WM2041 – Five Year Plan 2021-26

Executive Summary

West Midlands Combined Authority

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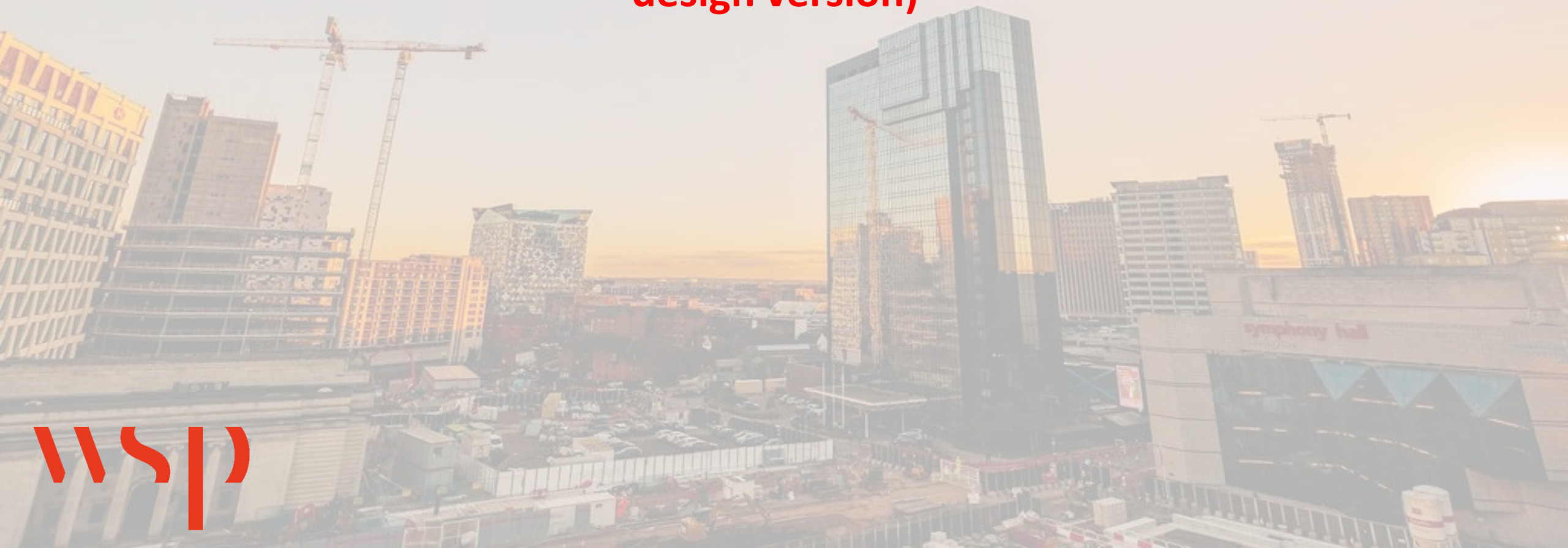
(awaiting the final design version)



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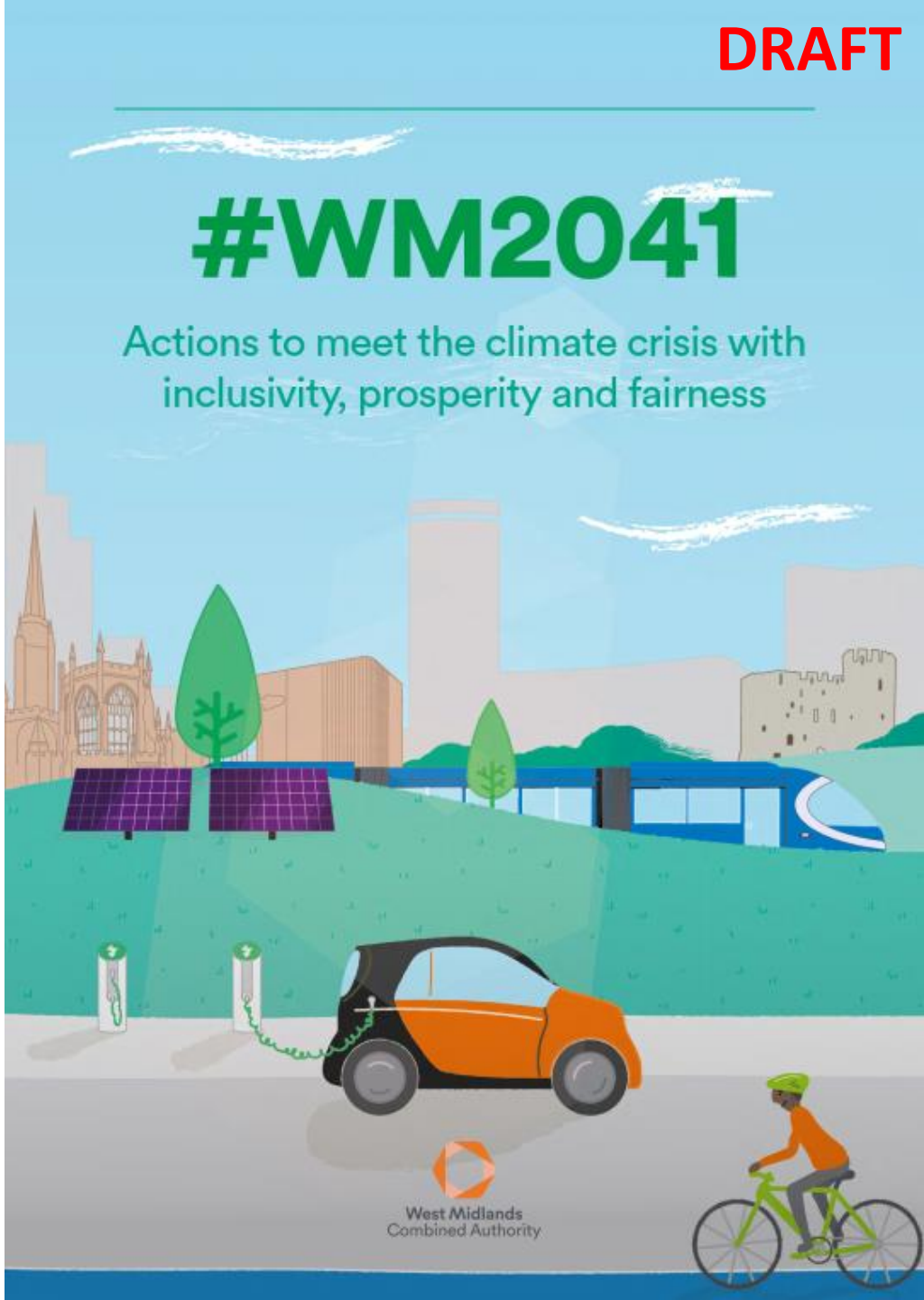
This summary of the first five year plan sets out how the West Midlands Combined Authority area can start to deliver net zero carbon emissions by 2041. It covers:

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

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In 2019 the West Midlands Combined Authority (WMCA) set the region a target to be net zero by 2041 and meet 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, delivery across domestic, commercial, industrial, transport and land use sectors could result in a **33% reduction by 2026 (against 2016) 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 2041.**
- 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 **£4.3bn 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.

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1. Set up a **Regional Retrofit Taskforce** to work with stakeholders to unlock investment to deliver energy efficient homes for up to 294,000 dwellings, with low carbon heating in 292,000, at a total cost of £3.2bn, reducing energy bills, fuel poverty and creating jobs.

2. Unlock investment of up to £70m in land based renewables and £483m on rooftop PV by 2026.

3. Energy Capital will support local authorities, LEPs and stakeholders to undertake and implement local area energy planning, 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, positioned as a global leader in the net zero transition as part of the WM industrial strategy.

5. Support changes in the way we travel through reduction in car usage, and a much higher modal share of public transport and cycling. TfWM 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 an updated LTP.

6. Implement the **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 as well as a **Net Zero Citizens' Panel and behaviour change programme.**

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 up to 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.

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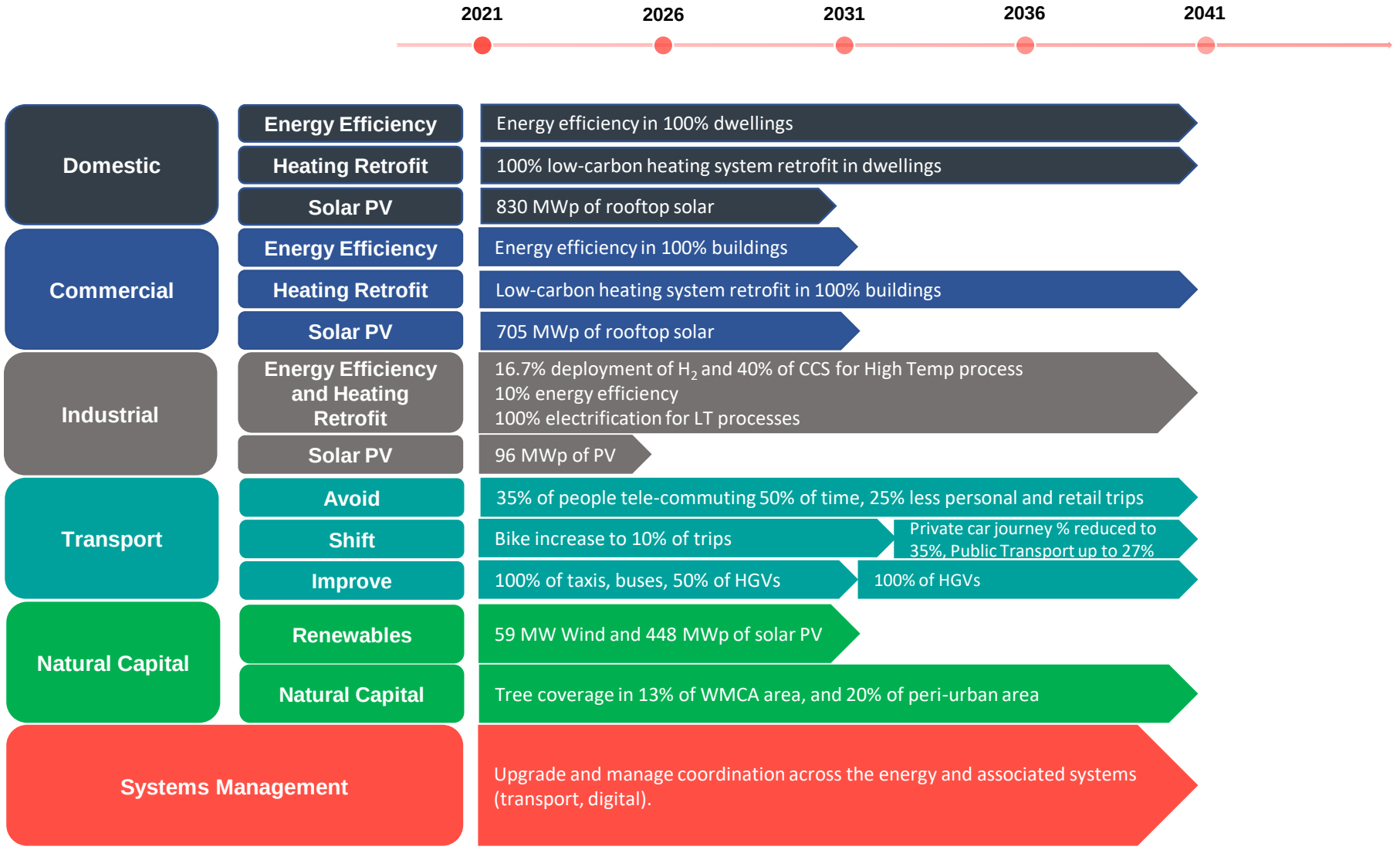
Timeline of Actions under ‘Accelerated’ Scenario to 2041



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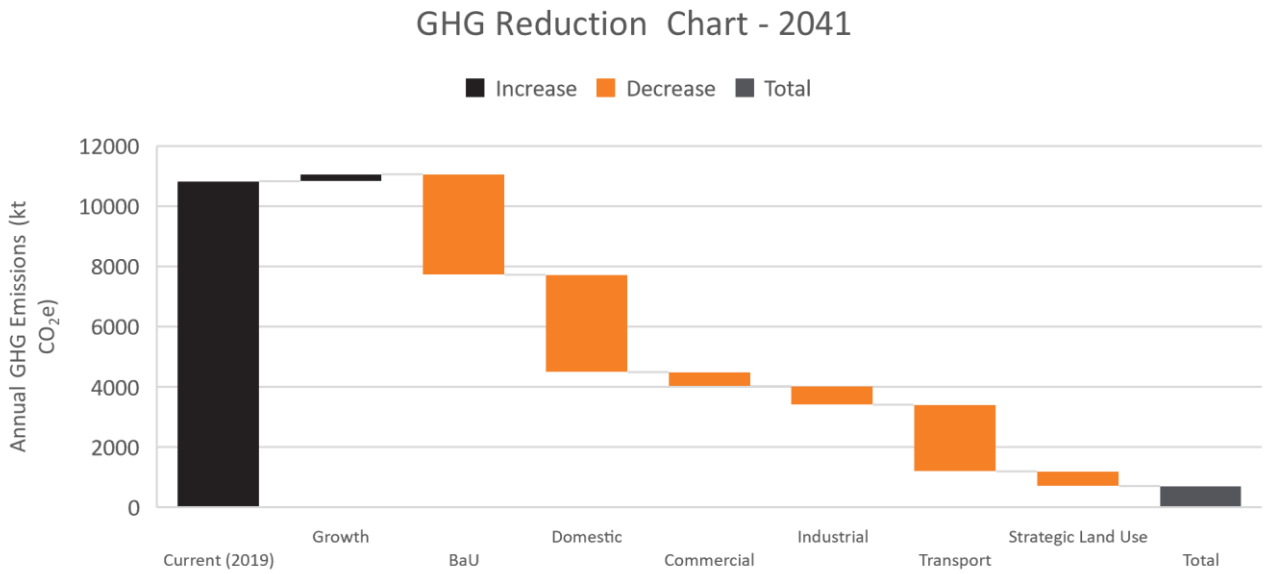
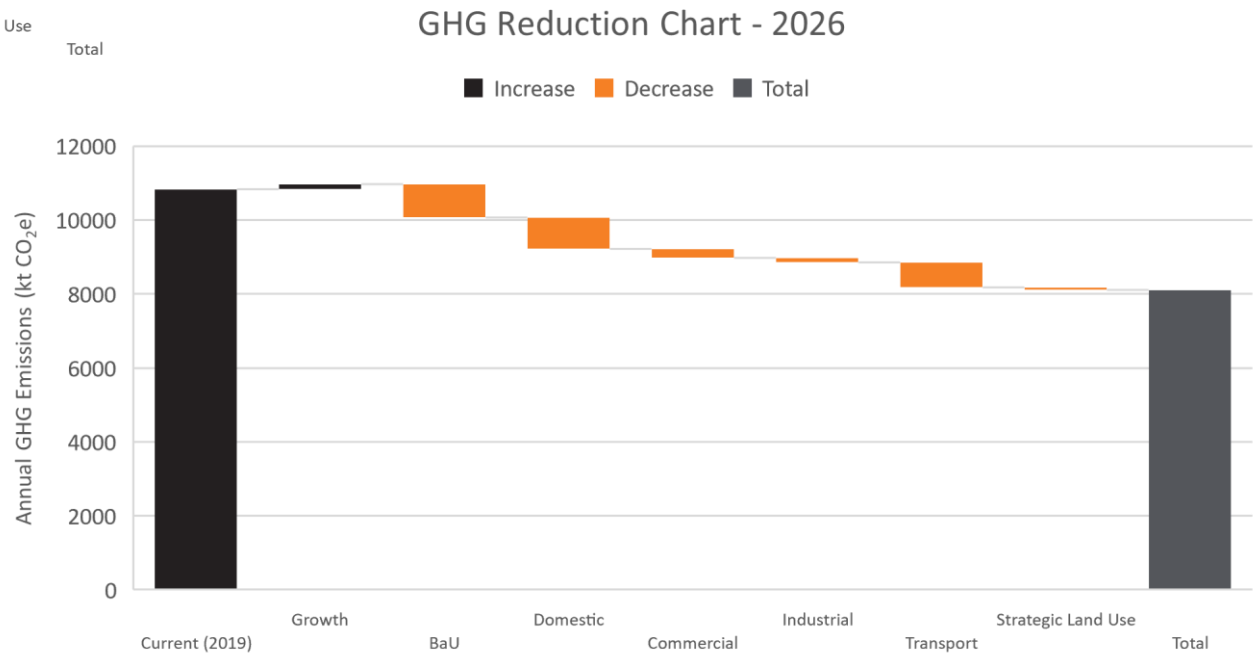
CO_2 Modelling results for 2041 and 2026 (Accelerated Scenario)



✓ Modelling shows implementing all goals gives a **94% reduction by 2041 – net zero is realistic**

The 'accelerated' scenario results in a **33% reduction to 8.1 $MtCO_2$ per year by 2026** (against a 2016 baseline).

Carbon modelling shows that there is **a gap between what is technically possible and socially tolerable** and the Tyndall target of 4.9$MtCO_2$ per year by 2026 .



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Background

West Midlands Combined Authority

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Background

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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

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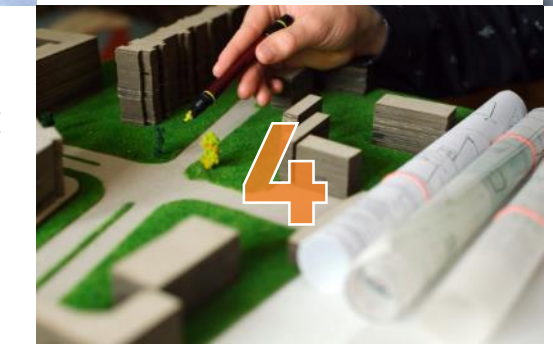
The original WM2041 plan (published in January 2020) suggested that becoming zero carbon needed to take account of wider social, economic and environmental principles. These are:

Invest in the resilience of our places

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

Change our economy without leaving anyone behind

Use our industrial past to create a new future



Decouple prosperity from the consumption of energy and resources

Alignment with the UN Sustainable Development Goals

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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:

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Evidence based 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.

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Where are we now?

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About the West Midlands Combined Authority region

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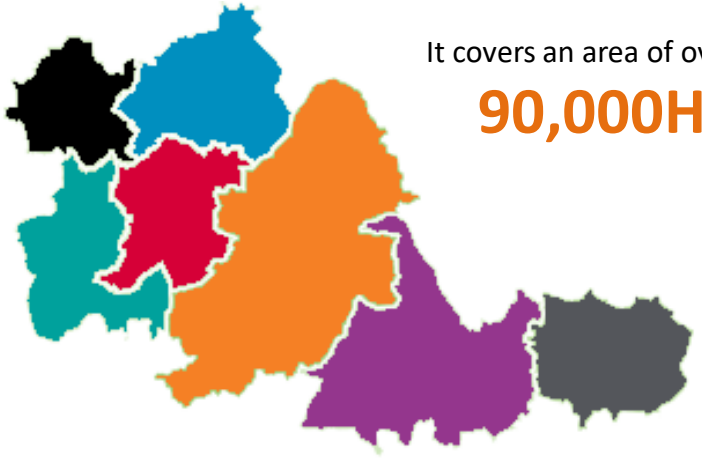


It covers an area of over **90,000Ha**

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

2.9m people in **1.15 million homes**

88,600 businesses across the seven authorities

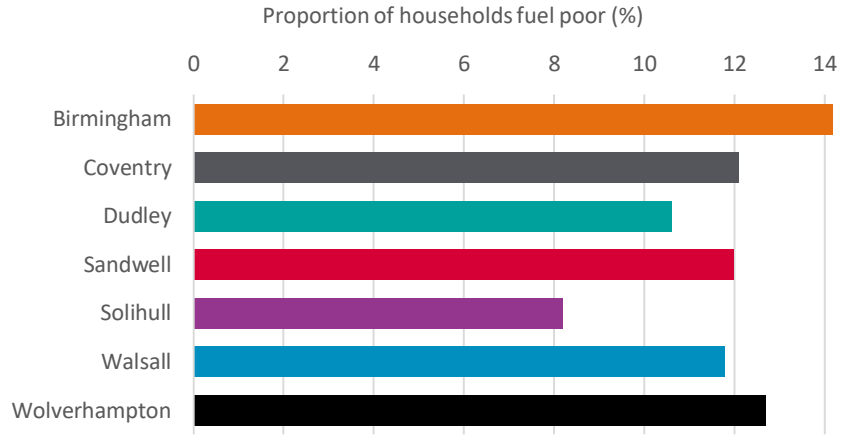
78,400 businesses employing **fewer than 10 people** with a similar number turning over **less than £1million**

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

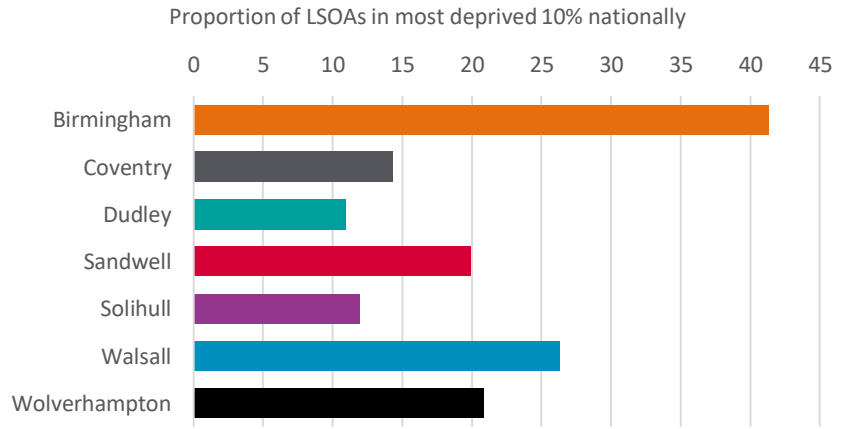
1.4 million cars registered in the West Midlands Combined Authority (including 32,000 ultra low emissions vehicles)

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'**

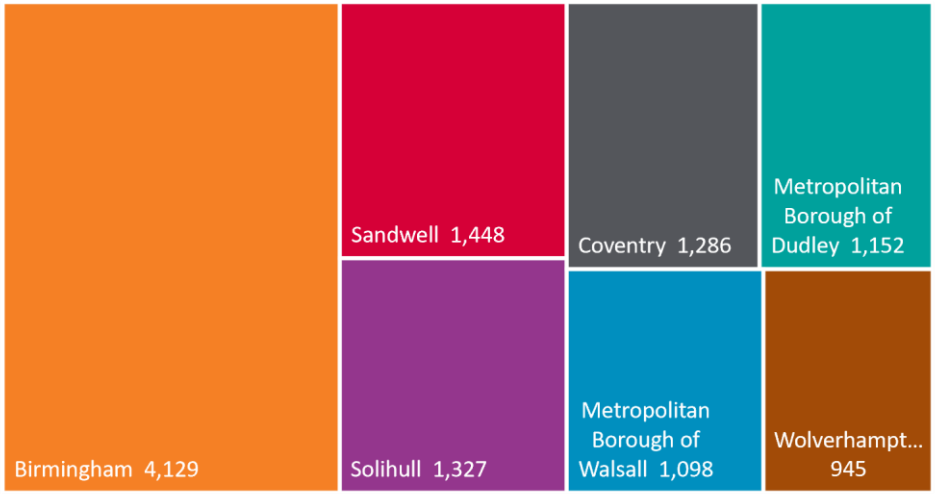


There is significant **variation across the seven local authorities** including the levels of fuel poverty (the national average for fuel poverty is 10.3%) and in the indices of multiple deprivation



GHG Emissions in the West Midlands Combined Authority

2018 Share of GHG Emissions ($ktCO_2$)

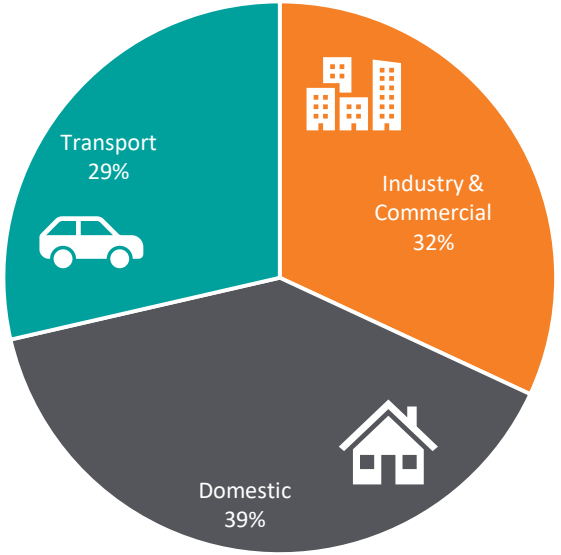


11,385 $ktCO_2$ emitted across the seven boroughs in 2018

This broadly mirrors the split in energy consumption for 2018 of

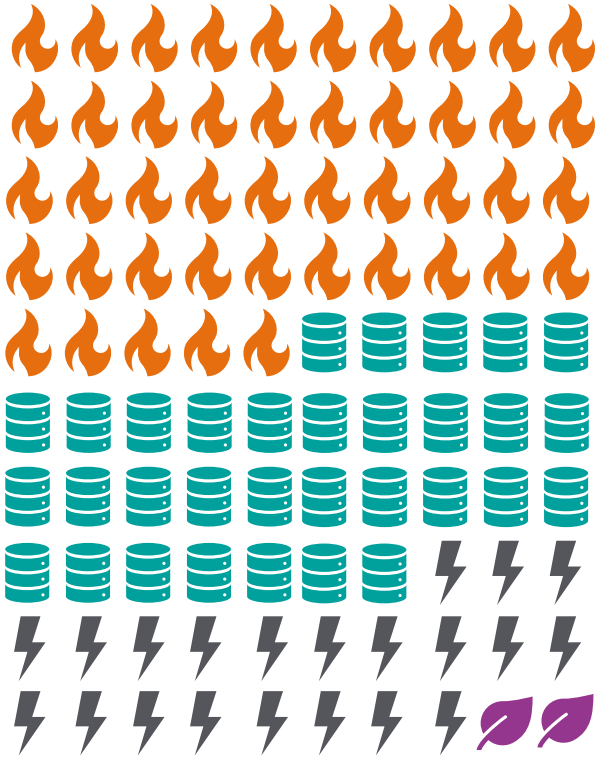
50,238 GWh

Energy Use by End User

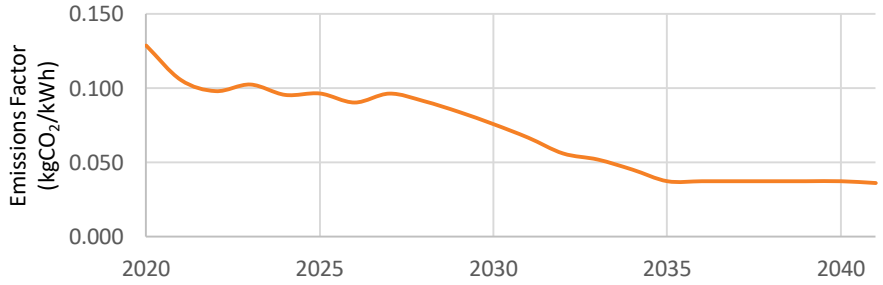


Energy consumption is split evenly between Domestic, Commercial & Industrial and Transport

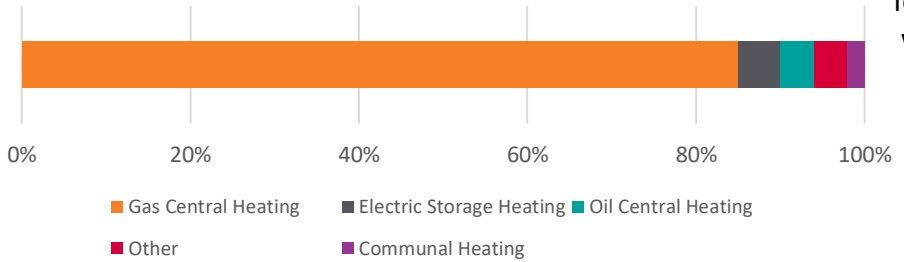
45% of energy consumption is gas,
32% from petroleum products,
21% from electricity and
2% from other sources



Projected Decarbonisation of Electricity



UK Heating Appliances in Homes (%)



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

Scope of carbon emissions in FYP

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- To estimate carbon emissions from the seven constituent local authorities by considering fuel use within the local authority geographic area only. This is a standard method for regional analysis.

- The rationale for this methodology is that:
  - The dataset has been developed for use by local authorities and devolved administrations for targeting and monitoring carbon reduction and energy efficiency policies
  - Sub-national energy use and GHG emissions data are available from central government.
  - There is a level of consistency between the reporting from local authorities and allows for easier comparison and benchmarking.

- The four main fuel categories considered are:
  - Natural gas
  - Electricity
  - Road transport fuels
  - Residual (non-electricity, non-gas and non-road transport) fuels

- This approach does mean, however, that only energy use undertaken within the physical boundary is considered. Other emissions, such as from the release of fluorinated gases, often used in refrigeration, are omitted.

West Midlands Combined Authority area energy consumption

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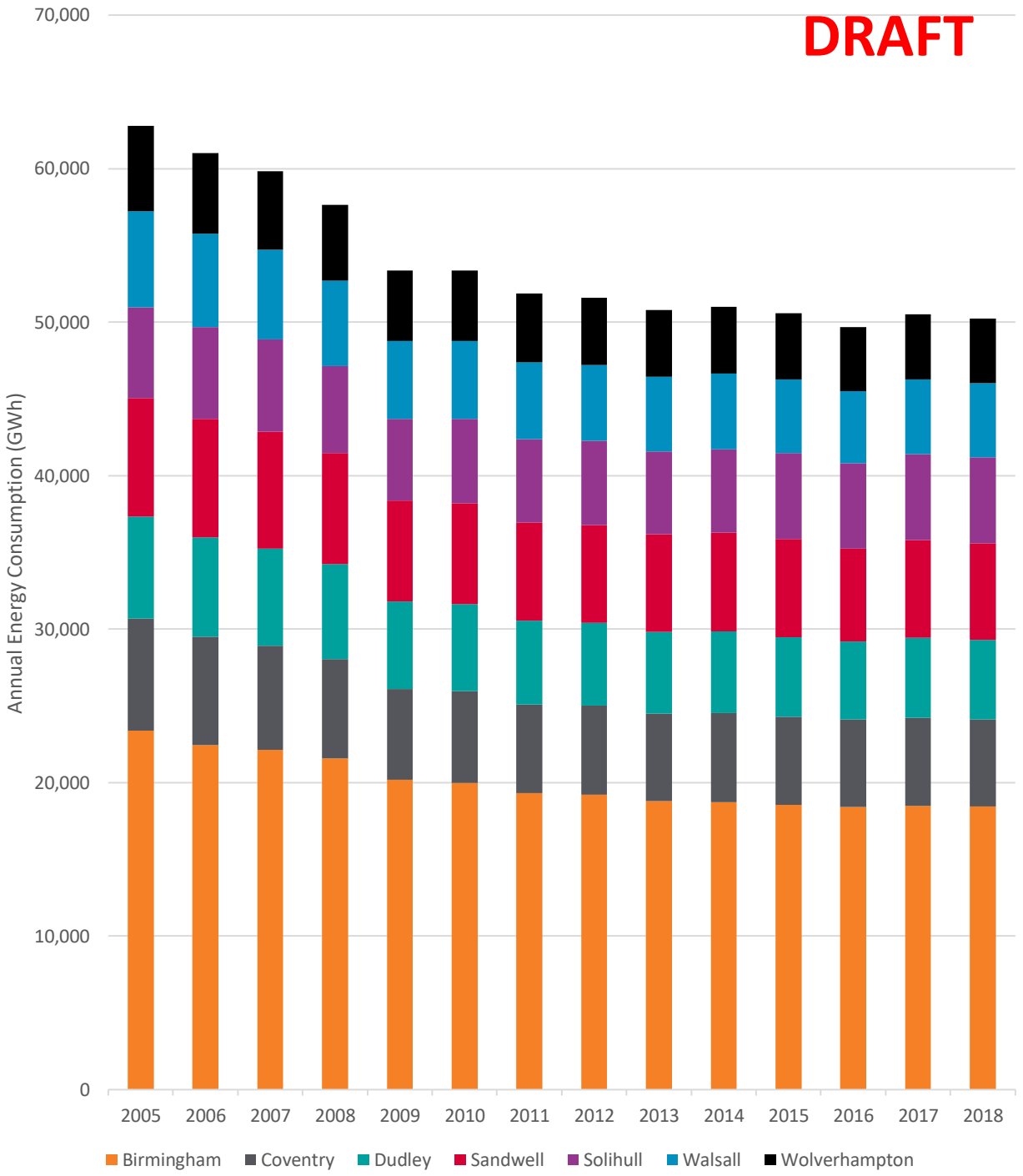
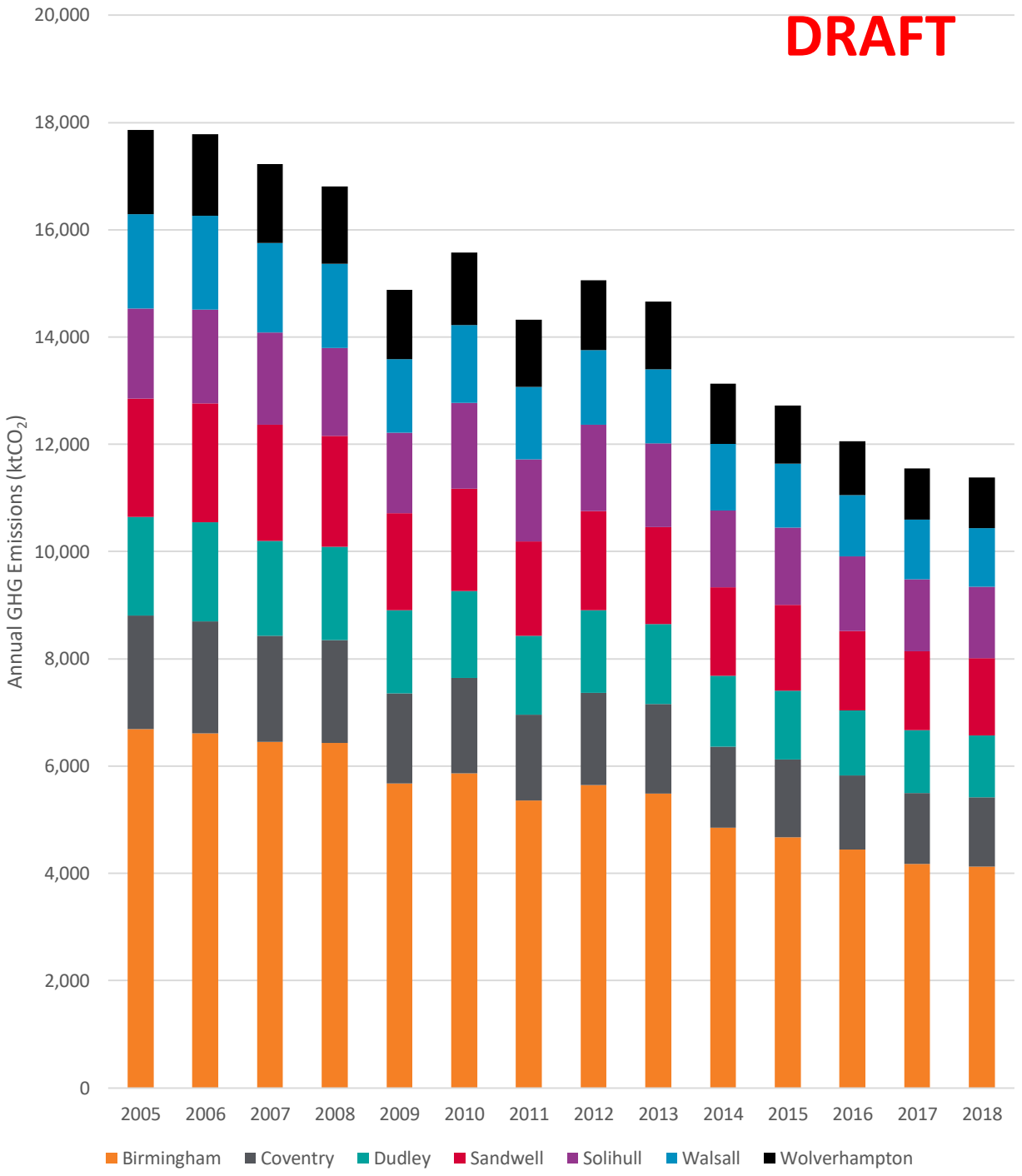
- Energy consumption in the region is around 50,000 GWh per annum
- This has fallen by 20% since 2005
- The share is split between domestic (39%), commercial/industry (32%) and transport (29%)
- 45% of this natural gas, 21% electricity and 32% petroleum



West Midlands Combined Authority area GHG Emissions

- Greenhouse gas emissions in the West Midlands Combined Authority around 11 $MtCO_2$ 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

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Walsall

- Council own emissions net zero by 2050

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

Birmingham

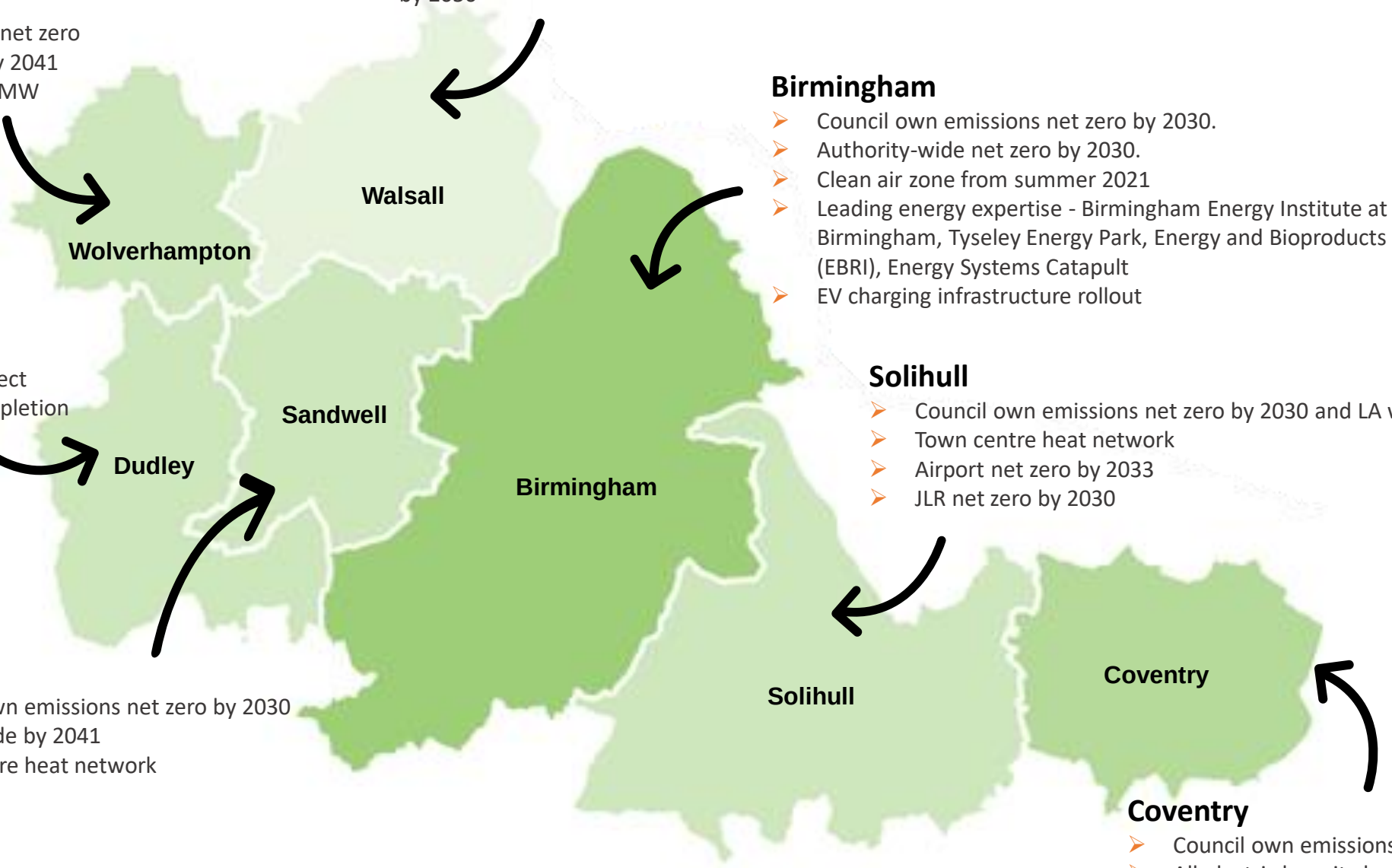
- Council own emissions net zero by 2030.
- Authority-wide net zero by 2030.
- Clean air zone from summer 2021
- Leading energy expertise - Birmingham Energy Institute at University of Birmingham, Tyseley Energy Park, Energy and Bioproducts Research Institute (EBRI), Energy Systems Catapult
- EV charging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

Dudley

- Low carbon place project
- LED streetlighting completion

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



Sandwell

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

Coventry

- Council own emissions net zero by 2030
- All electric bus city by 2025
- EV charging infrastructure & RESO project

WMCA investment and programme development

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Transport

- WMCA is investing in a range of transport schemes being delivered by TfWM totalling **£1.1bn** including **Active Travel** supporting cycling and walking, **Sprint Bus networks,** new and improved **rail stations** and **Midland Metro tram network.**

Buildings

- **Regional retrofit programme** development to outline investment and opportunities to deliver energy efficiency in buildings. WMCA also helped secure £1m funding to support people in fuel poverty.
- **Zero Carbon Homes Charter** and Routemap produced to show how the region can deliver zero carbon homes by 2025.

Energy

- **Energy Capital** board brings together key stakeholders for the region's energy transition, ensuring it supports green growth and removes barriers at the local level. The board is developing the regulatory and devolution requests to government.

Circular & Green Economy

- **Circular Economy taskforce** established Nov 2020 to identify the business and social opportunities by adopting more circular, less wasteful approaches.
- Developed a **Green Innovation Challenge** with WM5G & 5PRING Accelerator to support new business solutions to our WM2041 challenges that could make use of 5G.

Natural Capital

- **WM Virtual Forest** website launched to accelerate tree planting with regional stakeholders.
- £2m WMCA investment to support **Wildlife Ways** in Solihull.
- Developed **West Midlands National Park** concept with Birmingham City University.

National Policy Timeline

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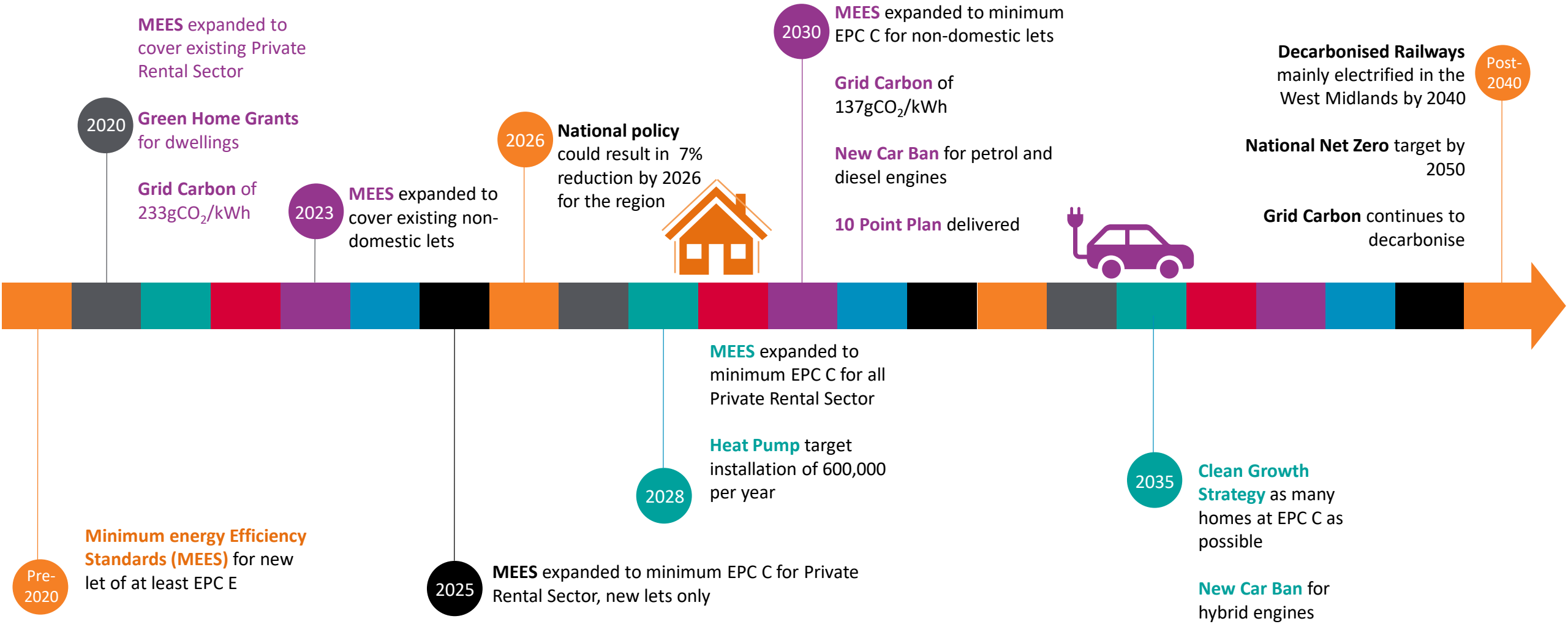

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Stakeholder Engagement & Data Review

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The Role of WSP…

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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

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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 – behaviour change is key. • There are existing commitments around net zero, and varying degrees of implementation that should 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.

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Sectoral Analysis

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Sectoral Breakdown

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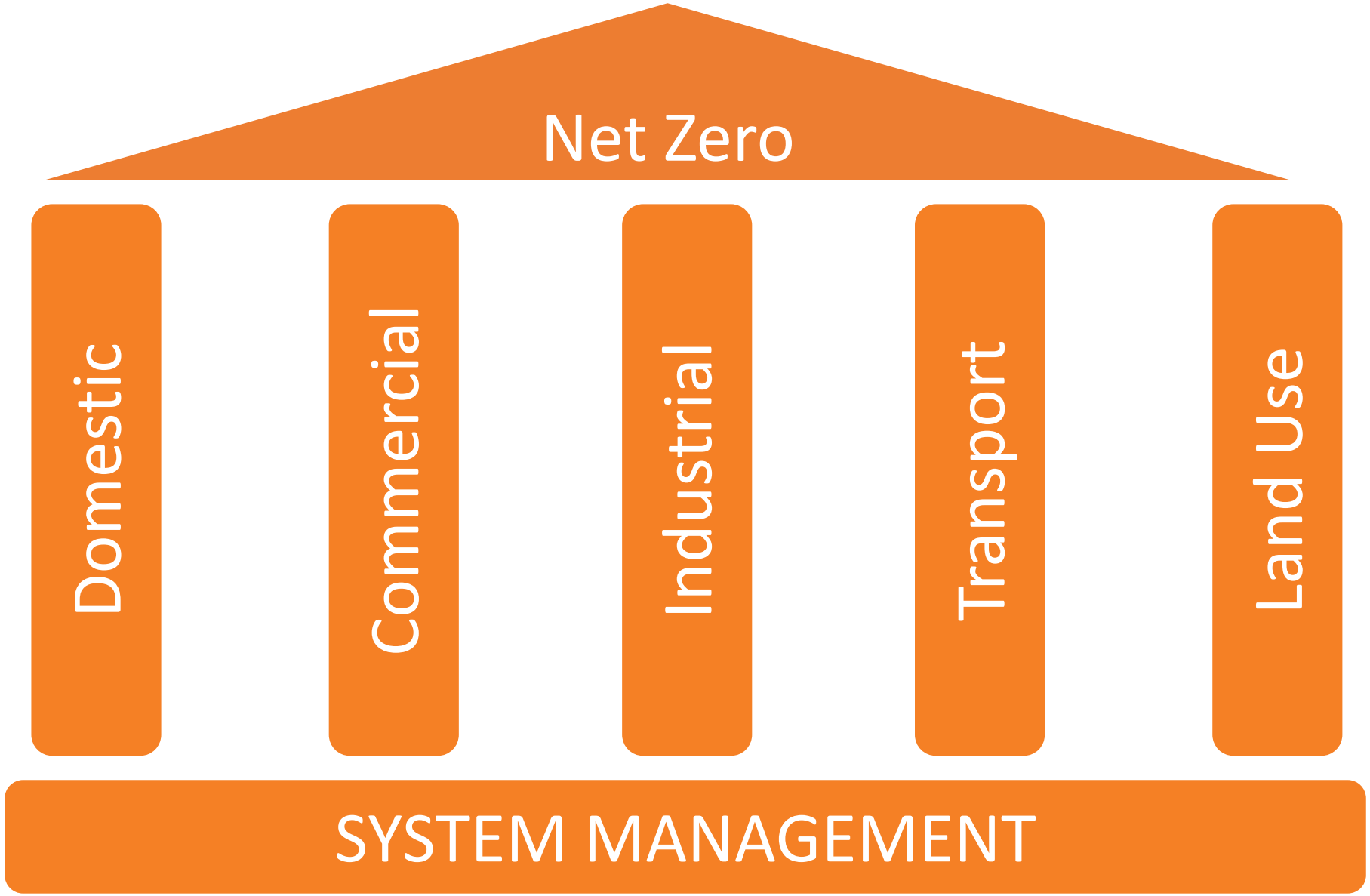

15 Main Goals

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These are the 15 main goals and modelling of carbon reduction.*

			Co-benefits of delivery
1	Domestic energy efficiency retrofit	Domestic	- Lower energy bills & fuel poverty - Reduce inequalities
2	Domestic heating retrofit		
3	Domestic solar PV		
4	Commercial energy efficiency retrofit	Commercial	- Boosting regional competitiveness - Retain energy spend in region - New business opportunity & economic growth
5	Commercial heating retrofit		
6	Commercial solar PV		
7	Industrial energy efficiency & fuels	Industrial	
8	Industrial renewables		
9	Avoiding travel	Transport	- Cleaner air - Better physical & mental health
10	Shifting travel		
11	Improving passenger service fleets		
12	Improving freight fleets		
13	Improving private vehicles		
14	Land use (renewables)	Land Use	- Adapting to climate change - Enhancing biodiversity - Better physical & mental health
15	Land use (natural capital)		

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

Delivery Scenarios

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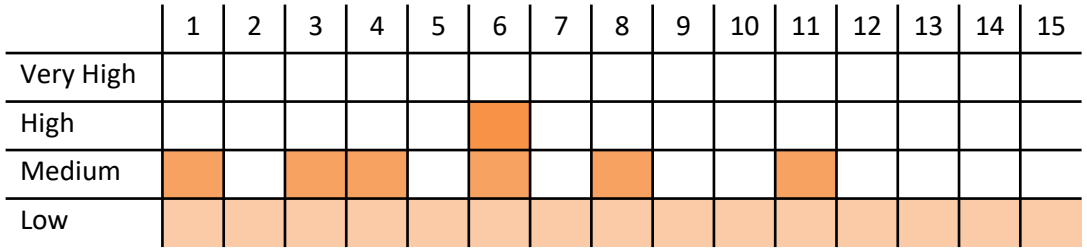
Three delivery scenarios, **moderate, accelerated and maximum,** have been considered to show what would be required to reach the 2026 and 2041 targets. A 'West Midlands Carbon Calculator' tool has been developed and will be available for people to create their own scenarios for reaching net zero. These are indicative and specific targets will be set out in business cases and policy that follow the FYP.

Moderate

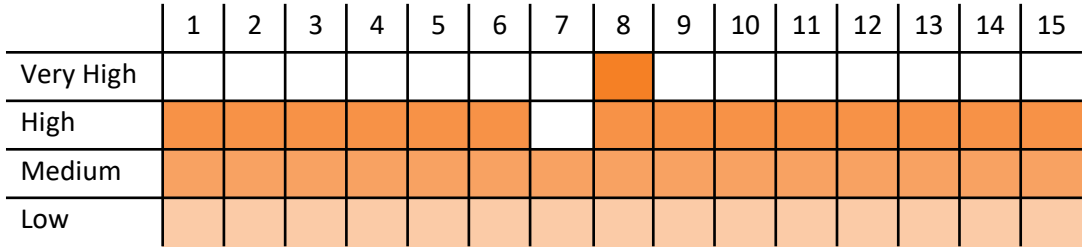
☒ 2026 ☒ 2041



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

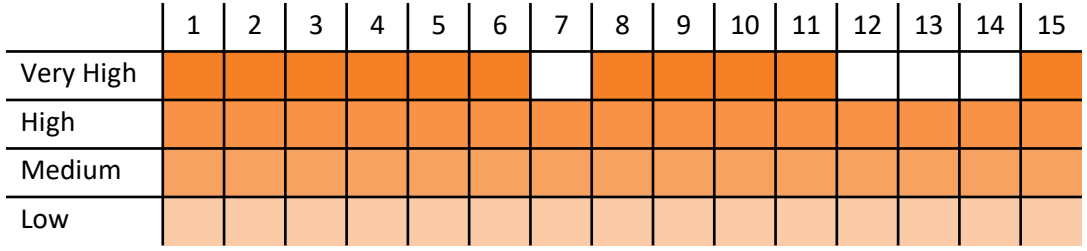


A much more rapid and aggressive delivery pace across sectors, with most set at a "High". Energy efficiency and fuel switching for industry is medium as the majority of technologies required are at an early stage of development. Due to its much smaller scale, solar PV in industrial buildings has been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

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

Maximum

☑ 2026 ☑ 2041



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. 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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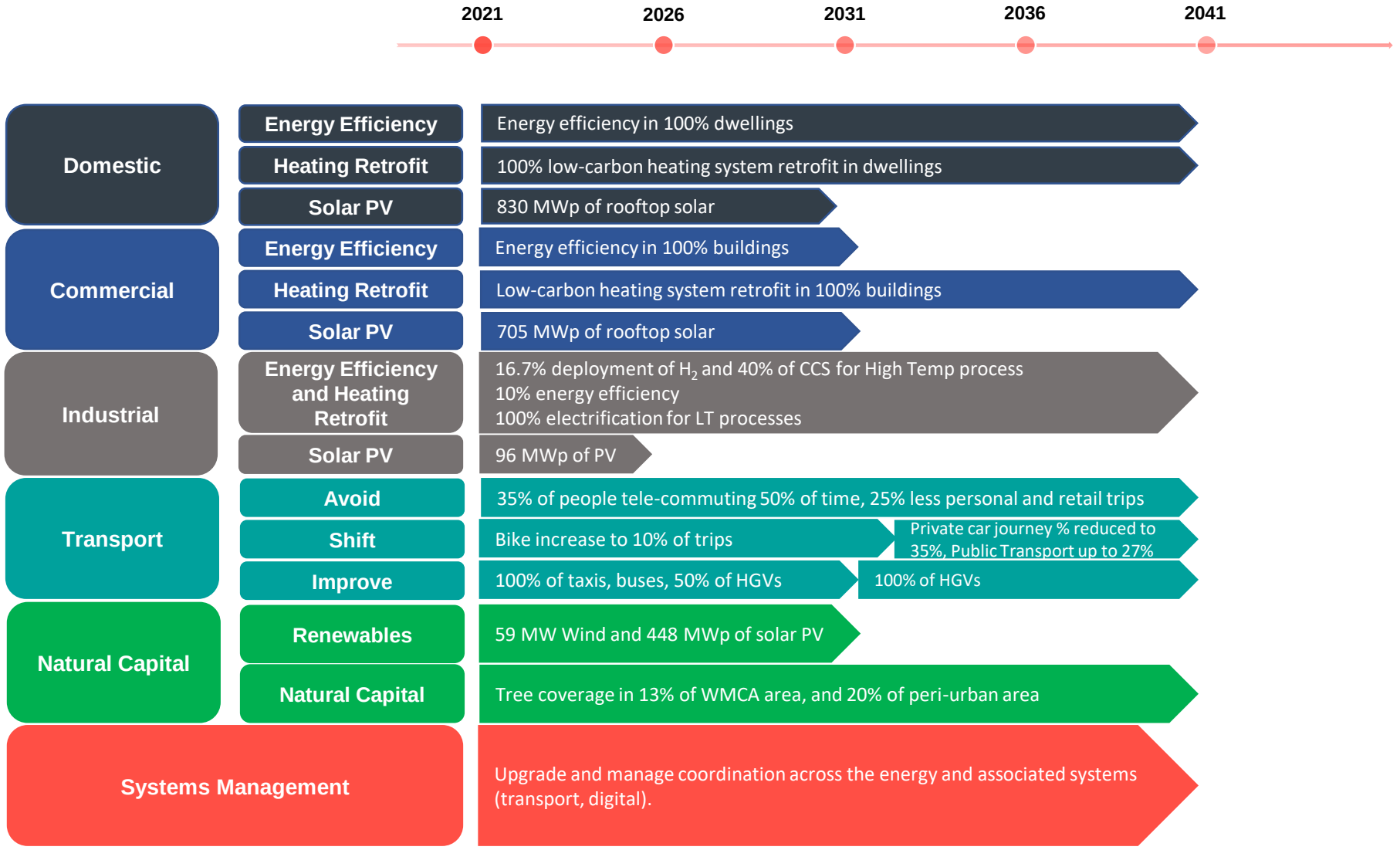

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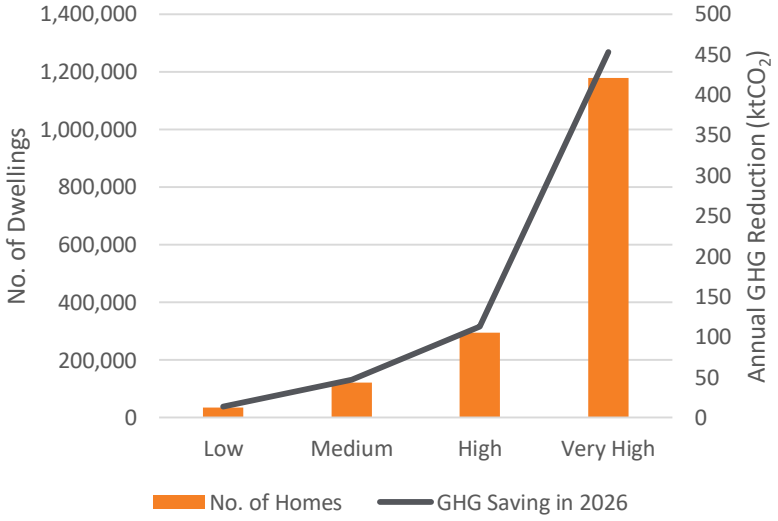
Goal 1 – Energy Efficiency Retrofit

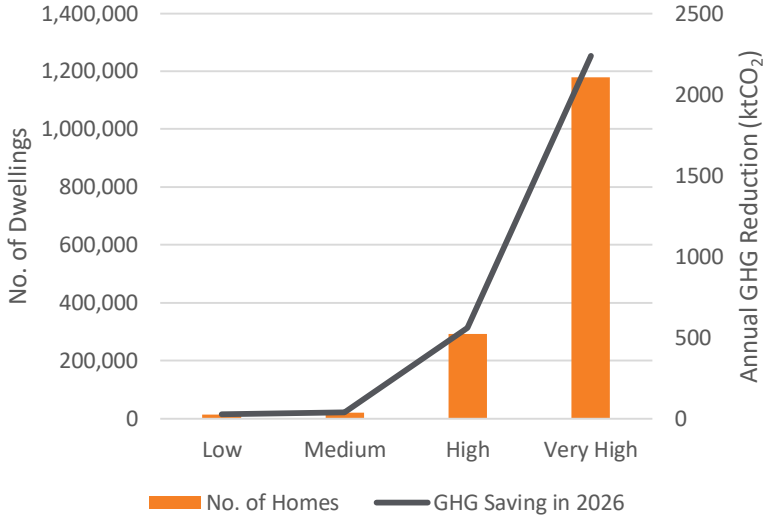
The installation of specific measures including **smart meters, smart thermostats, cavity and solid wall insultation, loft insulation, double glazing and behaviour change.**



Goal Level	Deployment to end of 2025	<CO_2 2026
Low	36,200 dwellings	14kt
Medium	122,000 dwellings	47kt
High	294,000 dwellings	113kt
Very High	1,178,260 dwellings	453kt

Goal 2 – Heating Retrofit

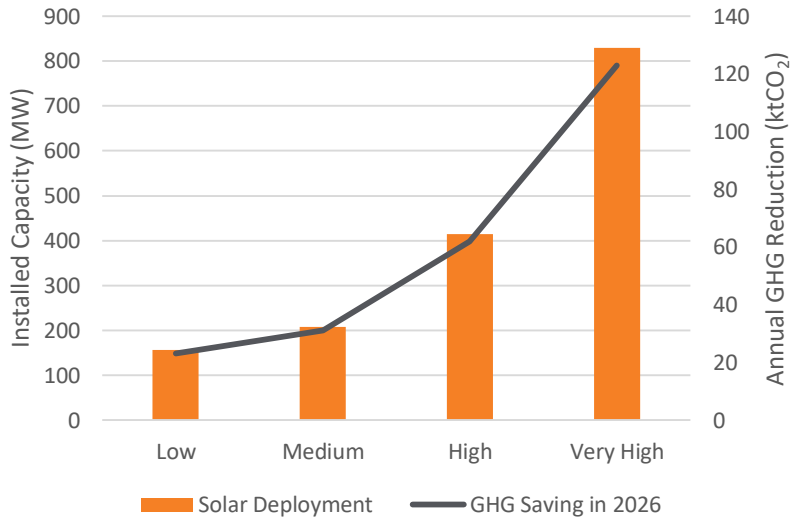
Alongside energy efficiency measures, the installation of renewable heating (nominally air source heat pump) to provide heating and hot water. Hydrogen as an alternative after 2026.



Goal Level	Deployment to end of 2025	<CO_2 2026
Low	14,000 dwellings	27kt
Medium	20,000 dwellings	37kt
High	292,000 dwellings	559kt
Very High	1,169,000 dwellings	2,238kt

Goal 3 – Solar PV

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_2 2026
Low	156MW of PV	23kt
Medium	207MW of PV	31kt
High	415MW of PV	62kt
Very High	830MW of PV	123kt

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

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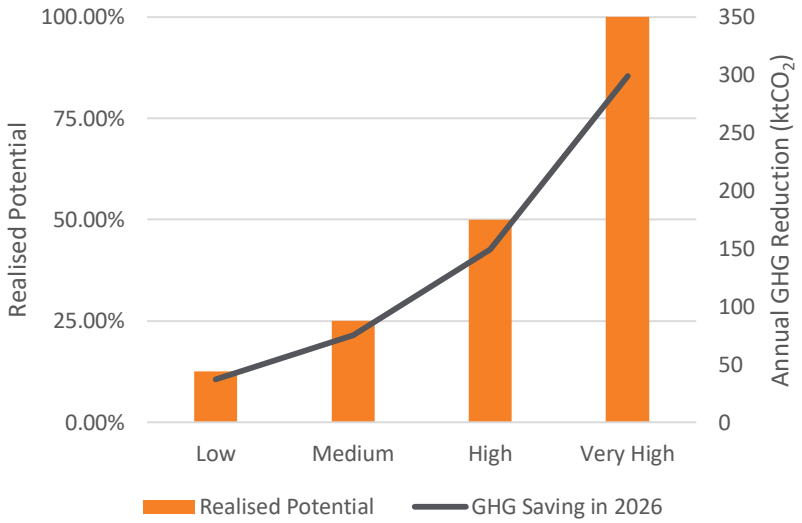
Goal 4 – Energy Efficiency

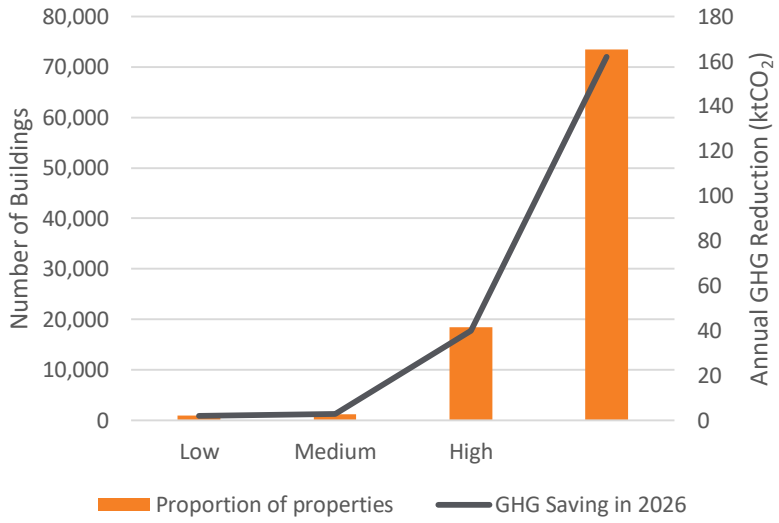
Energy efficiency measures applied to offices, retail and other commercial property types, as identified in the Building Energy Efficiency Surveys



Goal Level	Deployment to end of 2025	<CO_2 2026
Low	12.5% potential	37kt
Medium	25% potential	75kt
High	50% potential	149kt
Very High	100% potential	299kt

Goal 5 – Heating Retrofit

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

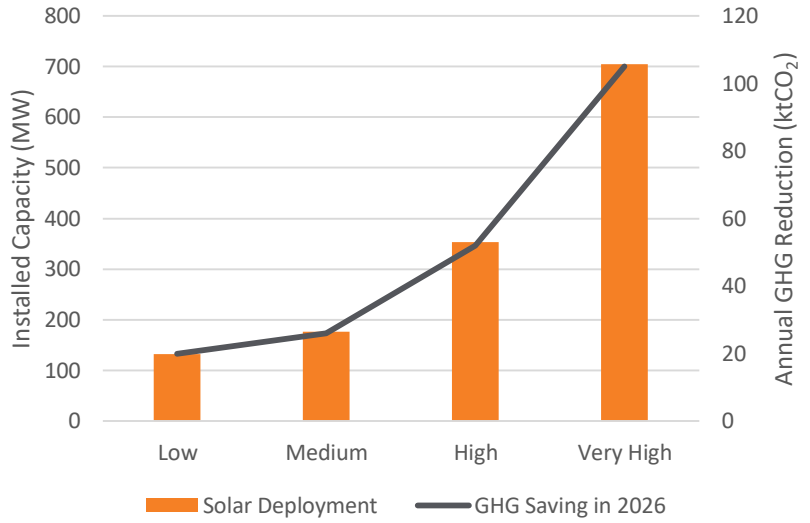


Goal Level	Deployment to end of 2025	<CO_2 2026
Low	870 buildings	2kt
Medium	1,250 buildings	2.7kt
High	18,400 buildings	40kt
Very High	73,400 buildings	162kt

Goal 6 – Solar PV

Rooftop Solar PV on commercial properties.

Photovoltaics will be more beneficial in the shorter term as the grid is still comparatively high carbon

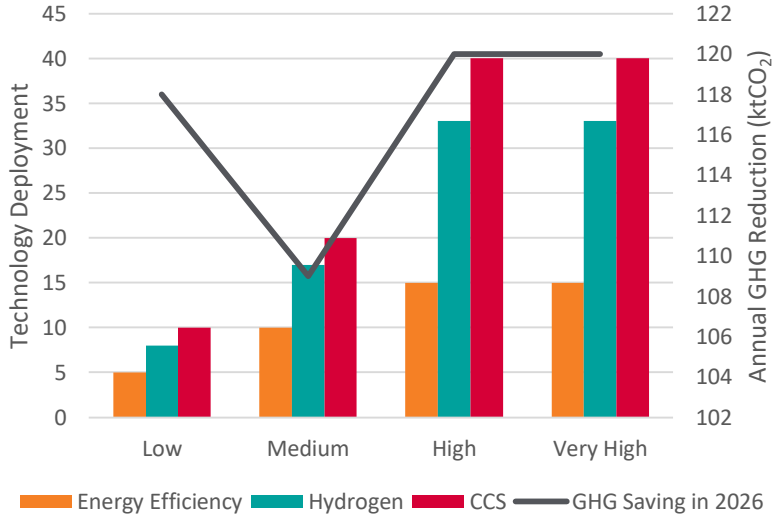


Goal Level	Deployment to end of 2025	<CO_2 2026
Low	132 MW of PV	20kt
Medium	176 MW of PV	26kt
High	353 MW of PV	52kt
Very High	705 MW of PV	105kt

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

Goal 7 – Energy Efficiency & Fuels

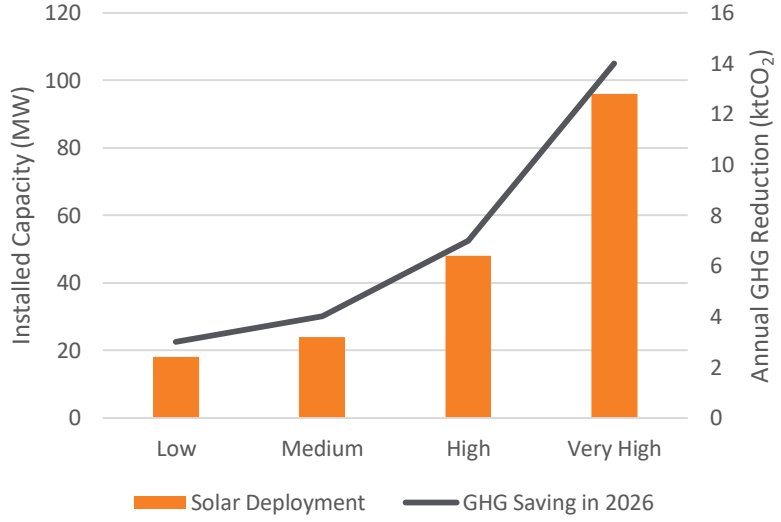
Covering steel and iron, mineral products, chemicals, mechanical / electrical engineering, vehicles manufactures, textiles, food and beverages, printing, paper and other industries.



Goal Level	Description	<CO_2 2026
Low	5% EE, 8% H_2, 10% CCS	118kt
Medium	10% EE, 17% H_2, 20% CCS	109kt
High	15% EE, 33% H_2, 40% CCS	120kt
Very High	15% EE, 33% H_2, 40% CCS	120kt

Goal 8 – Renewables

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



Goal Level	Description	<CO_2 2026
Low	18 MW of PV	3kt
Medium	24 MW of PV	4kt
High	48 MW of PV	7kt
Very High	96 MW of PV	14kt

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

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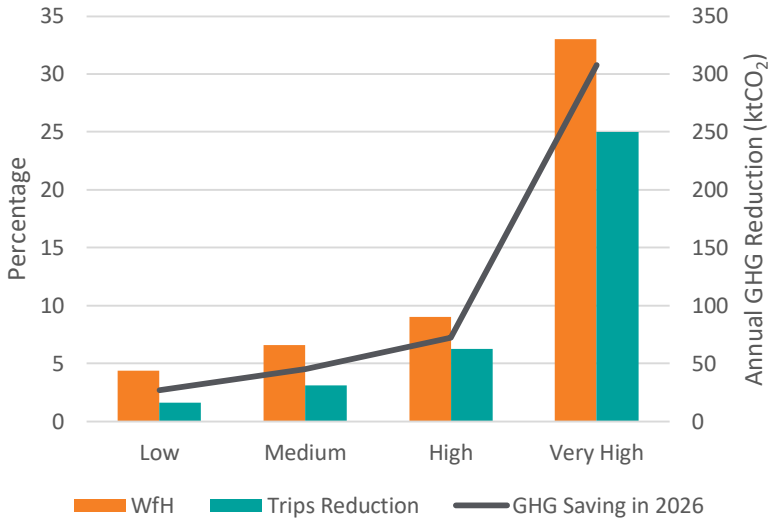
Goal 9 – Avoiding travel

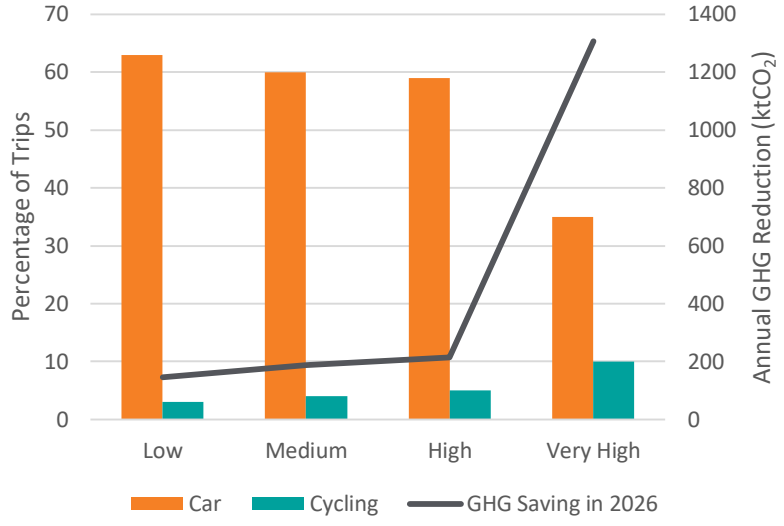
Increased take up of working from home or working at local hubs. 5-10% work from homes (pre-pandemic levels).Reduction in travel by 25% for retail and business (excluding commuting)



Goal Level	Description	<CO_2 2026
Low	4.4% people/1.6% red.	27kt
Medium	6.6% people/3.1% red.	45kt
High	9% people/6.25% red.	72kt
Very High	35% people/25% red.	308kt

Goal 10 – Shifting travel

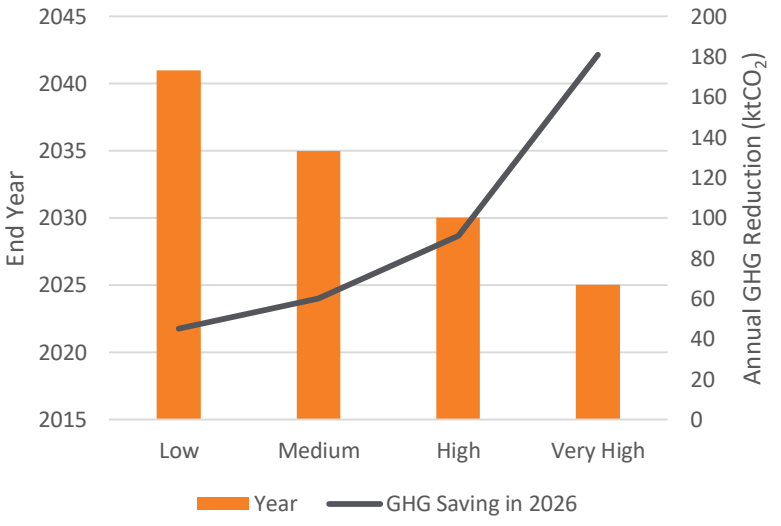
Long term strategy shift in travel in line with city regions such as Munich, Stuttgart and Dusseldorf, where car use accounts for typically 35 - 45% of all journeys, compared to 63% in WMCA.



Goal Level	Description	<CO_2 2026
Low	Car: 63%, PT: 8%, B: 3%	146kt
Medium	Car: 60%, PT: 10%, B: 4%	188kt
High	Car: 59%, PT: 11%, B: 5%	213kt
Very High	Car: 35%, PT: 27%, B: 10%	1,306kt

Goal 11 – Improving passenger service fleets

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

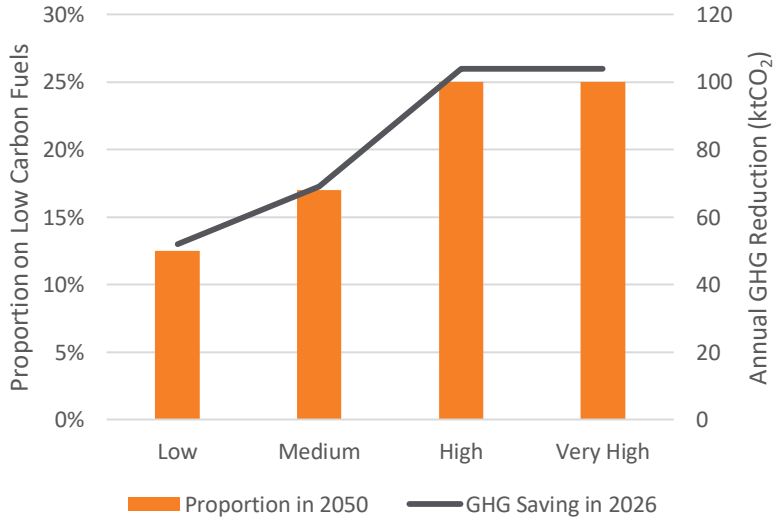


Goal Level	Description	<CO_2 2026
Low	2041 Target	45kt
Medium	2035 Target	60kt
High	2030 Target	91kt
Very High	2025 Target	181kt

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

Goal 12 – Improving freight fleets

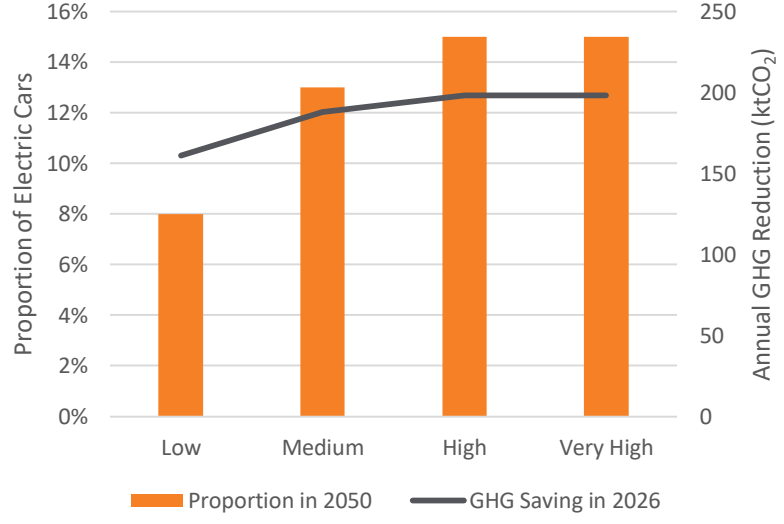
In line with Midlands Connect Tool, consider the decarbonisation of HGVs nationwide.
Assumed electrification, but realise the solution may be a mix of technologies



Goal Level	Description	<CO_2 2026
Low	12.5% of HGVs	52kt
Medium	17% of HGVs	69kt
High	25% of HGVs	104kt
Very High	(Same as High)	104kt

Goal 13 – Improving private vehicles

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.

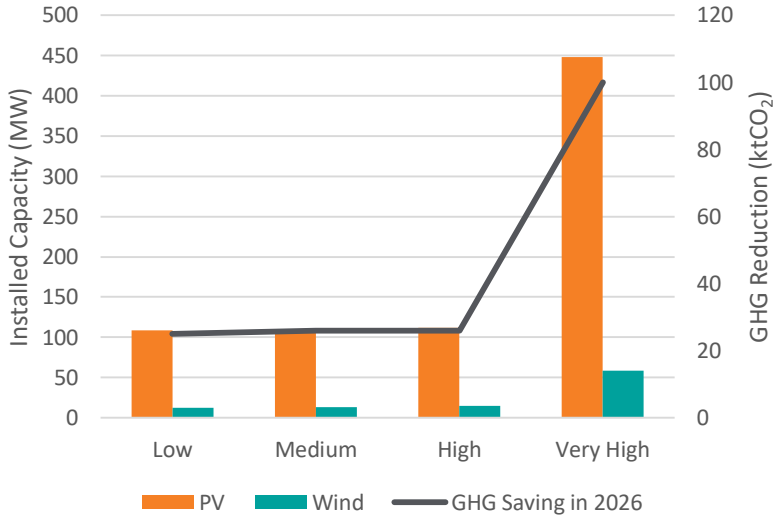


Goal Level	Description	<CO_2 2026
Low	8% by 2026	161kt
Medium	13% by 2026)	188kt
High	15% by 2026	198kt
Very High	(Same as High)	198kt

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

Goal 14 – Renewables

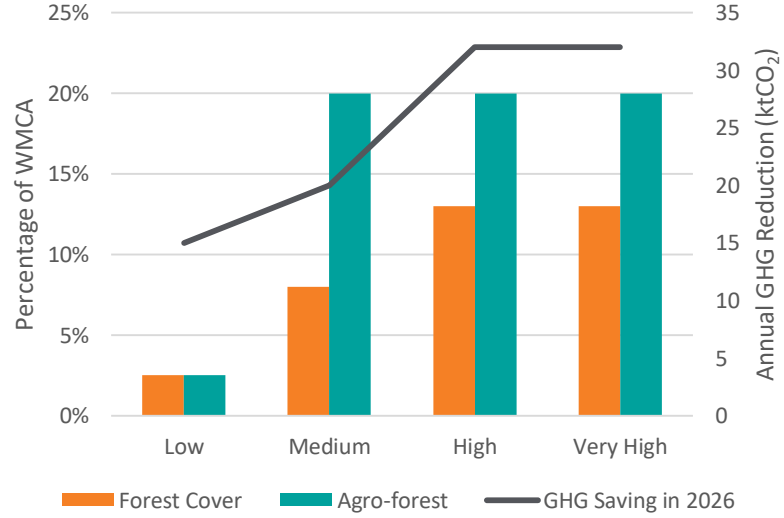
Utility scale Solar PV and Wind across the region on poorer quality land.
GIS mapping has been undertaken to understand what area is most suitable.



Goal Level	Description	<CO_2 2026
Low	109 MW PV / 12.5 MW Wind	24kt
Medium	111 MW PV / 14 MW Wind	24kt
High	224 MW PV / 30 MW Wind	50kt
Very High	448 MW PV / 59 MW Wind	100kt

Goal 15 – Natural Capital

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_2 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

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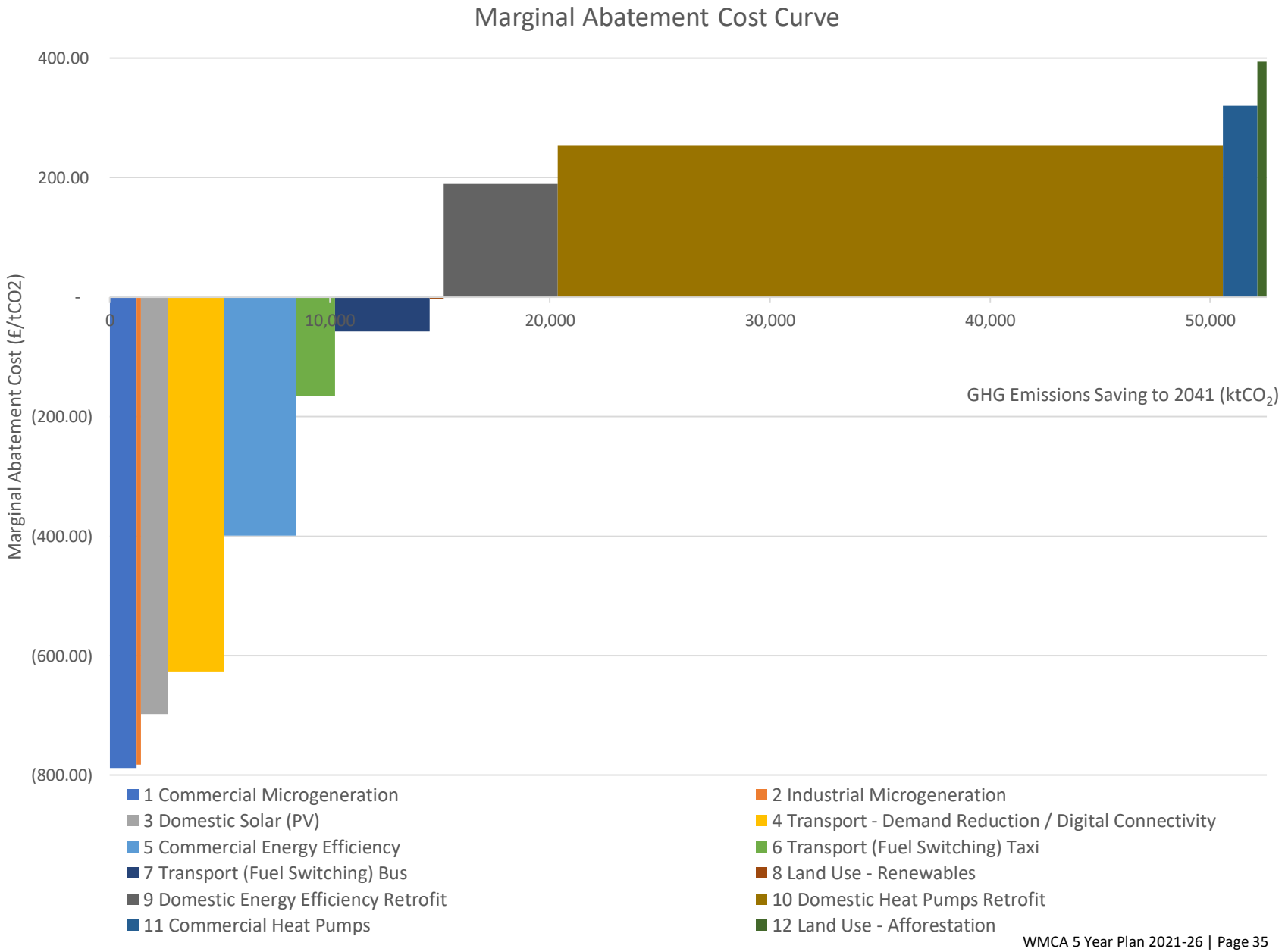
The MACC indicates broadly which measures will be more or less cost effective in terms of emissions reduction. These are ranked left to right.

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 by 2026

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No.	Measure	Investment to 2026
1	Domestic energy efficiency retrofit	£623m
2	Domestic heating retrofit	£2,275m
3	Domestic solar PV	£332m
4	Commercial energy efficiency retrofit	£365m
5	Commercial heating retrofit	£76m
6	Commercial solar PV	£270m
7	Industrial energy efficiency & fuels	Unquantified
8	Industrial renewables	£72m
9	Avoiding travel	£23m
10	Shifting travel	Unquantified
11	Improving passenger service fleets	£178m
12	Improving freight fleets	Unquantified
13	Improving private vehicles	Unquantified
14	Land use (renewables)	£71m
15	Land use (natural capital)	£57m

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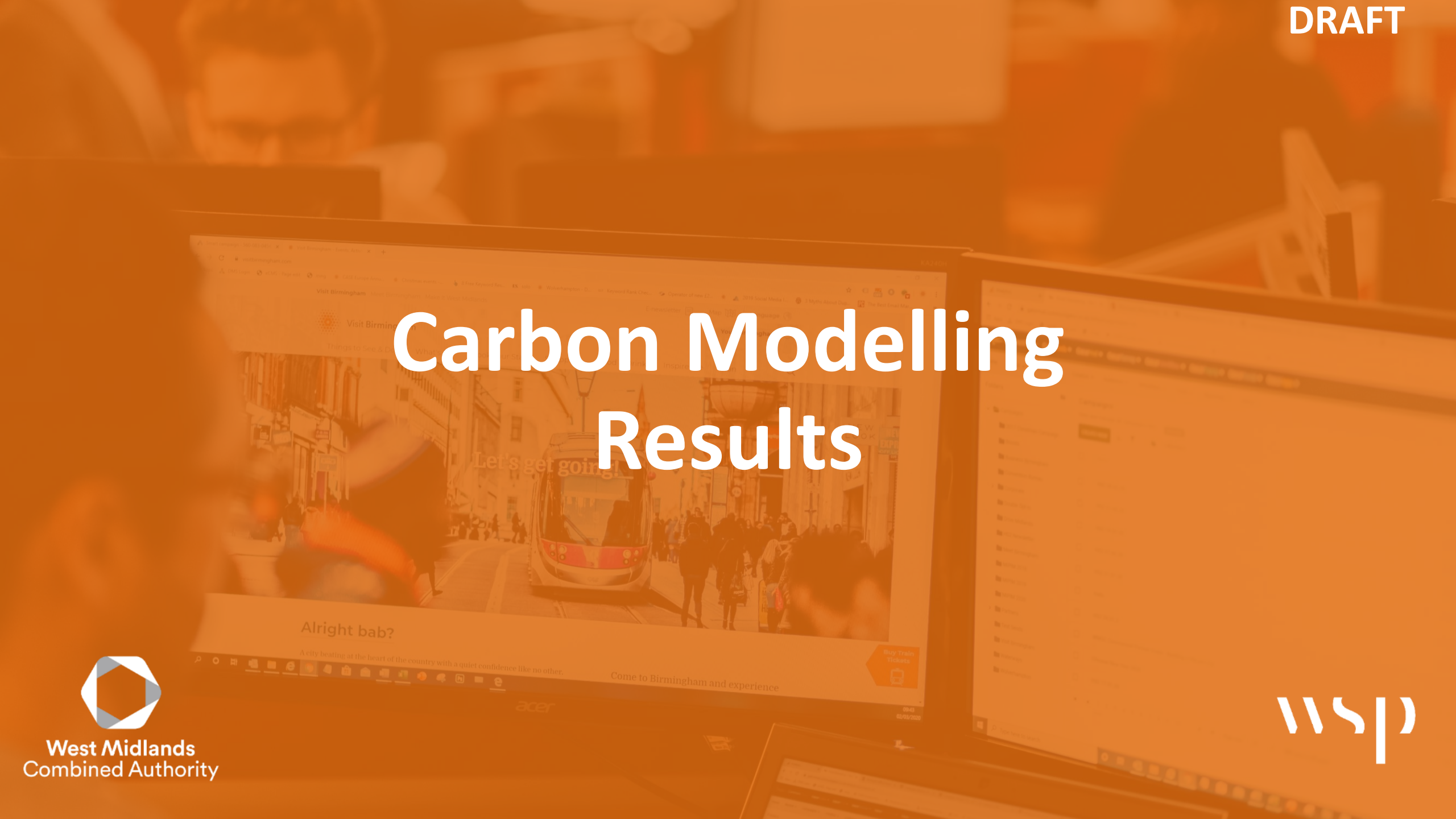
Carbon Modelling Results



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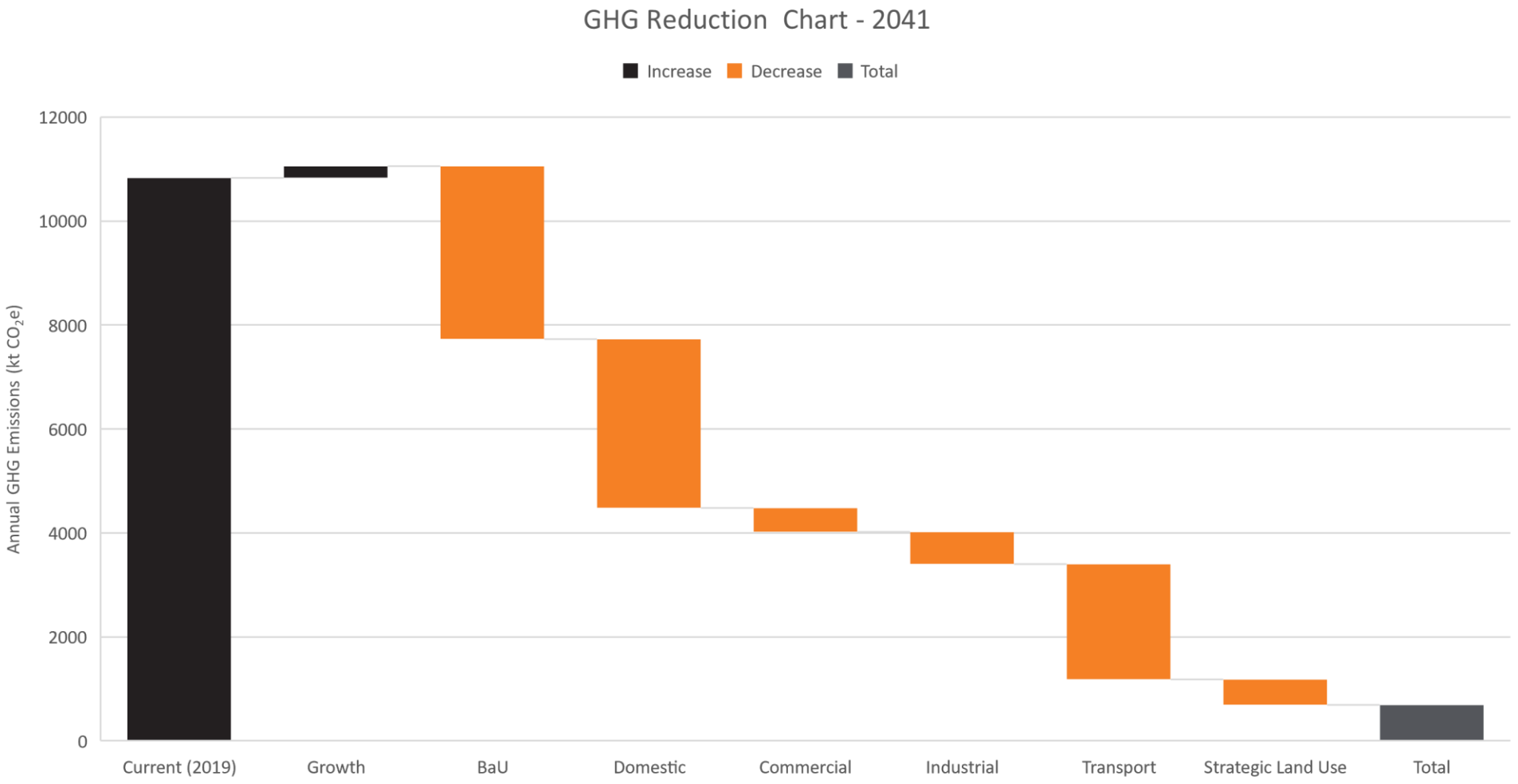
✓ Modelling shows the region needs to commit to the central 'Accelerated' scenario to deliver a 94% reduction by 2041



What does this mean for the first FYP by 2026?

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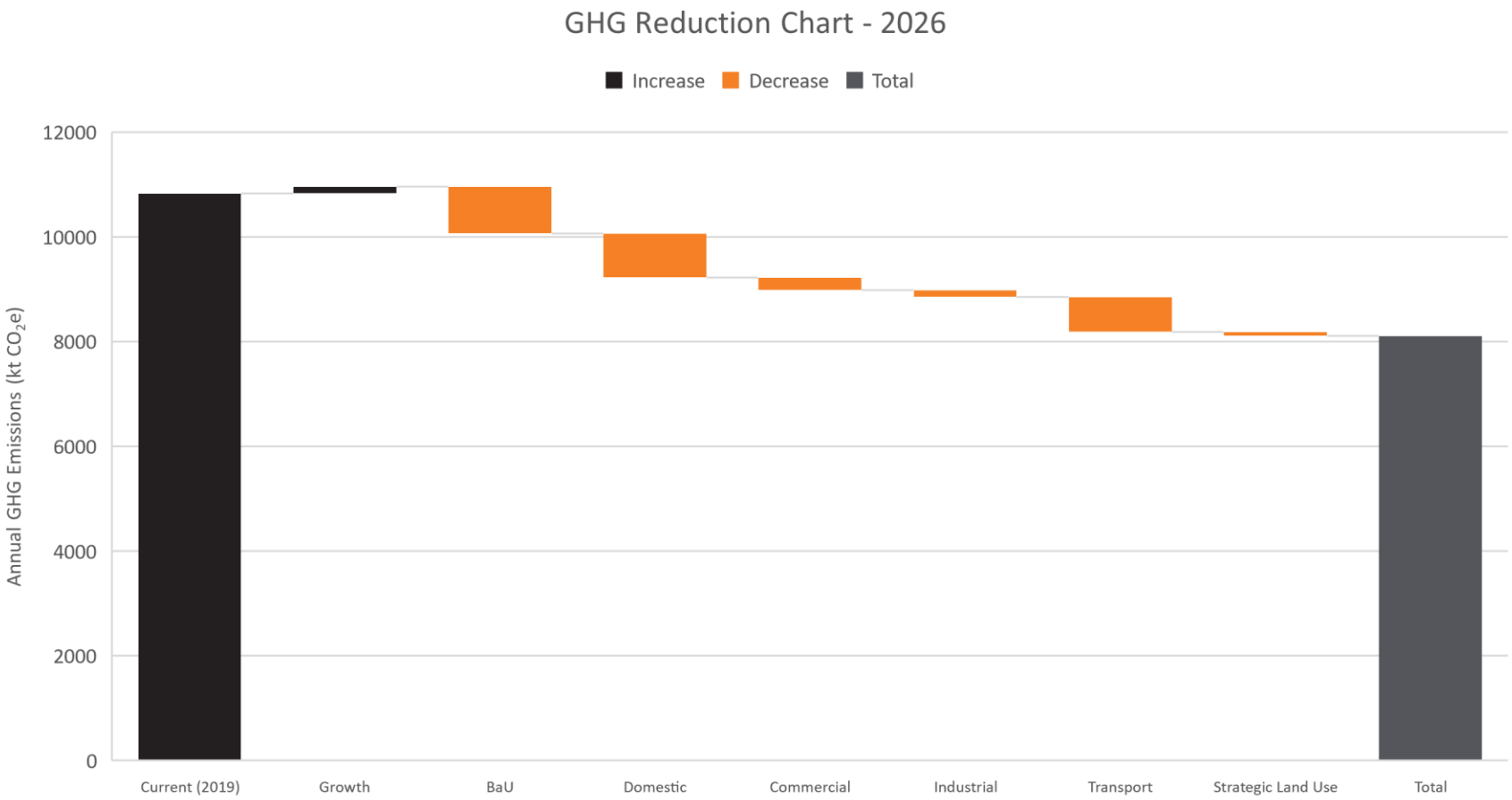
Modelling of the 'Accelerated' scenario shows that a **33% reduction** is possible by 2026 against a 2016 baseline.

The region would be emitting **8.1Mt CO_2** 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_2** by 2026.

This would require radical actions, some of which are not thought feasible in the timescale due to legal, social and financial requirements.



What we would need to do reach 4.9Mt CO_2 by 2026?

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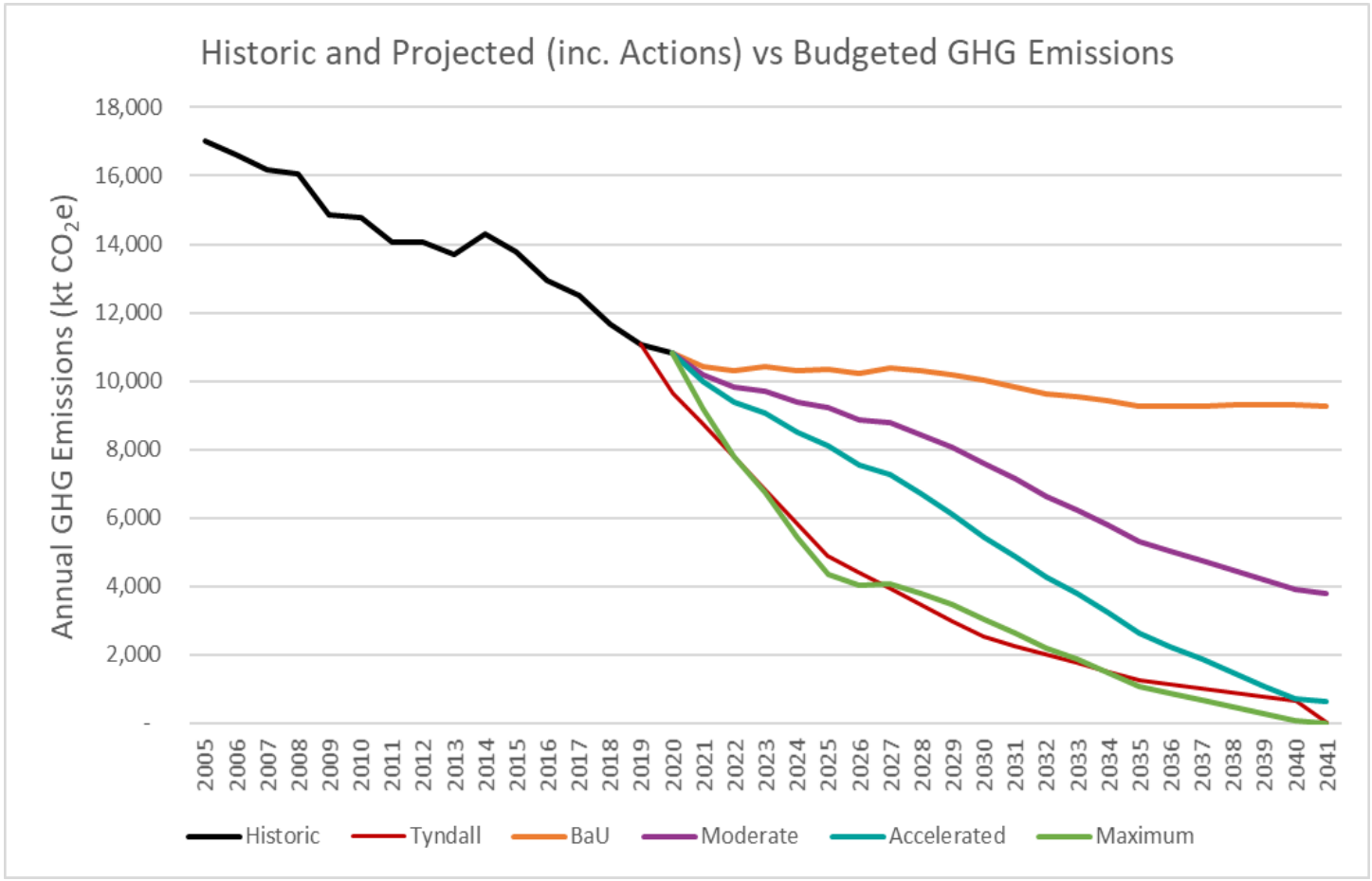
- **Retrofit all 1.1 million homes** by the end of 2025 and install **heat pumps** at the same time.
- Retrofit 100% of retail, offices and a range of other non-domestic properties to their **maximum potential.**
- Maximise rooftop solar across domestic, commercial and industrial sites as well as ground 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%.



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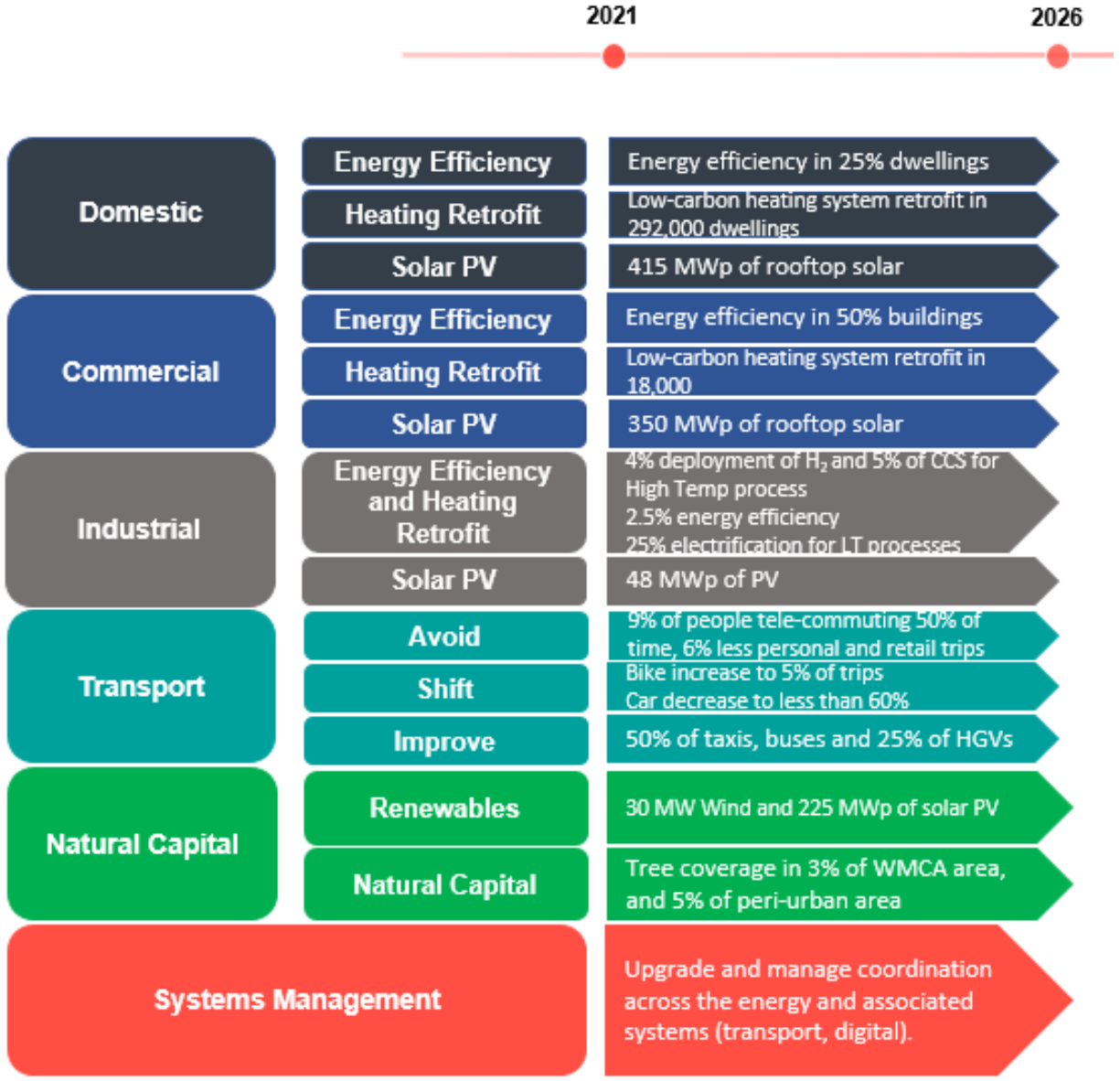
Ambition and Timeline under 'Accelerated' Scenario to 2026

- Given the impetus to decarbonise as soon as possible the report sets out a hugely ambitious, but realistic 'Accelerated' to net zero by 2041.

- The 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?

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Delivering a net zero society will require significant and unprecedented change. The changes will directly affect people and we need to ensure the transition is fair.

	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.	294,000 homes
	2. Heating retrofit	1.1m homes (100%)	Almost all homes are on fossil fuel boilers	292,000 dwellings
	3. Solar PV on rooftops	830MWp	Approximately 63MWp to date.	415MWp
Commercial	4. Energy efficiency	73,400 buildings	TBC	37,000 buildings
	5. Heating retrofit	73,400 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_2, 20% CCS
	8. Low carbon heating retrofit	33% deployment of H2 and 40% CCS for high temp. 100% electrification of low temp	Not yet commercialised technology	17% H_2, 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	63% of trips by car currently	59% trips by car
Land Use	13. Renewables	59MW wind and 448MWp of solar potential	<20MW of solar	30MW wind and 224MWp solar
	14. Natural capital	13% WMCA tree coverage	1% WMCA tree coverage	13% forest cover/20% peri-urban areas

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Delivery Plan

West Midlands Combined Authority

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

Deliver — Lead on or work with others in the region to deliver carbon emissions reduction

Enable — 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 the WMCA. The 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 work 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

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	Domestic	Commercial	Industry	Transport
Lead Role and Delivery Route	WMCA to fund business case and Energy Capital lead the work, through Fuel Poverty and Regional Retrofit Steering Group (FPRR). - Promotion of the campaign and opportunities. - Cross-disciplinary co-ordination team with stakeholders. Managing finances - Developing clear single programme for domestic sector and managing and administrating	WMCA to fund business case and Energy Capital lead the work. -Promotion of the campaign and the opportunities to businesses -Cross-disciplinary co-ordination team with stakeholders. Managing the financial streams from national government and other incentives -Developing clear single programme for sector and managing and administrating.	The regional role will be led by Energy Capital, building on the expertise and research developed through work with the Black Country Consortium. - Co-ordinating with UK government - Finance – Management of finance, grants, private investment - Co-ordination with industry	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.
Investment required to 2026	£3.5bn 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 FPRR, 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	Establishing the Fuel Poverty and Regional Retrofit (FPRR) Centre of Excellence and developing investable propositions to stimulate the market and scale-up efforts to tackle fuel poverty.	WMCA should fund the development of a strategy to support, persuade and incentivise business organisations and representatives.	Energy Capital to lead on an industrial decarbonisation taskforce, building on work started in partnership with the Black Country Consortium.	Proposals for Intra-City Transport Fund. Draft Local Transport Plan consultation, autumn 2021 and adoption in early 2022.

Delivery Plan for 2026 - 2/2

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	Land Use – Natural Capital	Land Use - Renewables	Cross-cutting
Lead Role and Delivery Route	This will be led by the Environment Team at the West Midlands Combined Authority: - Promotion of the opportunities around tree planting and other nature-based solutions - Co-ordinating with local authorities - Programme Management	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.	This will be led by the Environment Team at the West Midlands Combined Authority and will include: - Management of net zero business pledge - WM2041 behaviour change, working with communications teams and region stakeholders - Programme management, administration and reporting of WM2041 progress, including providing the secretariat function for the WM2041 Net Zero Delivery Board
Investment required to 2026	£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.	£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.	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.
Stakeholders	Landowners, local authorities, NGOs, business representatives, universities, developers, DEFRA group (to include Natural England, Environment Agency and Forestry Commission) and LEPs.	Landowners, local authorities, investors and developers	Local authorities and key stakeholders such as Sustainability West Midlands to support delivery. All regional stakeholders to be engaged as appropriate
Local Authority collaboration	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.	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.	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.
Next Steps	The WMCA should fund the initial management and administration to promote this with others through a regional natural capital board, develop the full business case, co-ordinating with the stakeholders.	The WMCA should fund the initial management and administration to promote this with others, develop the full business case, co-ordinating with the stakeholders.	The WMCA should fund the initial management and administration to develop the initiatives.

Cross-cutting, enabling actions

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WMCA will launch a **West Midlands Net Zero Business Pledge** to highlight existing business leadership, build on region's networks and provide support so al 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.

WMCA's role in systems management & governance – subject to budget approval

In order to ensure a cross-cutting approach to net zero delivery, it is proposed that a **new WM2041 Net Zero Delivery Board** is established that will:

- Provide oversight of progress against strategy, business cases and delivery to achieve both 2026 and longer term 2041 ambitions;
- Take responsibility for the achievement of net zero goals across the region and advocate for the necessary resources and powers to achieve this.
- Recognise the importance of and facilitate integrated transport, energy and planning at a local level in delivering net zero.
- Enable effective intelligence and data transfer between sectors to enable this.
- Keep an eye on the goal and identify policy and regulatory barriers to the achievement of net zero by 2041 in the region and take action to remove these
- Bring together local authorities where appropriate to deliver at scale and the pace required, respecting subsidiarity and relevant duties and powers;
- Recognise the key role of LEPs, businesses, third sectors and education institutions, engaging them in a co-ordinated and strategic way around net zero delivery;
- Receive input from a Net Zero Citizens' Panel to test solutions and inform decisions developed from the FYP;
- Get the region behind net zero and communicating a story together which is compelling and demonstrates commitment;
- Report progress to the WMCA Environment and Energy Board.

Monitoring and Reporting

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

- Reviews on delivery and carbon reduction progress (annually)
- Data collection, validation and interpretation (quarterly)
- Defining methodology for performance monitoring (one-off)
- Auditing including governance, risk management and financial control (annually)
- Monitoring and scrutinise performance and reporting against targets (annually)
- Technological assessments and reviews of emerging best practices (twice per FYP period)
- Dissemination of learnings (annually)
- Review of changes in national policy (quarterly)
- External/independent auditing (annually)

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Jobs & Skills

West Midlands Combined Authority

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Where we are Today

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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

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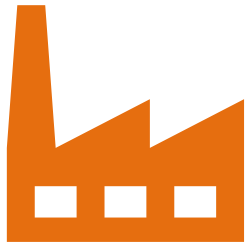
1. **Low-carbon electricity**: Wind power, solar PV, hydropower, nuclear, CCS
2. **Low-carbon heat**: Renewable heat, heat networks and CHP
3. **Alternative fuel**: Bioenergy and hydrogen production
4. **Energy efficient products**: Insulation, lighting, monitoring and control systems
5. **Low-carbon 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…

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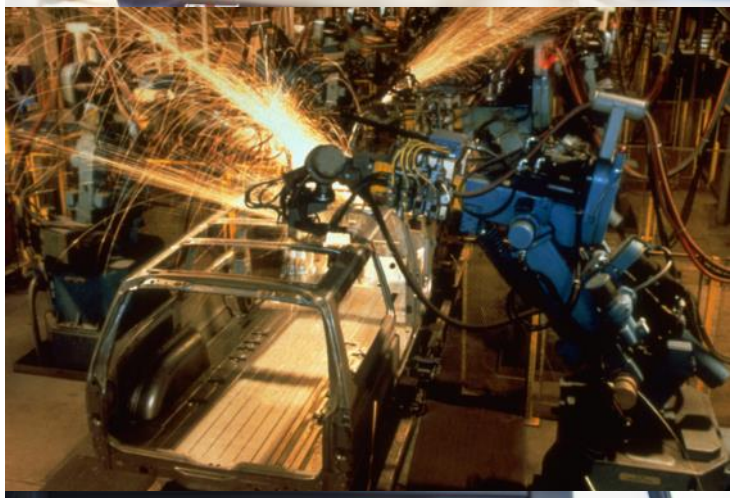
Sector	Goals	Jobs created
Domestic	Energy Efficiency	Retrofit coordinators, installers and designers
	Fuel Switching	Heat pump installers
	Microgeneration	Solar PV installers
Commercial	Energy Efficiency	Retrofit coordinators, installers and designers
	Fuel Switching	Heat pump installers
	Microgeneration	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

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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	Minimal	200
	Microgeneration	Minimal	100
Transport	Fuel Switching (HGVs)	Minimal	400
	Fuel Switching (Buses, Taxis)	500	800
	Demand Reduction (Trips)	Minimal	120
	Mode shift	1,500	1,500
	Electric Vehicles	3,400	32,800
Land Use	Renewables	Minimal	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

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A Day in the Life

West Midlands Combined Authority

wsp

A day in the life of a West Midlands resident in 2026

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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!

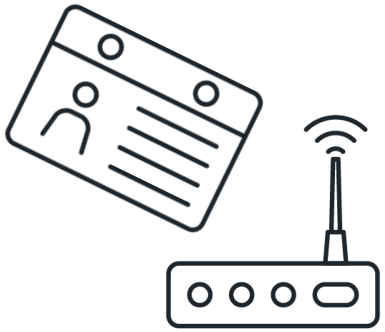
Mid-Morning

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 tele-conferencing is a breeze, even when her partner is also connected.



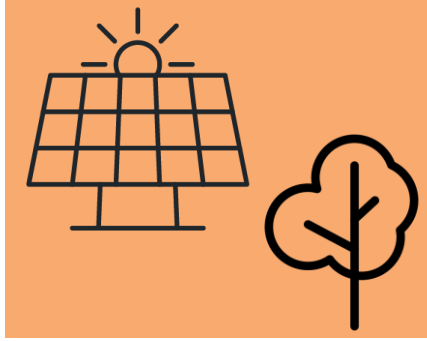
Midday

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.



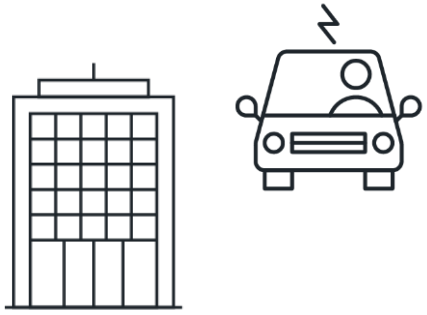
Afternoon

1:30 PM

Amelia has a busy afternoon so 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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