Country Consortium.</p> <ul style="list-style-type: none"> <li>- Co-ordinating with UK government</li> <li>- Finance – Management of finance, grants, private investment</li> <li>- Co-ordination with industry</li> </ul>	<p>Delivery of the LTP will require action by TfWM in collaboration with partners. They will work with our local partners to establish governance that monitors the policy delivery of all key stakeholders in the area in addition to monitoring the impact of policies.</p>
Investment required to 2026	£4.0bn in first FYP	£0.4 bn gross investment in first FYP	The gross investment cost within the first FYP is difficult to quantify due to the TRL of the proposed interventions	Proposals to Government to go further and faster, with a £2.5bn rolling, five-year single infrastructure package covering £1.5bn of transport investment together with energy and digital interventions.
Stakeholders	Housing associations, local authority housing, homeowners and private landlords, supply chain, public, national government - BEIS	Commercial forums (e.g. Better Building Partnership, supply chain, Federation for Small Businesses), LEPS, Energy Capital, BEIS, WPD	LEPs, Industry, BEIS, Cadent, WPD, Energy Capital	TfWM, Local authorities, Highways England, Private fleet and transport operators, the public, WPD, Energy Capital, DfT, BEIS
Local Authority collaboration	Work with FRR, receive funding, work with installers and householders, lobby for funding. Retrofit own housing stock and zero carbon policy for new build	Work with Energy Capital and LEPS to develop local area energy planning	Work with Energy Capital and LEPS to develop local area energy planning	Work with TfWM as it develops policies for low carbon transport to, from and within the area, and carry out their functions so as to implement those policies.
Next Steps	The Fuel Poverty and Regional Retrofit Group should consider the full business case for this programme.	This work will be lead by Energy Capital in conjunction with the stakeholders identified above.	Energy Capital will lead on this, building on work started in partnership with the Black Country Consortium.	Proposals for Intra-City Transport Fund. Transport Green Paper published Feb 2021, Draft Local Transport Plan consultation, autumn 2021 and adoption in early 2022.

	Land Use – Natural Capital	Land Use - Renewables	Cross-cutting
Lead Role and Delivery Route	<p>This will be led by the Environment Team at the West Midlands Combined Authority:</p> <ul style="list-style-type: none"> <li>- Promotion of the opportunities around tree planting and other nature-based solutions</li> <li>- Co-ordinating with local authorities</li> <li>- Programme Management</li> </ul>	<p>It is proposed that this is led by Energy Capital, working closely with the WMCA Environment Team and local authorities and regional stakeholders to unlock investment opportunities. The routes to delivery may be different for each opportunity but the emphasis will need to be on delivering at pace and scale.</p>	<p>This will be led by the Environment Team at the West Midlands Combined Authority and will include:</p> <ul style="list-style-type: none"> <li>- Management of net zero business pledge</li> <li>- WM2041 behaviour change, working with communications teams and region stakeholders</li> <li>- Programme management, administration and reporting of WM2041 progress, including providing the secretariat function for the WM2041 Net Zero Delivery Board</li> </ul>
Investment & Resources	<p>£60m within first FYP A budget of ~£200k per annum would be appropriate with 2 or 3 staff dedicated to its management, within the wider team.</p>	<p>£50m gross investment within first FYP A budget of ~£200k per annum would be appropriate with 1 or 2 staff dedicated to its management, within the wider team.</p>	<p>Funding to oversee programme delivery within the WMCA Environment Team. Some elements of the programme may attract external funding, for example, the Net Zero Business Pledge.</p>
Stakeholders	<p>Landowners, local authorities, NGOs, business representatives, universities, developers, DEFRA group (to include Natural England, Environment Agency and Forestry Commission) and LEPs.</p>	<p>Landowners, local authorities, investors and developers</p>	<p>Local authorities and key stakeholders such as Sustainability West Midlands to support delivery. All regional stakeholders to be engaged as appropriate</p>
Local Authority collaboration	<p>Work with WMCA and other stakeholders to ensure existing natural capital plans are joined up with cross-boundary opportunities. Lobby gov for funding. Develop policies at local level with natural capital group and a natural capital accounting approach.</p>	<p>Work with Energy Capital to identify available land and rooftops, as well as stakeholder opportunities, to install renewables. Develop preferred route to delivery and business cases where LA owned investment.</p>	<p>There are opportunities to work with the WMCA Environment Team to deliver the cross cutting wok on business engagement, carbon literacy and behaviour change programmes.</p>
Next Steps	<p>The West Midlands Combined Authority should fund the initial management and administration to promote this with others, develop the full business case, co-ordinating with the stakeholders.</p>	<p>The West Midlands Combined Authority should fund the initial management and administration to promote this with others, develop the full business case, co-ordinating with the stakeholders.</p>	<p>The West Midlands Combined Authority should fund the initial management and administration to develop the initiatives.</p>

## Cross-cutting, enabling actions



WMCA will launch a **West Midlands Net Zero Business Pledge** to highlight existing business leadership, build on region's networks and provide support so all businesses know how they can play their part.



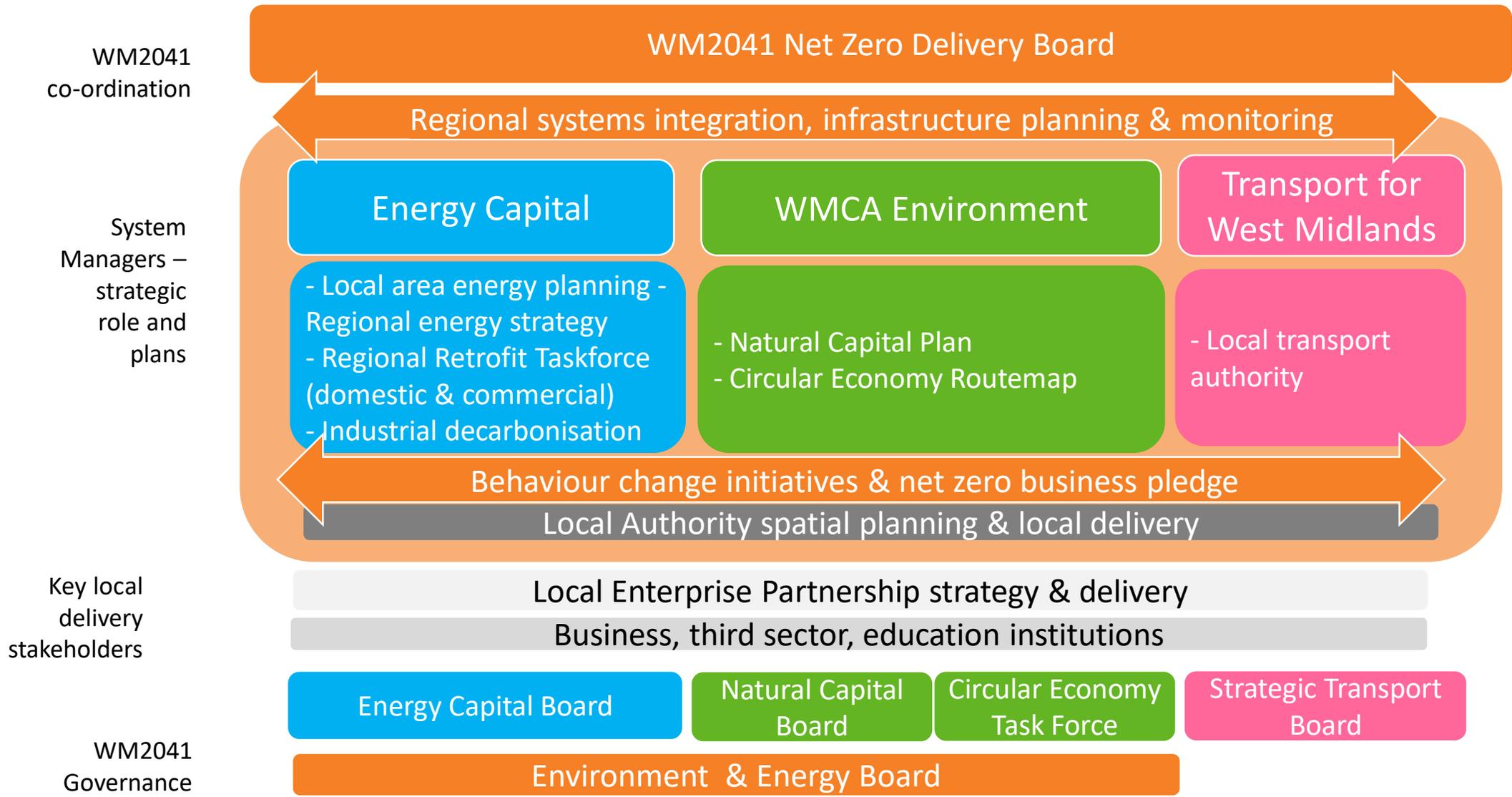
WMCA will commence **Carbon Literacy** training for staff during 2021 to work towards becoming a "carbon literate" organisation. All organisations in the region are encouraged to complete the UN recognised training to make the West Midlands a carbon literate region.

### WM2041 communications & behaviour change

Building on the findings of this plan, WMCA will work with regional stakeholders to develop initiatives and information that will **enable people to make a positive contribution** to net zero and improve their quality of life.

### Green Finance

WMCA will lead on the development of **green finance solutions** to support the delivery of this plan.



## Monitoring and Reporting

There will be an ongoing need to monitor performance and report back findings, which must then be able to inform project planning, specification and resources, including:

- Reviews on delivery and carbon reduction progress
- Data collection, validation and interpretation
- Defining methodology for performance monitoring
- Auditing including governance, risk management and financial control
- Annual monitoring and scrutinise performance and reporting against targets
- Technological assessments and reviews of emerging best practices
- Dissemination of learnings
- Review of changes in national policy
- External/independent auditing

# Jobs & Skills



## Where we are Today

Sector	Number of jobs
Agriculture, forestry and fishing	400
Mining and quarrying	300
Manufacturing	133,000
Electricity, gas, steam and air conditioning supply	5,500
Water supply; sewerage, waste management and remediation activities	10,800
Construction	58,600
Wholesale and retail trade; repair of motor vehicles	183,200
Transportation and storage	66,600
Accommodation and food service activities	81,000
Information and communication	30,000
Financial and insurance activities	42,100
Real estate activities	24,400
Professional, scientific and technical activities	84,700
Administrative and support service activities	135,100
Public administration and defence; compulsory social security	50,000
Education	126,800
Human health and social work activities	178,500
Arts, entertainment and recreation	23,300
Other service activities	24,800

**Automotive , Logistics, Manufacturing** have shaped the sub-regional economy

- **170,000 jobs** in **Industry**
- **116,000 jobs** in **Transport** related roles
- **17,000 jobs** in **Energy** sector
- **74,000 jobs** in **Construction** and **Built Environment**

Control of own Adult Education Budget

Significant changes in existing occupations will happen at the **low and medium-skill** levels

New and emerging occupations will require **higher-level qualifications**

# Green and low carbon skills

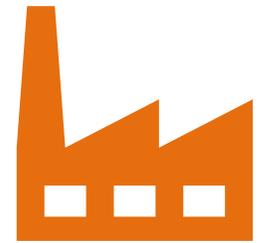
1. **Low-carbon electricity:** Wind power, solar PV, hydropower, nuclear, CCS
2. **Low-carbon heat:** Renewable heat, heat networks and CHP
3. **Alternative fuel:** Bioenergy and hydrogen production
4. **Energy efficient products:** Insulation, lighting, monitoring and control systems
5. **Low-carbon services:** Low-carbon financial, IT, and advisory services
6. **Low-emission vehicles & infrastructure:** Low-emission vehicles & infrastructure, fuel cells and energy storage systems

Around half of **automotive** companies produce vehicle components in the West Midlands

Increased demand for **electric cars** will increase jobs in West Midlands - existing manufacturing capacity

Most jobs created in the WMCA will be in manufacturing low emission vehicles, battery packs and modules in giga factories situated near existing production sites. Wider mobility services and products may also play a role and affect demand for new vehicles and create opportunities for employment in the wider mobility sector.

Also install low carbon heating technologies, energy efficiency products and solar installations



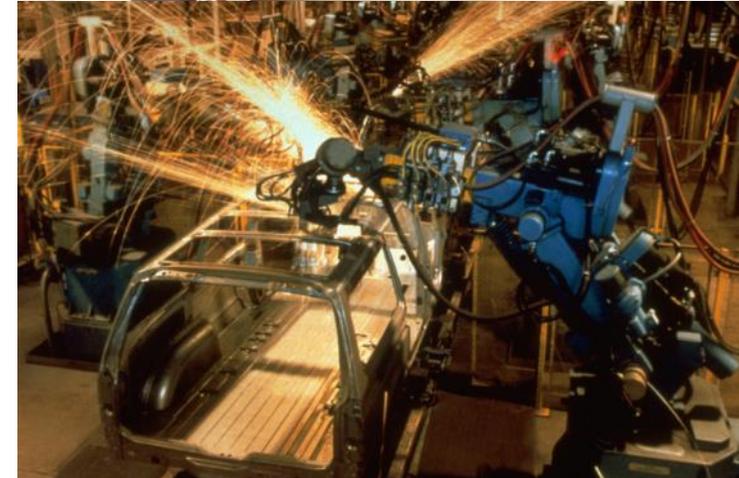
# New Jobs Created...

Sector	Goals	Jobs created
Domestic	Energy Efficiency	Retrofit coordinators, installers and designers
	Fuel Switching	Heat pump installers
	Microgeneration	Solar PV installers
Commercial	Energy Efficiency	Retrofit coordinators, installers and designers
	Fuel Switching	Heat pump installers
	Microgeneration	Solar PV installers
Industry	Energy Efficiency and Fuel Switching	Retrofit coordinators, installers and designers, Heat pump installers
	Microgeneration	Solar PV installers
Transport	Demand Reduction (WFH)	Digital skills, jobs in more rural areas in local workspace hubs, goods deliveries
	Fuel Switching (HGVs)	Hydrogen, Electric vehicle manufactures
	Fuel Switching (Buses, Taxis)	Petrol and diesel engine manufacturers
	Demand Reduction (Trips)	Increase in LGV services and driver from more deliveries
	Mode Shift	Increased public transport operators & and wider mobility services and products
	EV Uptake	EV vehicle manufacturing
Land Use	Renewables	Solar and wind installers
	Natural Capital	Tree planters, ecologists, environmental managers, woodland managers



# Others Lost...

Sector	Goals	Jobs lost
Domestic	Energy Efficiency	
	Fuel Switching	Gas boiler maintenance repairs
	Microgeneration	
Commercial	Energy Efficiency	
	Fuel Switching	Gas boiler maintenance repairs and gas transmission
	Microgeneration	
Industry	Energy Efficiency and Fuel Switching	
	Microgeneration	
Transport	Demand Reduction (WFH)	Reduced demand for City services such as food and beverage stores Vehicle manufacturers
	Fuel Switching (HGVs)	Petrol and diesel engine manufacturers
	Fuel Switching (Buses, Taxis)	Petrol and diesel engine manufacturers
	Demand Reduction (Trips)	Vehicle manufacturers
	Mode Shift	Vehicle manufacturers
	EV Uptake	Petrol and diesel vehicle manufacturing
Land Use	Renewables	
	Natural Capital	



# A big opportunity for the region

Sector	Intervention	Net jobs created by 2026	Net jobs created by 2041
Domestic	Energy Efficiency	5,500	18,800
	Fuel Switching (Heat pumps)	6,900	23,500
	Microgeneration	1,800	7,900
Commercial	Energy Efficiency	500	2,200
	Fuel Switching (Heat pumps)	500	2,200
	Microgeneration	100	600
Industry	Energy Efficiency	10	200
	Microgeneration	10	100
Transport	Fuel Switching (HGVs)	0	400
	Fuel Switching (Buses, Taxis)	500	800
	Demand Reduction (Trips)	40	120
	Mode shift	1,500	1,500
	Electric Vehicles	3,400	32,800
Land Use	Renewables	40	600
	Natural Capital	200	700

- A real need for **skills & apprentices**
- Potential for **21,000** jobs to be created by 2026
- Potential for another **71,000** jobs to be created by 2041
- **140,000** jobs need to reskill as result of transition (11.1%)
- **143,500** jobs are aligned to net zero transition (11.5%)
- **283,000** total jobs linked to transition (22.5%)
  - Manufacturing
  - Transport
  - Construction
  - Electrical, plumbing and other building services
  - Energy generation, transmission and distribution
  - Water collection, treatment and supply
  - Sewerage and waste collection

# What does it mean for people?

**Who is Amelia?** Amelia (pronouns: she/her) is in her early thirties working in the professional services industry. She lives in the West Midlands with her partner at their two bedroom home which they own together.

## Early Morning

**7:30 AM**

Amelia wakes up in her warm home that she has fully retrofitted with loft and wall insulation and new glazing. She no longer has to worry about condensation covered windows or draughts.

**7:55 AM**

After breakfast she walks over to her home office, with planning permission from the council she no longer has to work from her dining table!



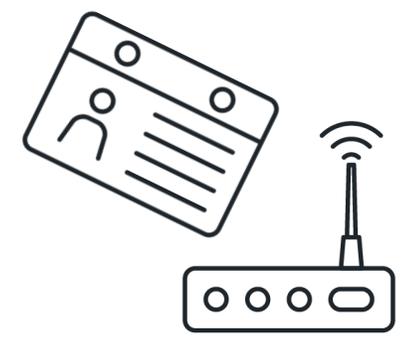
## Mid-Morning

**8:00 AM**

Amelia works flexibly from home and no longer commutes every day. She uses the extra time to start work early and run errands at lunchtime.

**8:05 AM**

Everyone in the street now has ultra-fast broadband so teleconferencing is a breeze, even when her partner is also connected.



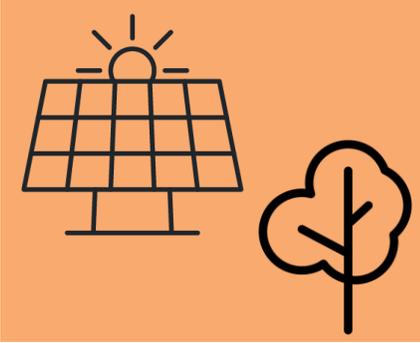
## Midday

**12:30 PM**

It's a bright sunny day so the rooftop solar panels are generating all of the electricity the home needs. Amelia puts the washing machine on a low temperature wash to take full advantage.

**1:00 PM**

Amelia stops for lunch in the new community pocket park and then heads round the corner to collect some parcels from her local collection hub.



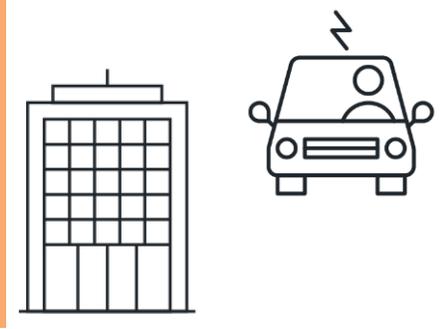
## Afternoon

**1:30 PM**

Amelia has a busy afternoon so she heads to a flexible office space her company has rented. Once she finishes meetings Amelia makes the final arrangements for a community tree planting event at the weekend.

**5:30 PM**

There are plenty of electric taxis close by, but instead she rents a bike and uses the newly installed cycle lanes with her parcels in her backpack.



## Evening

**6:00 PM**

Dropping off the bike Amelia opens her phone and turns up the home temperature using her smart thermostat which connects to the heat pump.

**9:00 PM**

After dinner, she logs on to the college website to view the new modules available. Amelia is learning new skills to meet the demands of her business clients who want to reduce their carbon impact and improve their competitiveness.



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