
WM2041

FIVE YEAR PLAN 2021-26

Executive Summary



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:



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The Five Year Plan (FYP) – Summary of the Summary

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, goals in domestic, commercial, industrial, transport and land use sectors could deliver a **33% reduction by 2026 (against 2016 baseline) 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**.
- ▲ 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**.






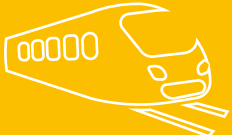




To set the region on course to deliver the net zero target by 2041, WMCA have identified key priorities for delivery, working with regional stakeholders.

1. Set up a **regional approach** 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 £3.6bn, 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 a new LTP aligned to WM2041.
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.
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.

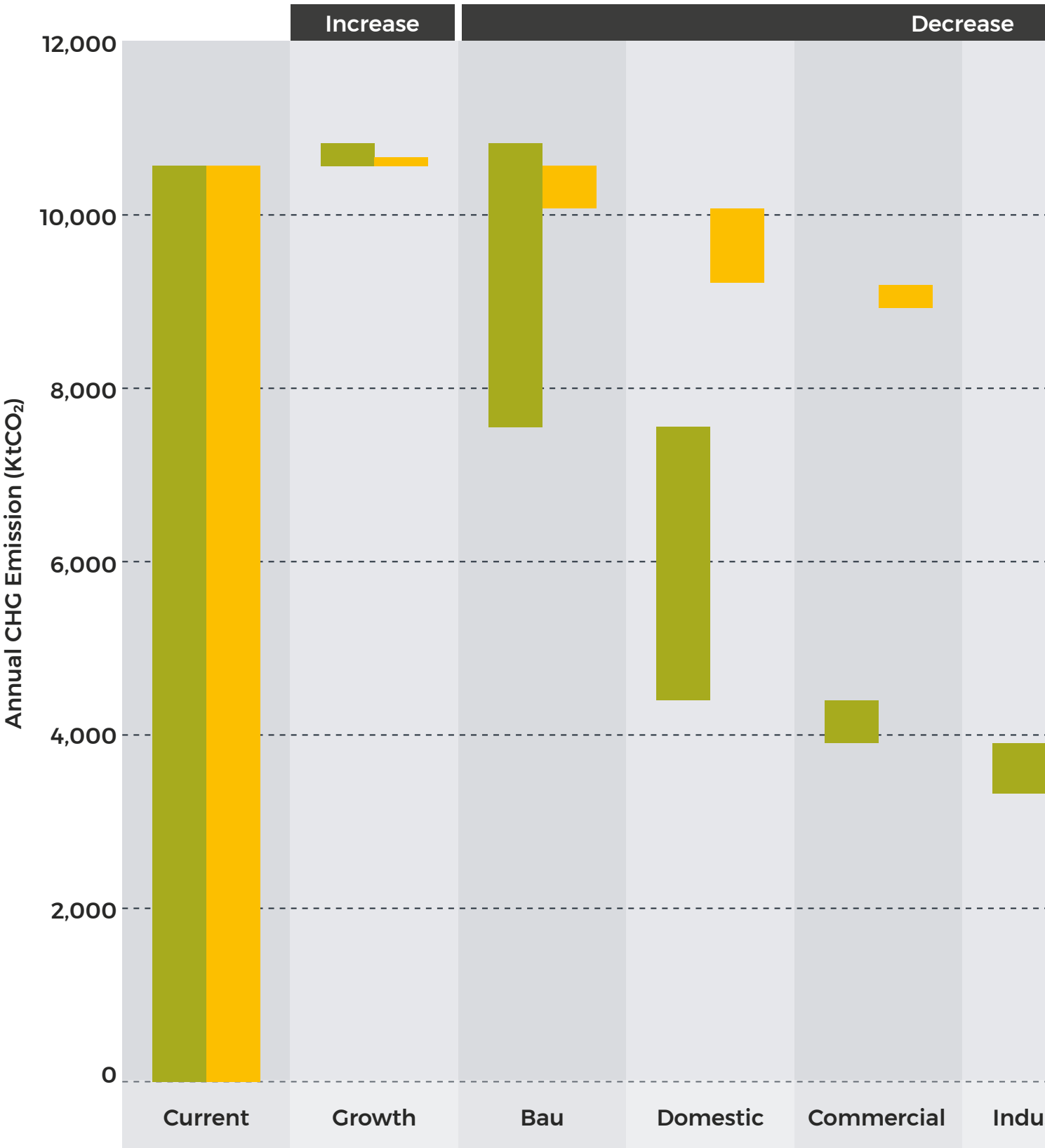


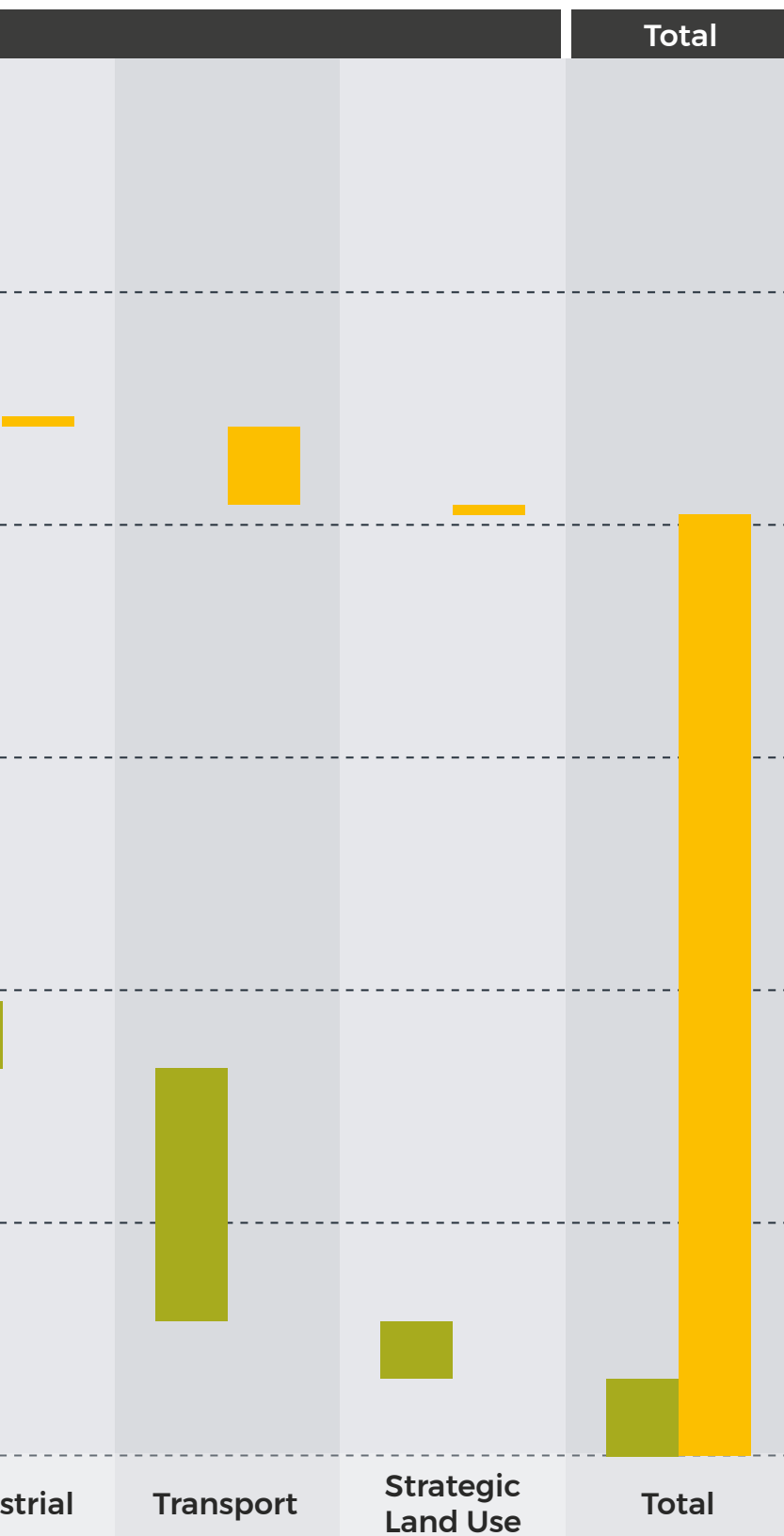
Timeline of actions under 'Accelerated' scenario by 2041

			2021	2026
				
	Domestic	Energy Efficiency	Energy efficiency in 100% dwelling	
		Heating Retrofit	100% low-carbon heating system	
		Solar PV	830 MWp of rooftop solar	
	Commercial	Energy Efficiency	Energy efficiency in 73,400 comm	
		Heating Retrofit	Low-carbon heating system retro	
		Solar PV	705 MWp of rooftop solar	
	Industrial	Energy Efficiency and Heating Retrofit	16.7% deployment of H ₂ and 40% 10% energy efficiency 100% electrification for low temp	
		Solar PV	96 MWp of PV	
	Transport	Avoid	35% of people tele-commuting 5	
		Shift	Bike increase to 10% of trips	
		Improve	100% electric taxis, buses, 50% of	
	Land Use	Renewables	59 MV Wind and 448 MWp of sola	
		Natural Capital	Tree coverage in 13% of WMCA ar	
	Systems Management		Upgrade and manage coordinati	



Carbon 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 MtCO₂ 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 4.9MtCO₂ per year by 2026.

■ 2041 ■ 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 in support of delivering the **net zero carbon target for the West Midlands by 2041**.

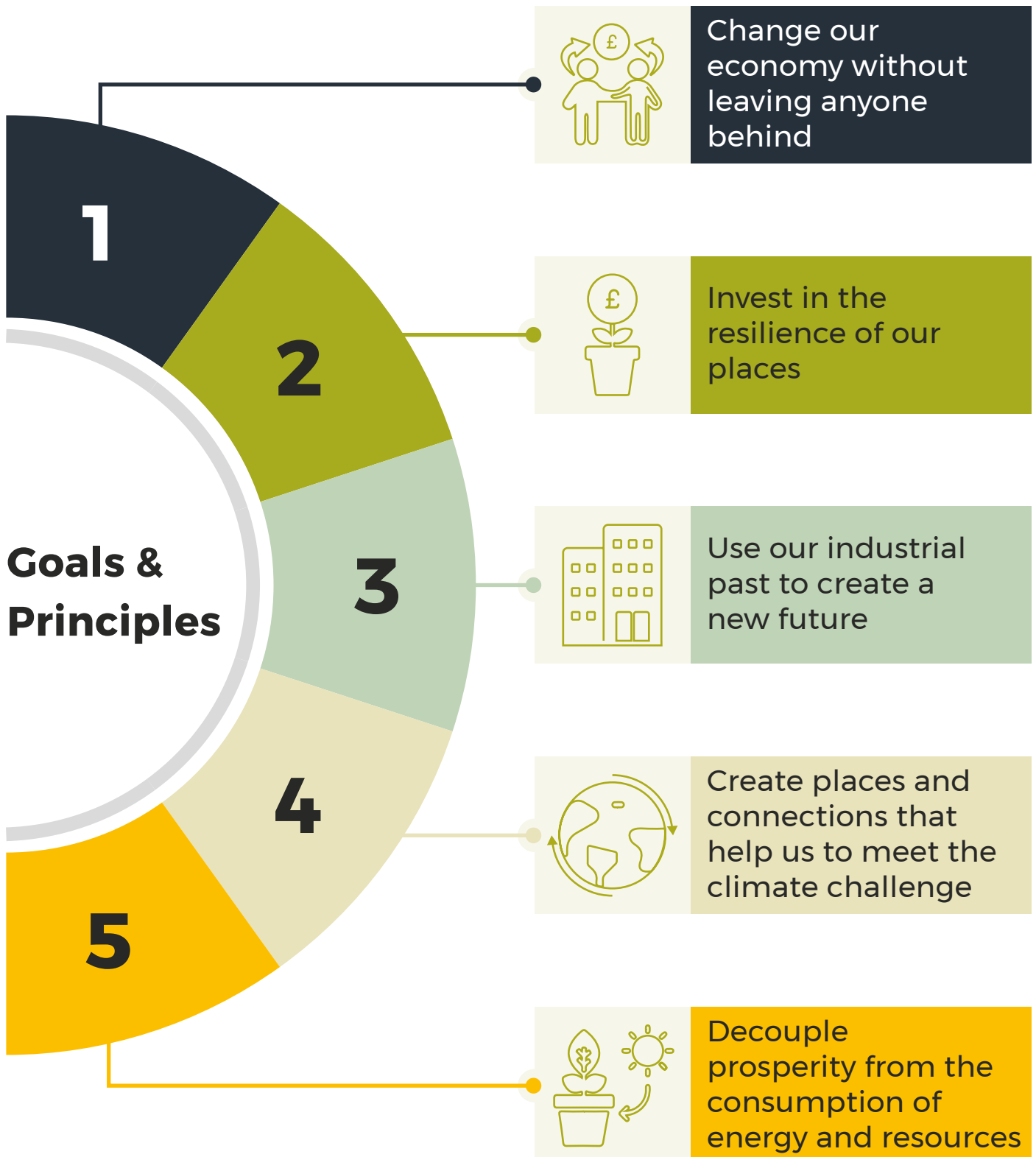
The aim of this first Five Year Plan (FYP) is to provide clear guidance on the types of measures that will need to be implemented in the 2021-2026 timeframe to reach net zero by 2041.

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:



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**



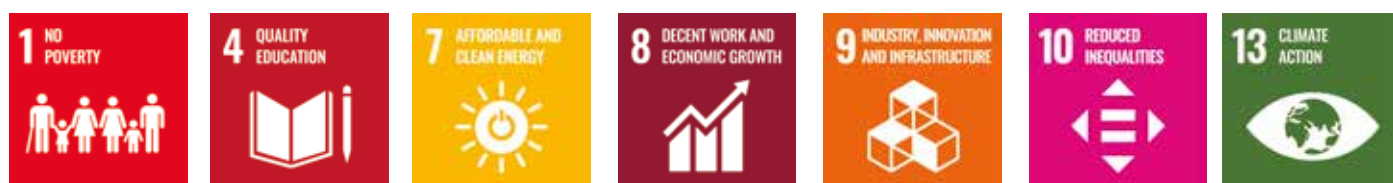
- 2 Make space for **sustainable transport**



- 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 aims to:

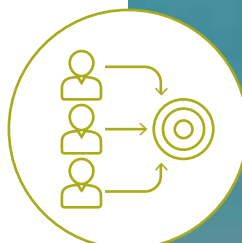
Evidence based plan

Provide an **evidence based 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.

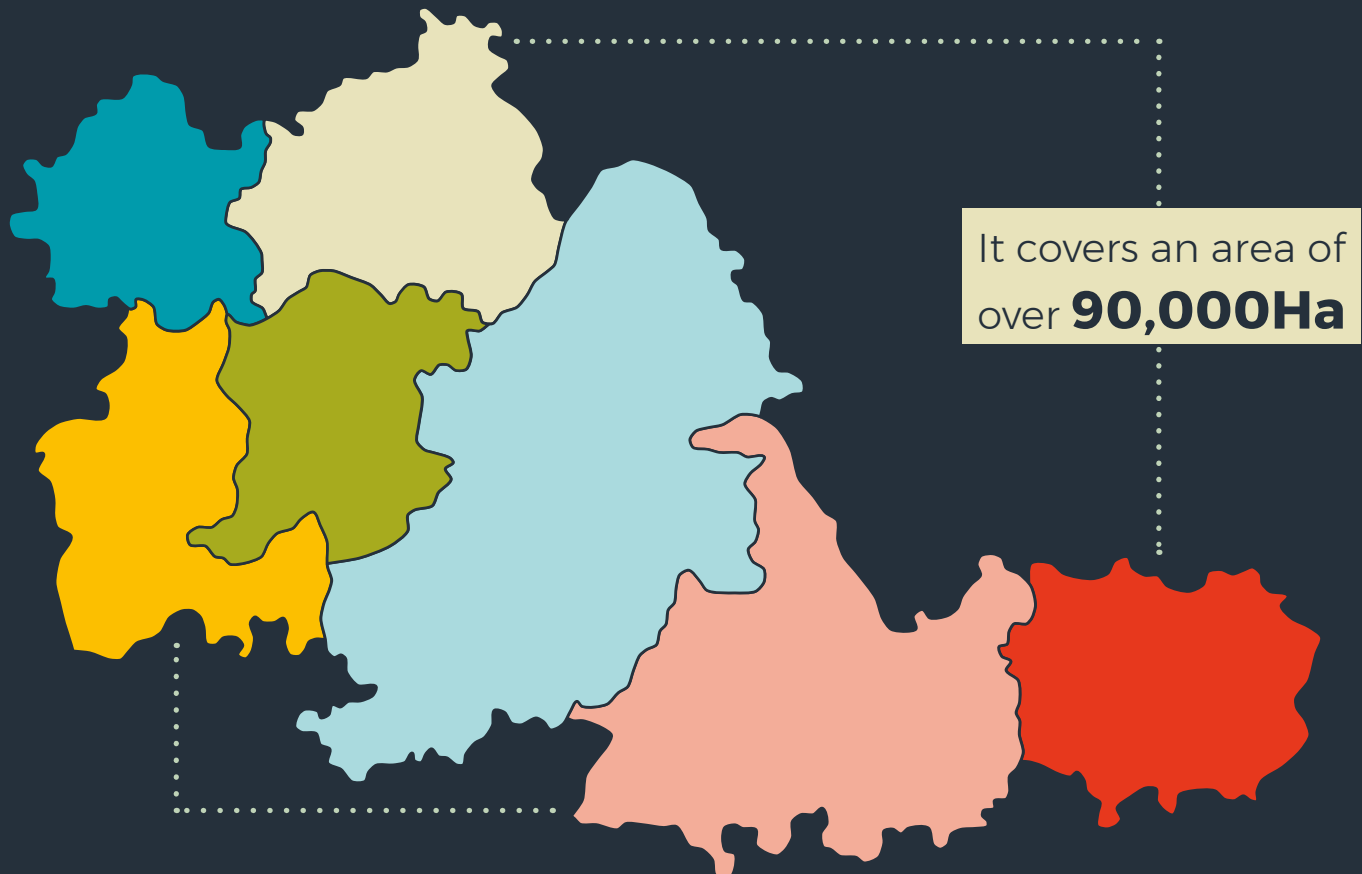




WHERE ARE WE NOW? —————



About the West Midlands Combined Authority region



**2.9m people in
1.15 million homes**

Birmingham

Coventry

Dudley

Sandwell

Solihull

Walsall

Wolverhampton

88,600 businesses
across the seven authorities



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

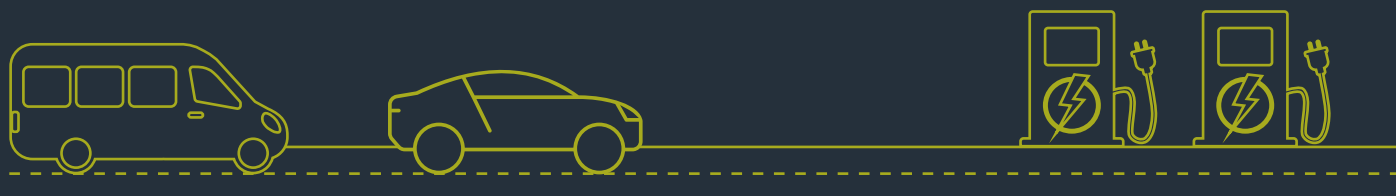
1,000 businesses employing
more than 100 people with a
similar number turning **over more**
than £10million

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



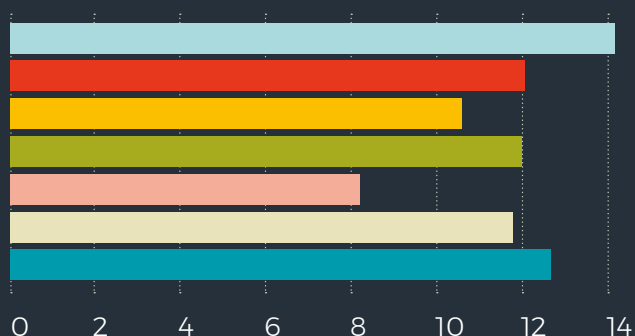
455 public EV chargers
in the West Midlands Combined
Authority of which 97 are 'rapid'.

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

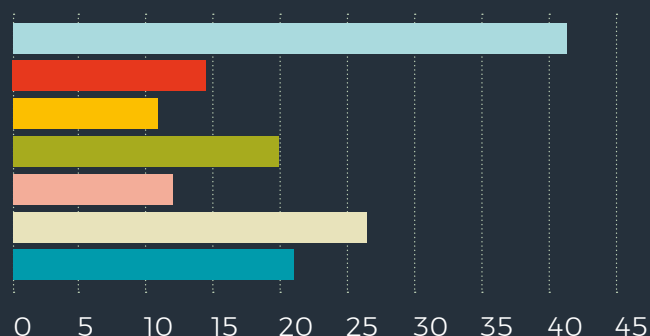


There is significant **variation across the seven local authorities**
including the levels of fuel poverty (the national average for fuel
poverty is 10.3%) and in the indices of multiple deprivation.

Proportion of households
fuel poor (%)

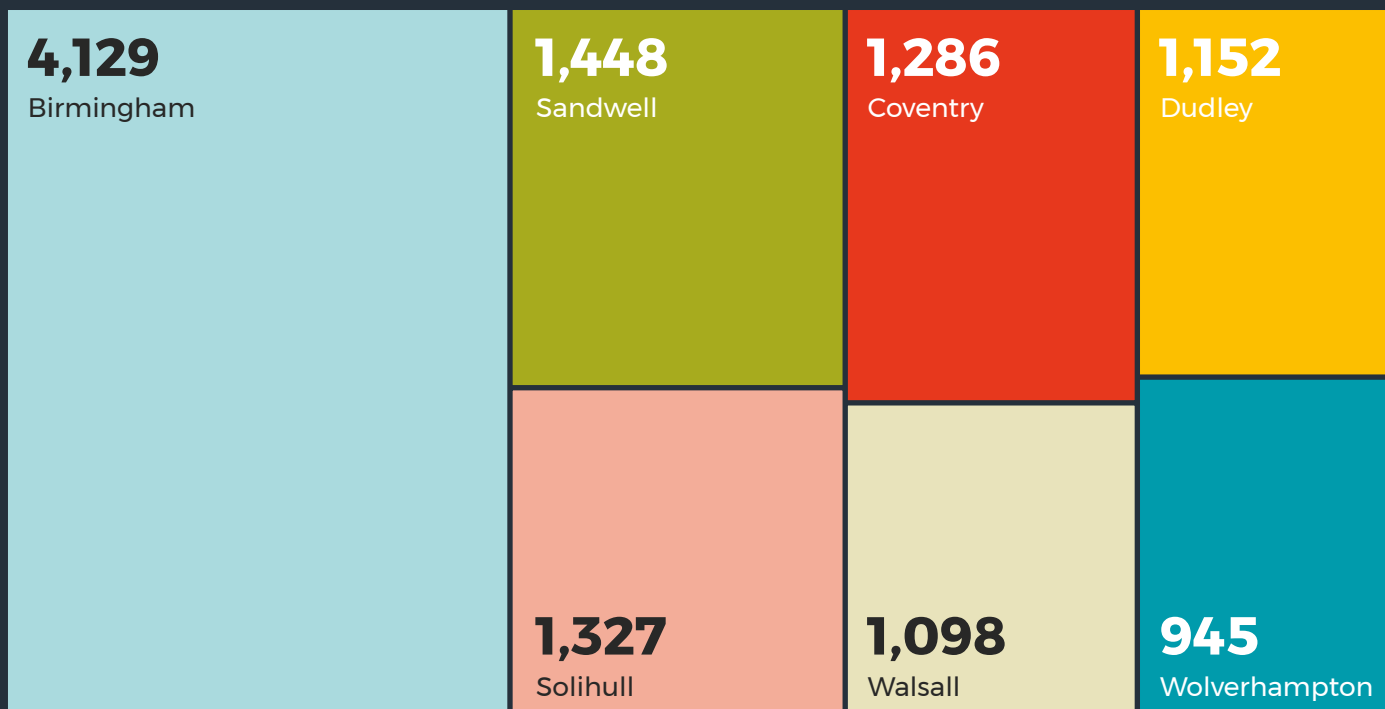


Proportion of LSOAs in most
deprived 10% nationally



GHG emissions in the West Midlands Combined Authority

2018 Share of GHG Emissions (ktCO₂)

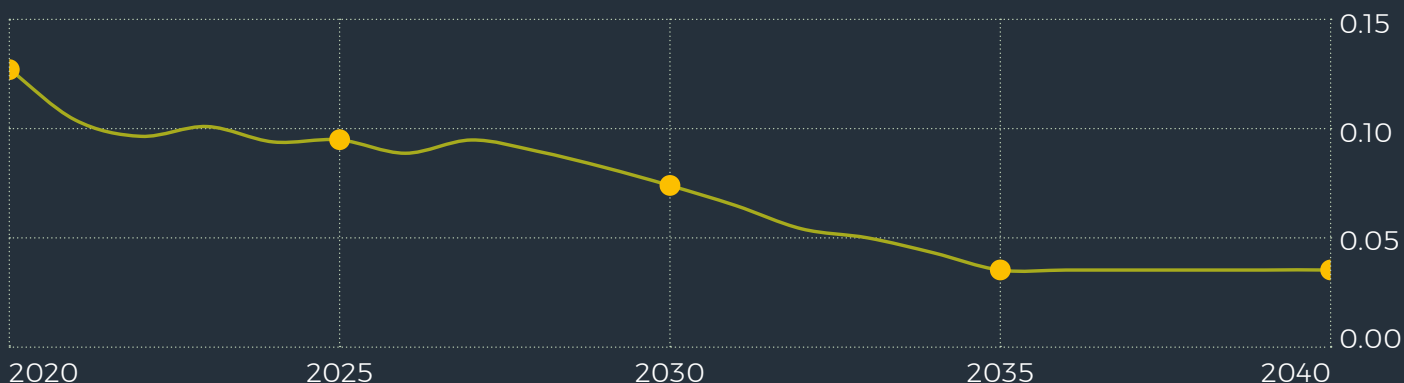


11,385 ktCO₂ emitted across
The seven boroughs *in 2018*

The split in energy consumption of **50,238 GWh**

Projected Decarbonisation of Electricity

(kgCO₂ / kWh)



Energy Use

by End User

Energy consumption is split evenly between -

29% Transport

39% Domestic

32% Industry & Commercial



45% Gas



32% Petroleum products



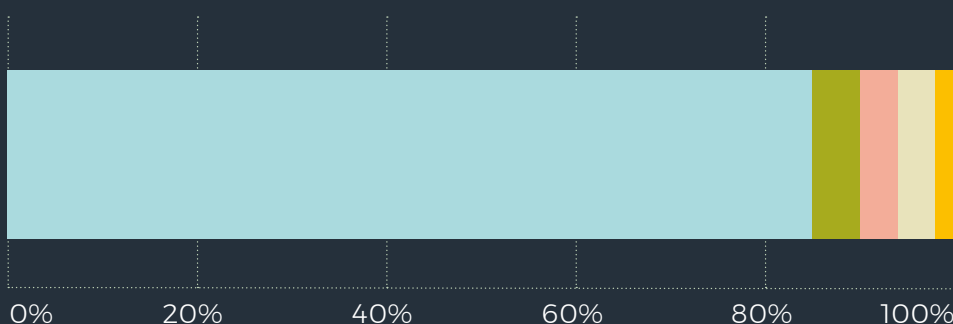
21% Electricity



2% Other sources

UK Heating Appliances in Homes (%)

Gas Central Heating Electric Storage Heating Oil Central Heating
Other Communal Heating



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

⬆ **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

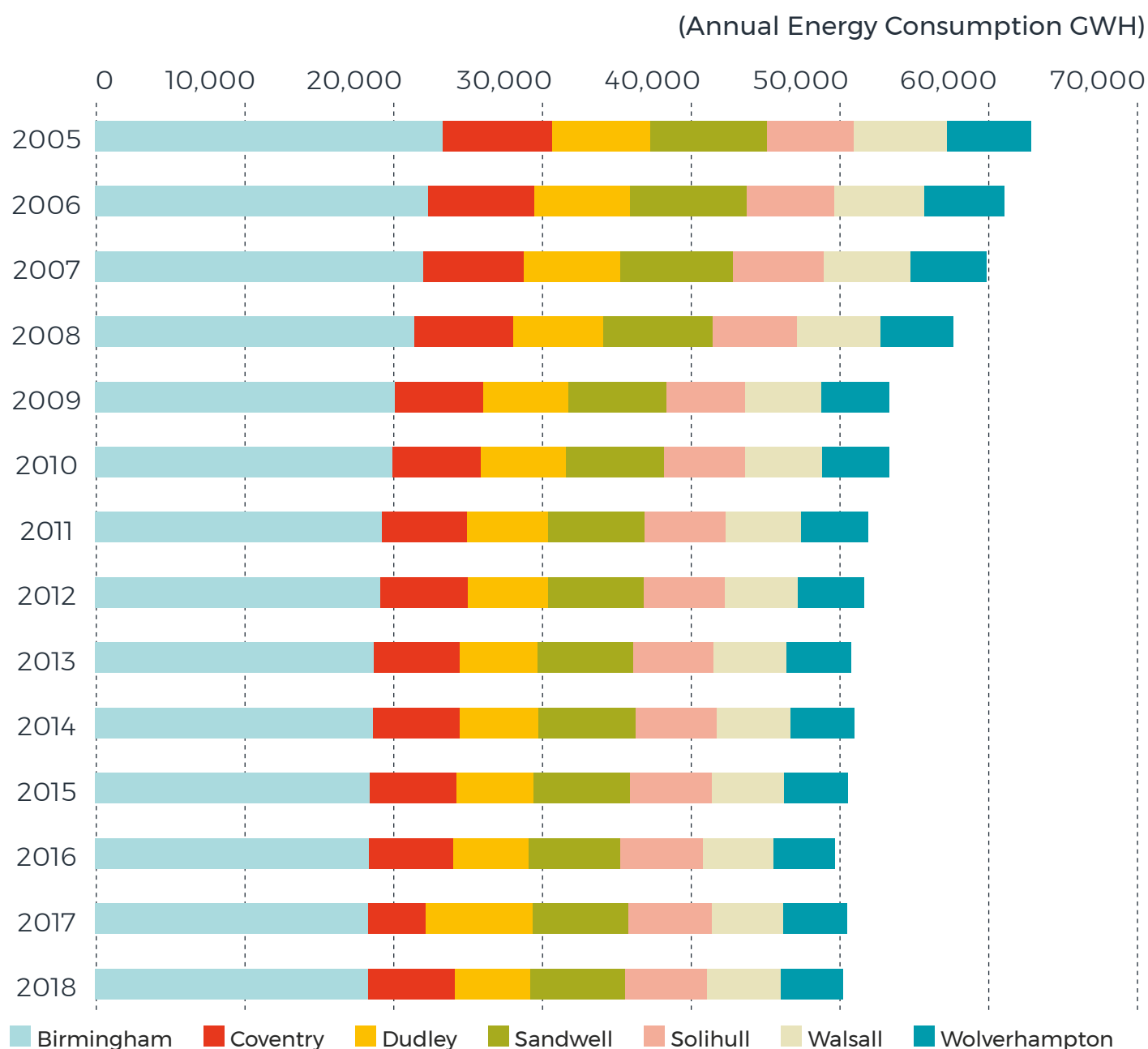
⬆ This approach does mean, however, that **only energy use undertaken within the physical boundary is considered**. Other emissions, such as from the release of fluorinated gases, often used in refrigeration, are omitted.





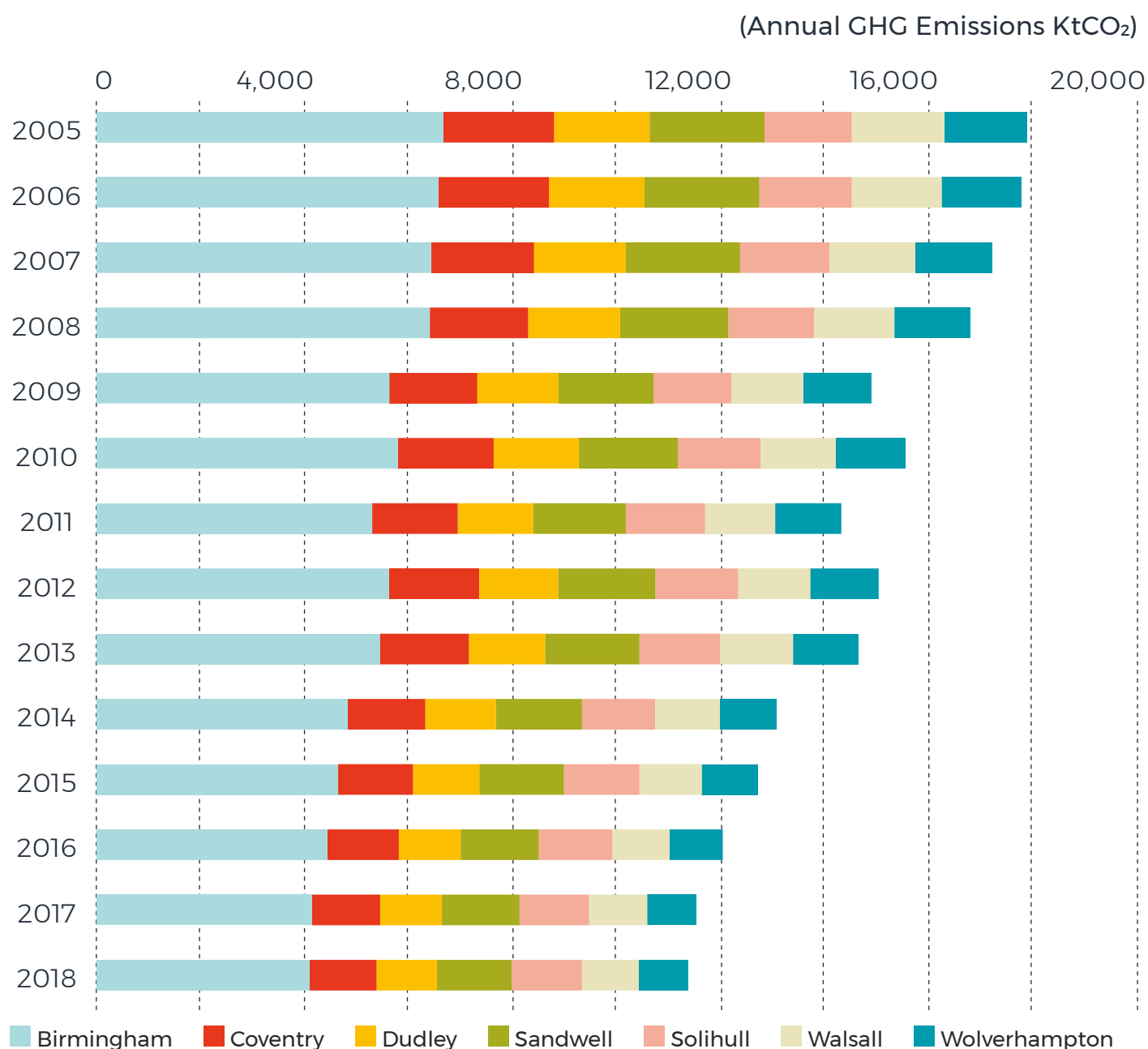
West Midlands Combined Authority area energy consumption

Energy consumption in the region	Fallen since 2005	The split of emissions by end-user		The split of emissions by fuel	
50,000 GWh per annum	↓ 20%	Domestic	39%	Natural Gas	45%
		Commercial/Industry	32%	Electricity	21%
		Transport	29%	Petroleum	32%



West Midlands Combined Authority area GHG emissions

Greenhouse gas emissions in the region	Fallen since 2005	The split of emissions by end-user		The split of emissions by fuel	
11 KtCO ₂ per annum	↓ 36%	Domestic	34%	Natural Gas	37%
		Commercial/Industry	30%	Electricity	22%
		Transport	36%	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

Dudley

Low carbon place project

LED street lighting
completion

Sandwell

Council own emissions net zero
by 2030 and LA wide by 2041

Town centre heat network



Walsall

Council own emissions net zero by 2050

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

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

Coventry

Council own emissions net zero and at least 55% reduction by 2030 (against 1990)

All electric bus city by 2025

EV charging infrastructure

Developing a national pilot for a Regional Energy Systems Operator (RESO)

Birmingham

Solihull

Coventry

WMCA investment and programme development

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 and Green Economy

- Circular Economy task-force** 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.

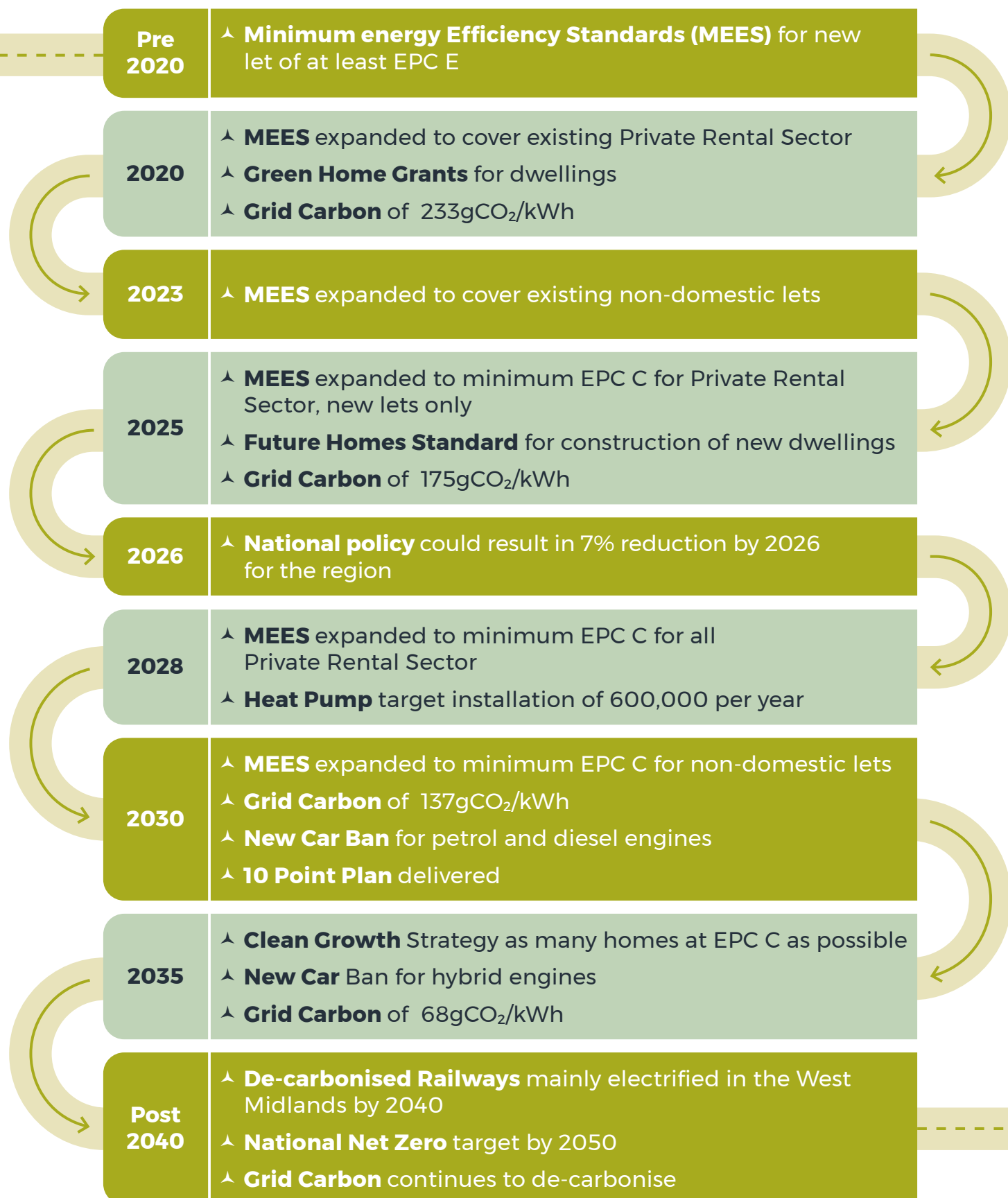


Natural Capital

- 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

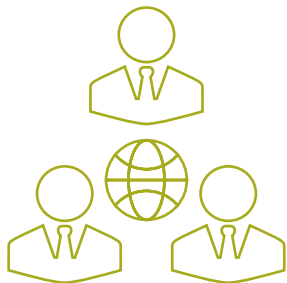




STAKEHOLDER ENGAGEMENT & DATA REVIEW



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



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.

“

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

“

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.

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

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.

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.

Resources

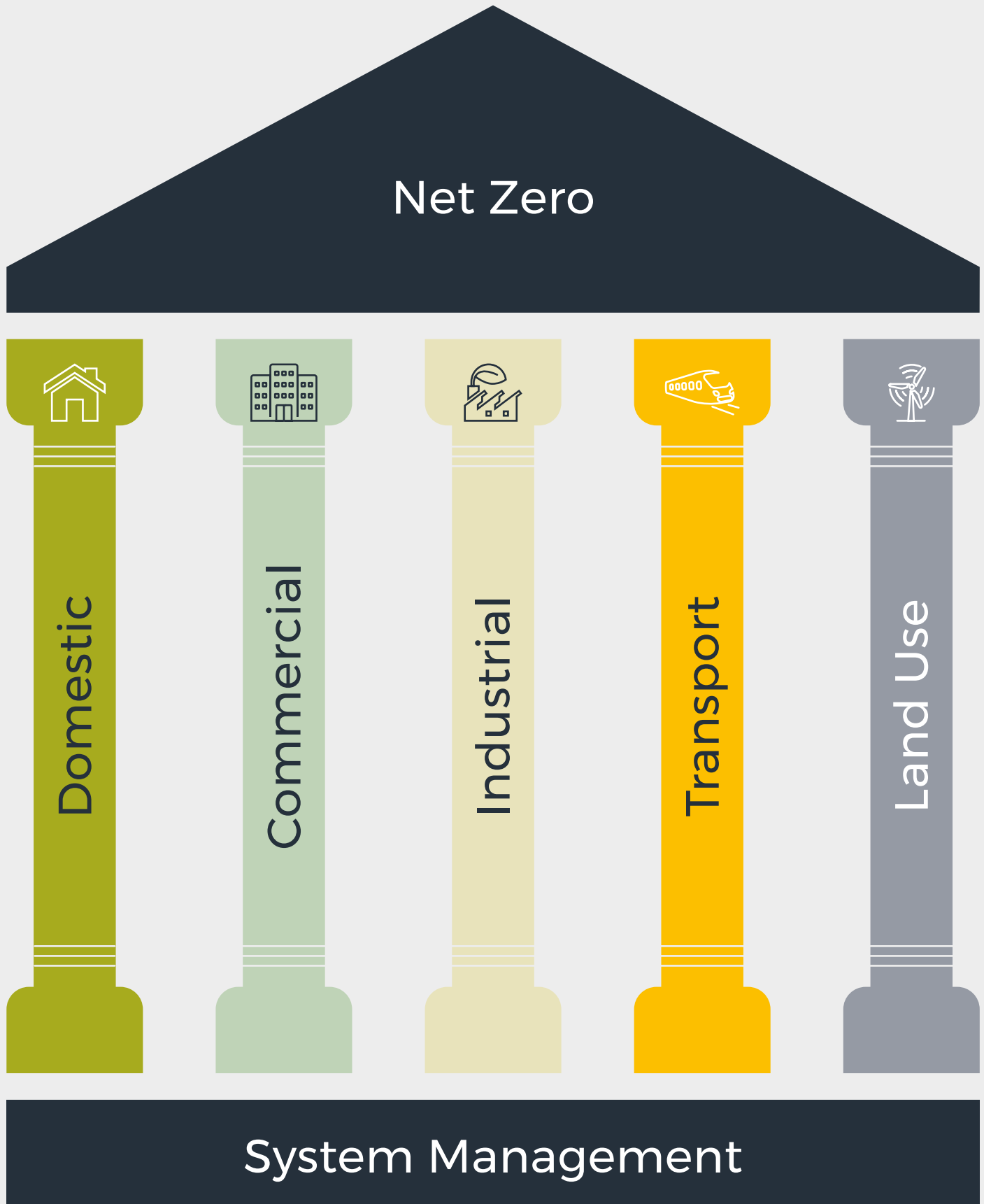
- ▲ Main barriers – access to finance & funding structure, followed by regional powers & infrastructure.
- ▲ Clear structures and avenues for funding for each intervention would instil confidence.
- ▲ There is a need for national grid to be able support energy efficient transitions.
- ▲ The plan needs 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



Sectoral Breakdown



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

Co-benefits of delivery -

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

- ✦ Lower energy bills & fuel poverty
- ✦ Reduce inequalities

- ✦ Boosting regional competitiveness
- ✦ Retain energy spend in region
- ✦ New business opportunity & economic growth

- ✦ Cleaner air
- ✦ Better physical & mental health

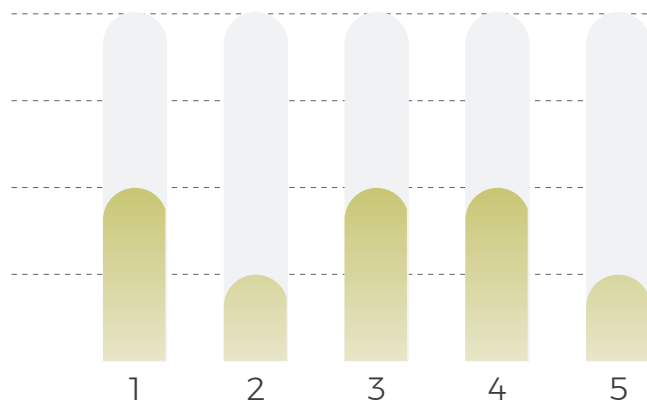
- ✦ Adapting to climate change
- ✦ Enhancing biodiversity
- ✦ Better physical & mental health

Delivery Scenarios

Moderate

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

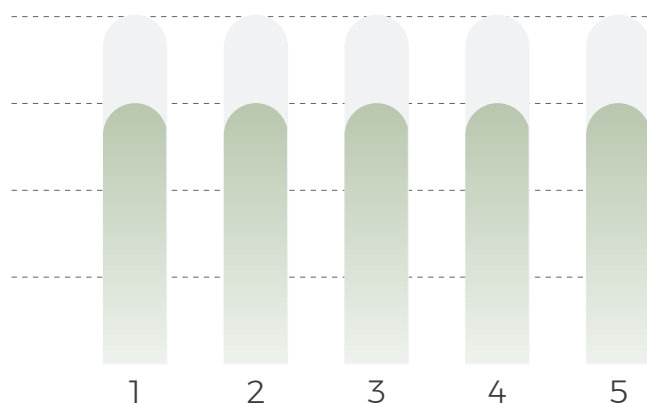
✗ Achieve 2026 goal ✗ Achieve 2041 goal



Accelerated

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.**

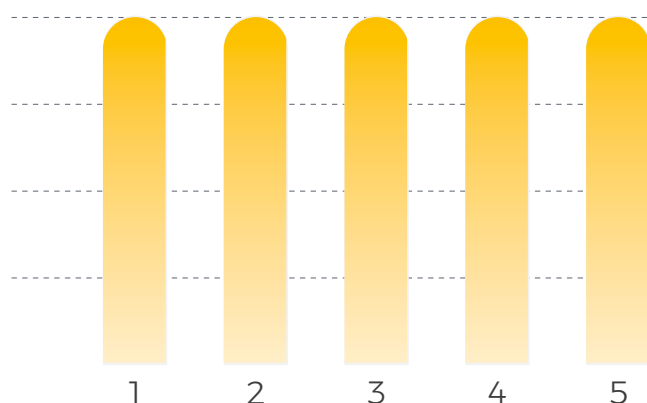
✗ Achieve 2026 goal ✓ Achieve 2041 goal

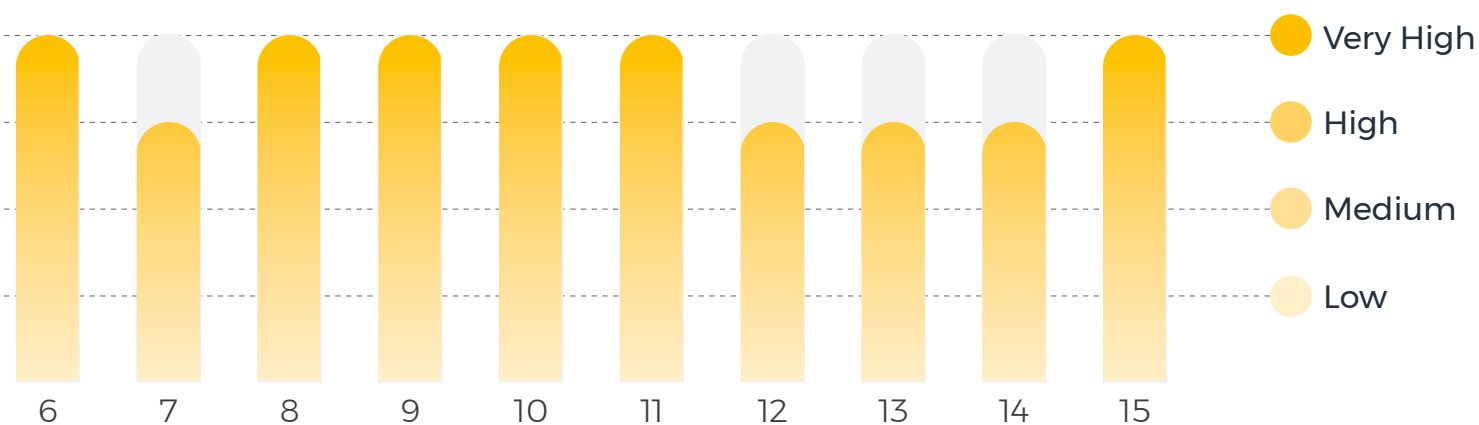
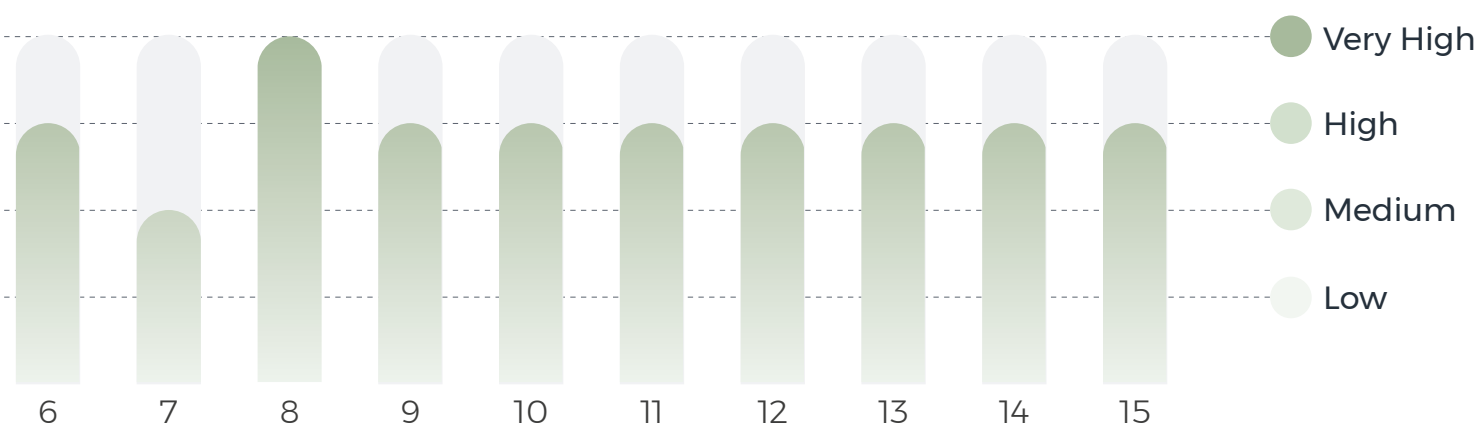
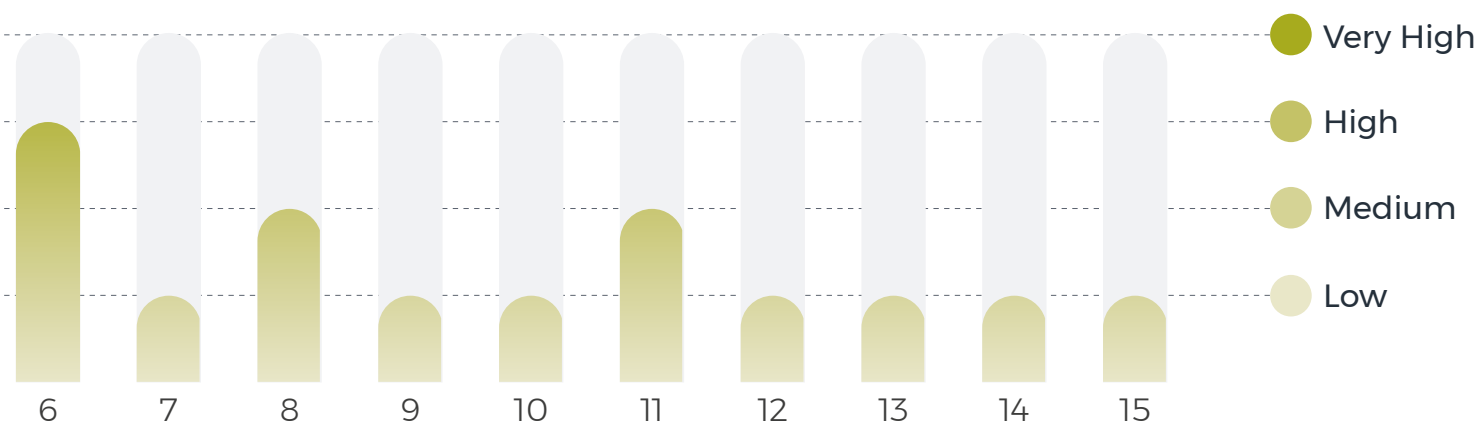


Maximum









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.

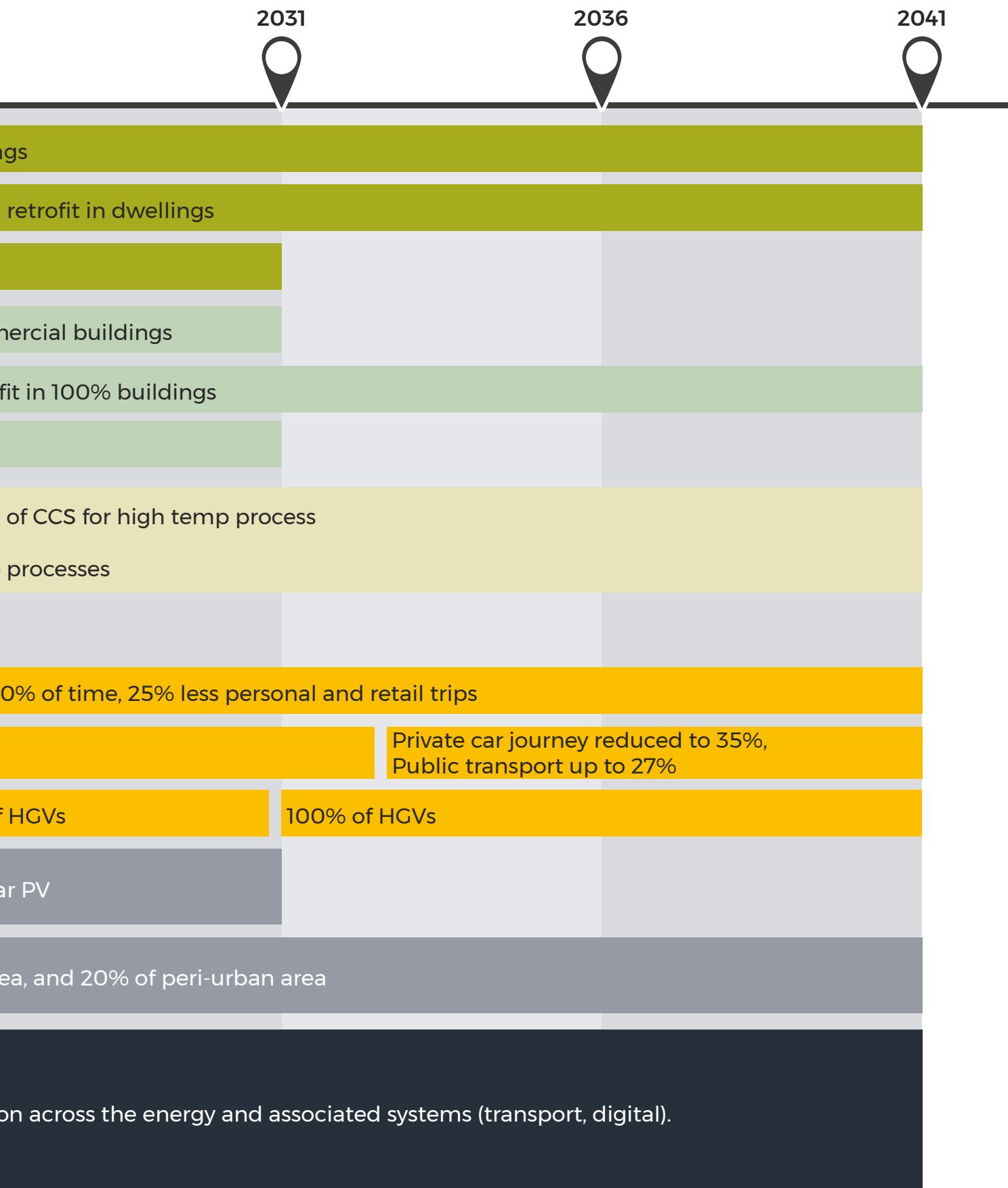
✓ Achieve 2026 goal ✓ Achieve 2041 goal





Ambition and timeline under 'Accelerated' scenario to 2041

			2021	2026
				
	Domestic	Energy Efficiency	Energy efficiency in 100% dwellings	
		Heating Retrofit	100% low-carbon heating system	
		Solar PV	830 MWp of rooftop solar	
	Commercial	Energy Efficiency	Energy efficiency in 73,400 commercial buildings	
		Heating Retrofit	Low-carbon heating system retrofits	
		Solar PV	705 MWp of rooftop solar	
	Industrial	Energy Efficiency and Heating Retrofit	16.7% deployment of H ₂ and 40% energy efficiency	
		Solar PV	100% electrification for low temperature processes 96 MWp of PV	
	Transport	Avoid	35% of people tele-commuting 5 days a week	
		Shift	Bike increase to 10% of trips	
		Improve	100% electric taxis, buses, 50% of other vehicles	
	Land Use	Renewables	59 MV Wind and 448 MWp of solar	
		Natural Capital	Tree coverage in 13% of WMCA area	
	Systems Management		Upgrade and manage coordination	

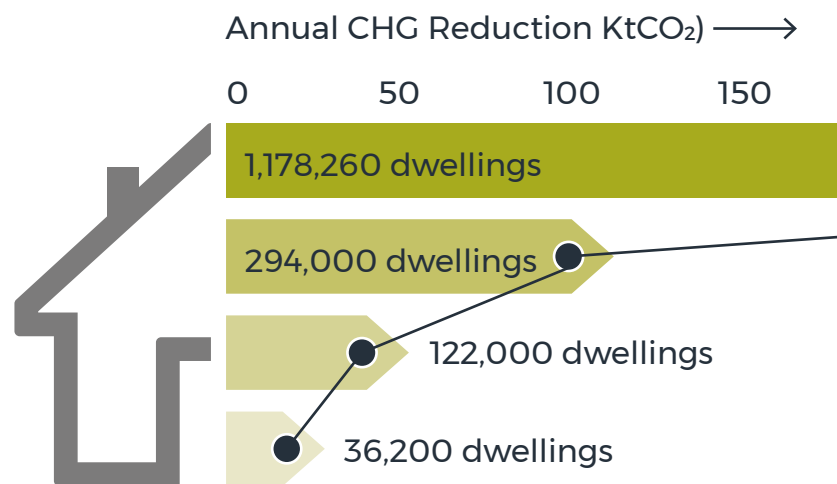


Domestic Retrofit

Goal 1 – Energy Efficiency Retrofit



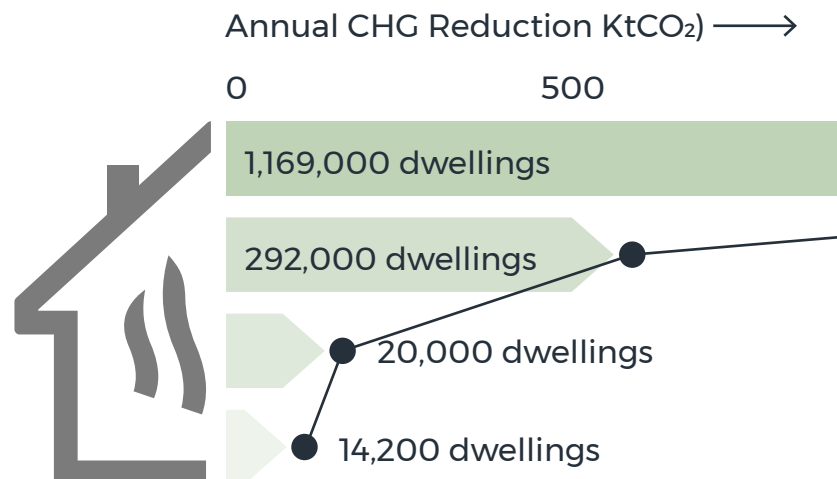
The installation of specific measures including **smart meters, smart thermostats, cavity and solid wall insulation, loft insulation, double glazing and behaviour change.**



Goal 2 – Heating Retrofit



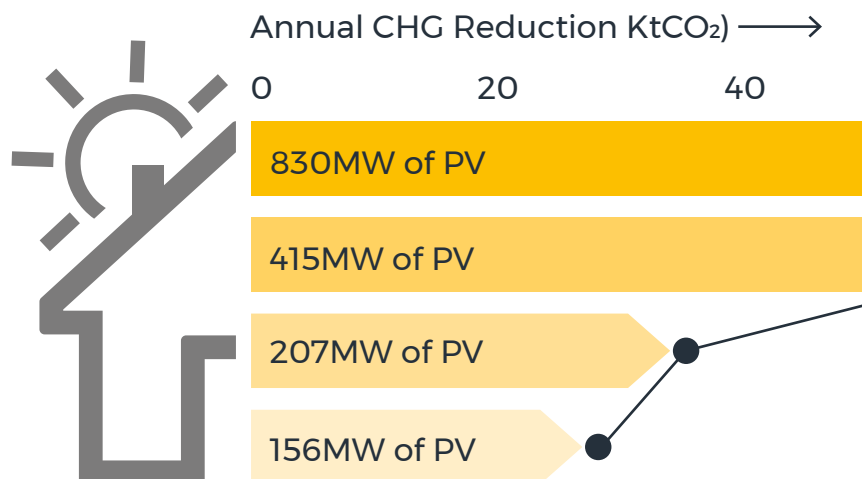
Alongside energy efficiency measures, the installation of renewable heating (nominally air source heat pump) to provide heating and hot water.
Hydrogen as an alternative after 2026.



Goal 3 – Solar PV

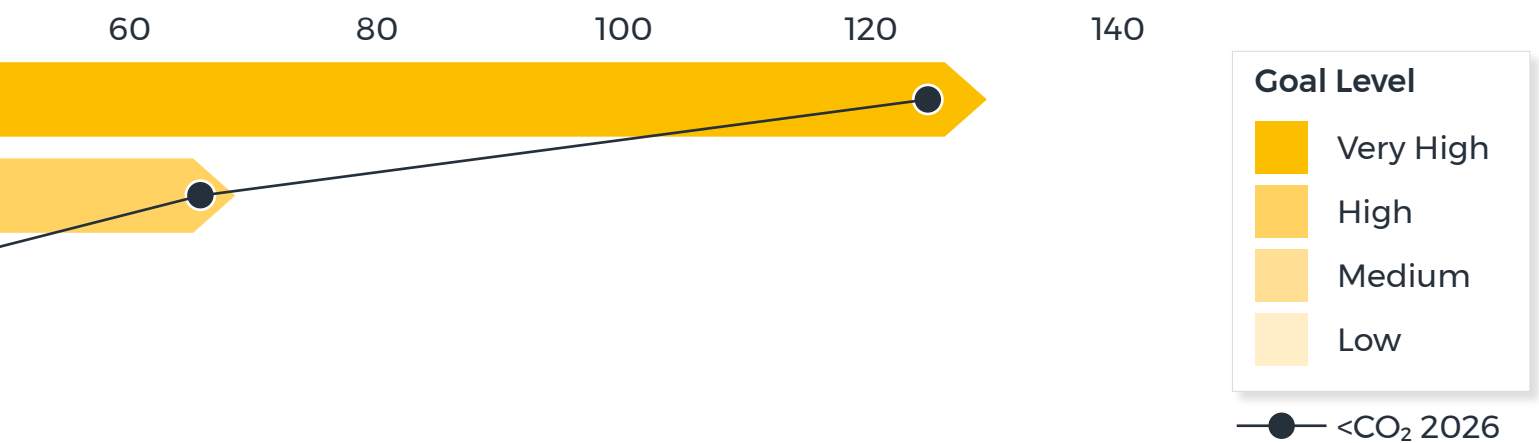
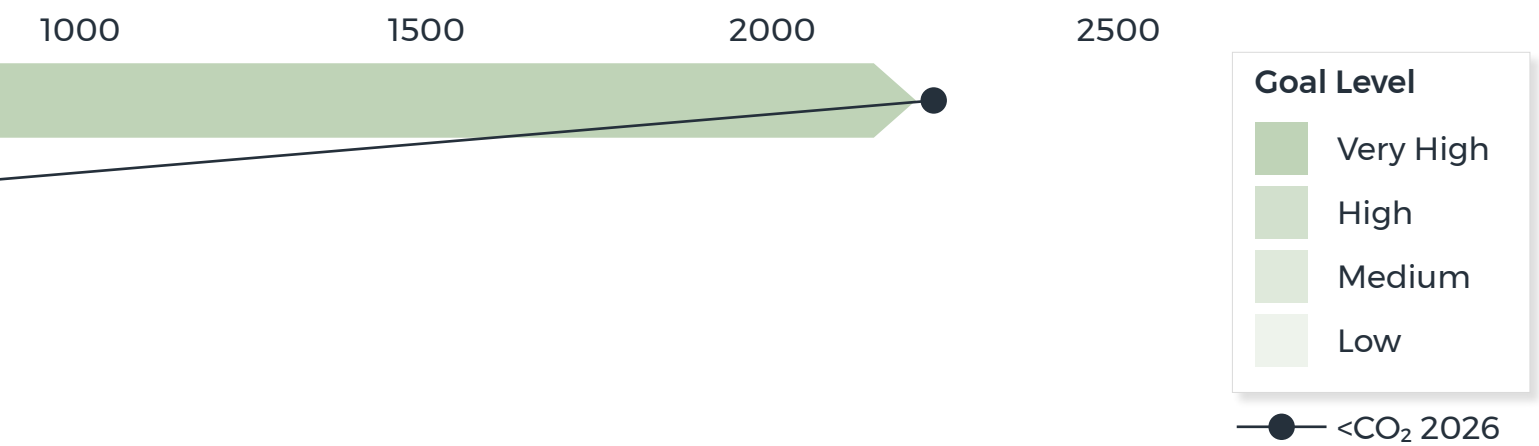
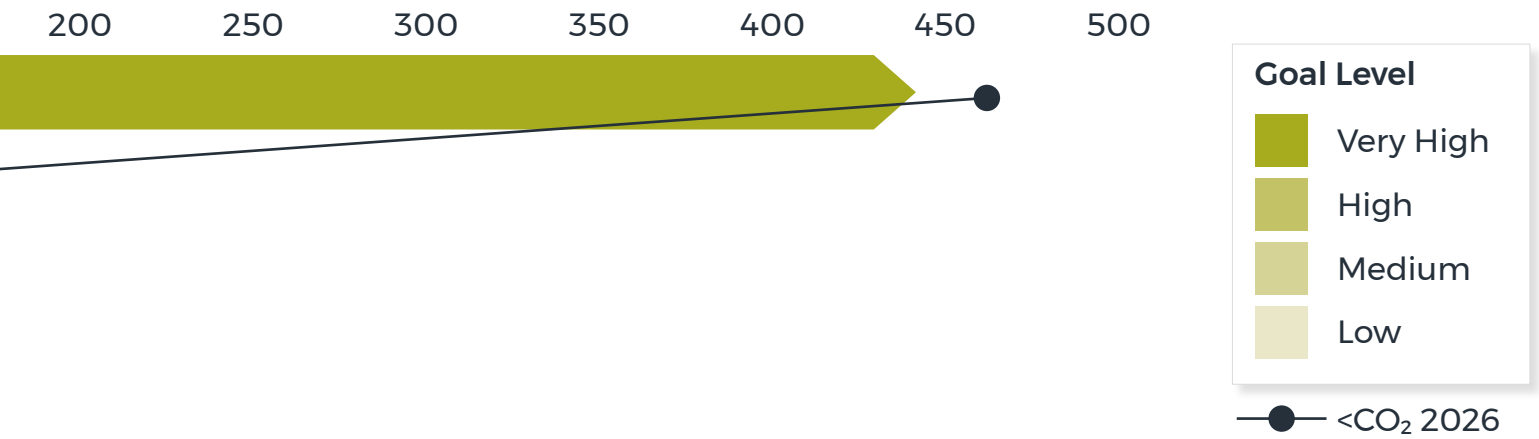


Micro-generation within homes consisting primarily of rooftop solar. Photovoltaics will be the vast majority. Could include storage but this doesn't change the carbon impact.



Proportion of savings in 2026 (at High goal level)



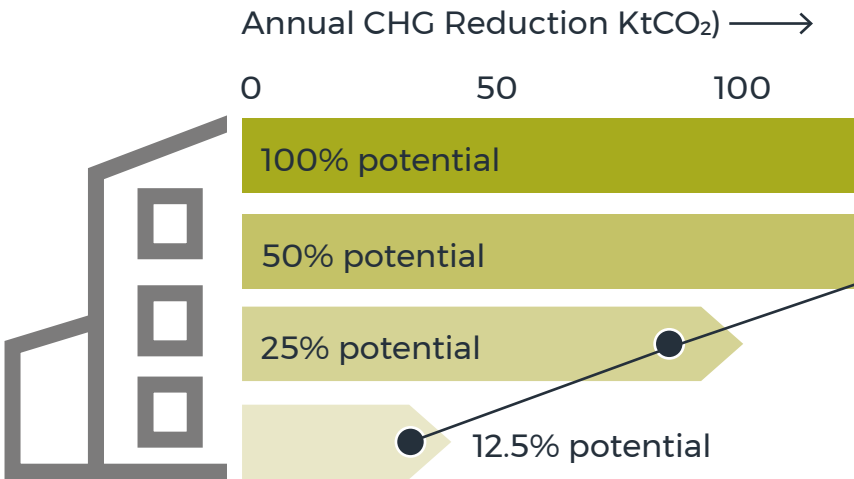


Commercial Retrofit

Goal 4 – Energy Efficiency Retrofit



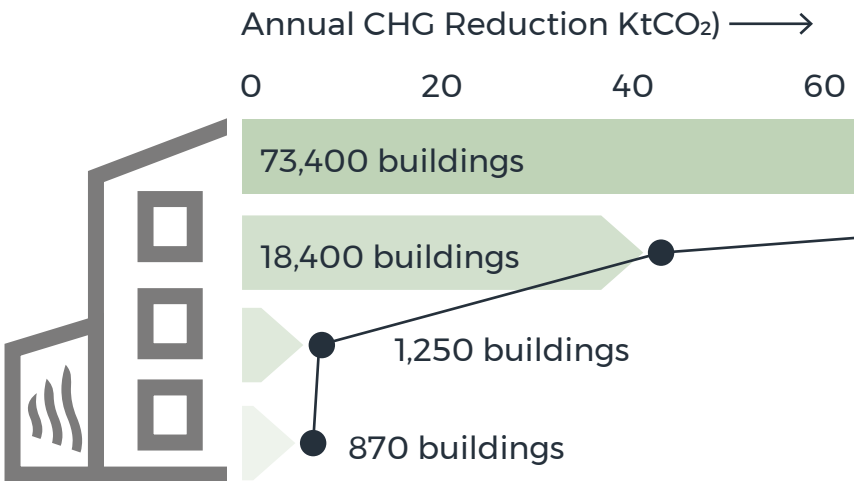
Energy efficiency measures applied to offices, retail and other commercial property types, as identified in the Building Energy Efficiency Surveys



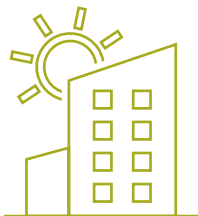
Goal 5 – Heating Retrofit



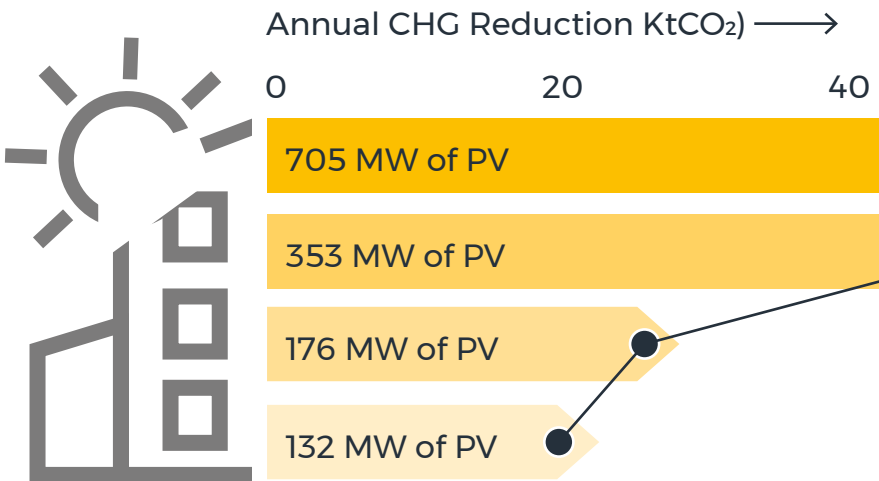
Applied to a 26,000 retail and 18,000 offices (excluding industry). Replacement of fossil fuel boilers with nominally air source heat pumps. Heat pump COP of 2.75



Goal 6 – Solar PV

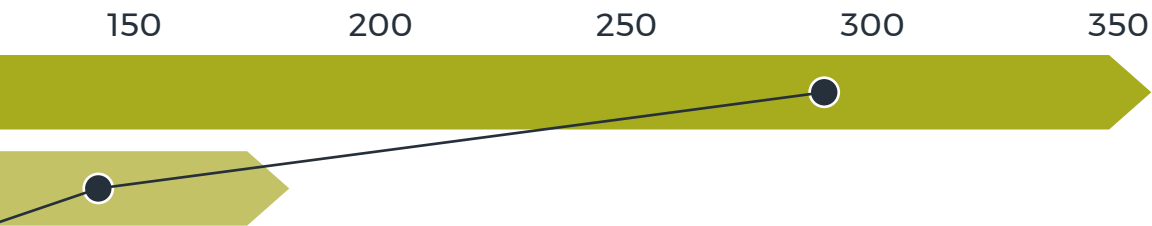


Rooftop Solar PV on commercial properties. Photovoltaics will be more beneficial in the shorter term as the grid is still comparatively high carbon

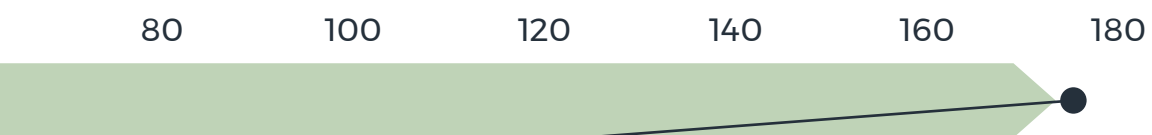


Proportion of savings in 2026 (at High goal level)





—●— <CO₂ 2026



—●— <CO₂ 2026



—●— <CO₂ 2026



Industrial Retrofit

Goal 7 – Energy Efficiency & Fuels

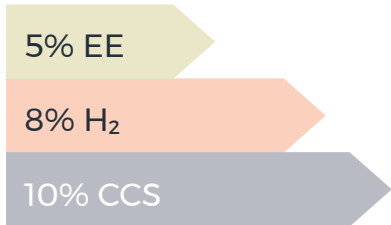
Covering steel and iron, mineral products, chemicals, mechanical / electrical engineering, vehicles manufactures, textiles, food and beverages, printing, paper and other industries.

- Energy Efficiency
- Hydrogen
- CCS



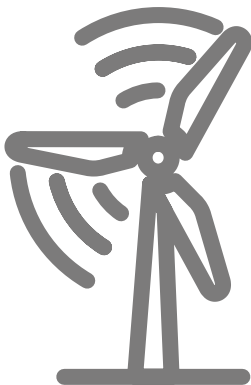
Annual CHG Reduction (KtCO₂) →

102 104 106 108



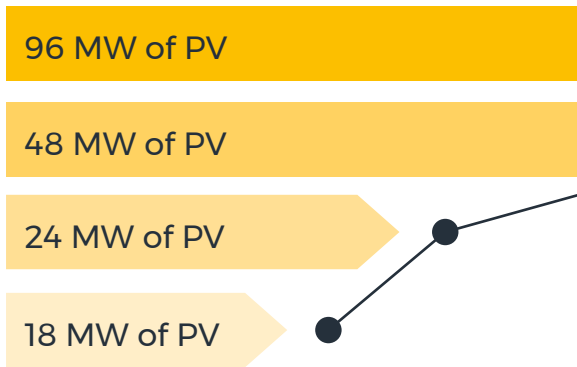
Goal 8 – Solar PV

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



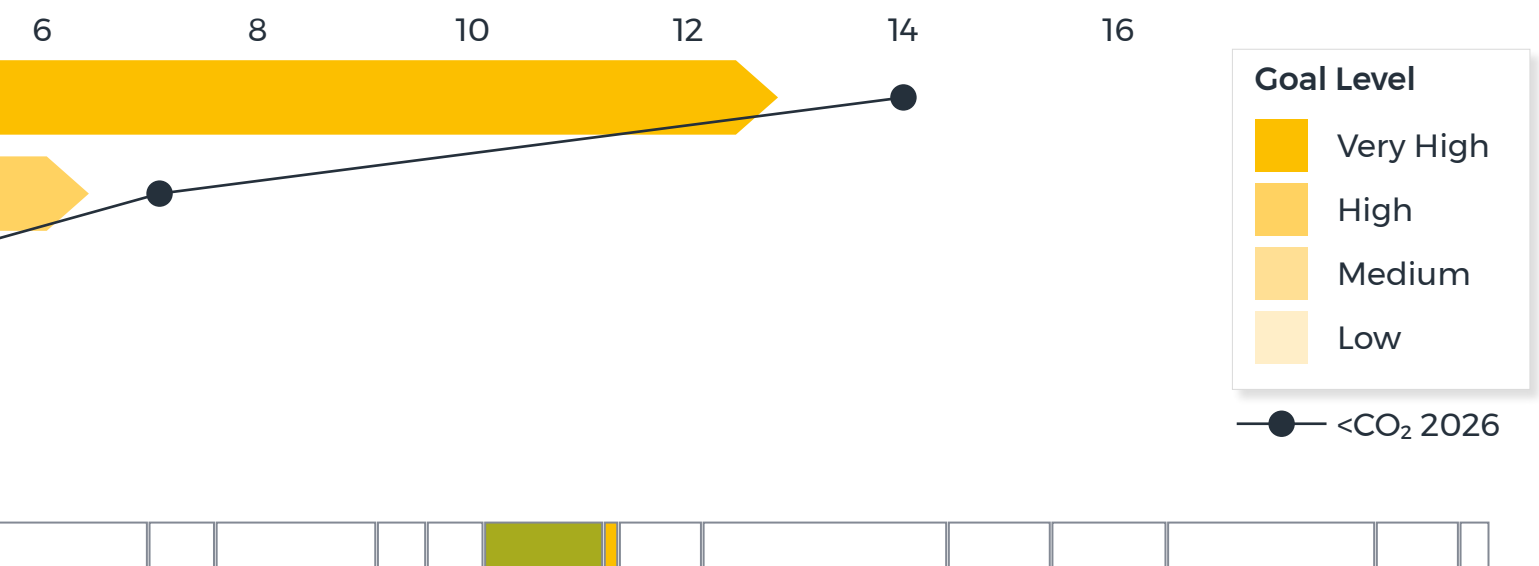
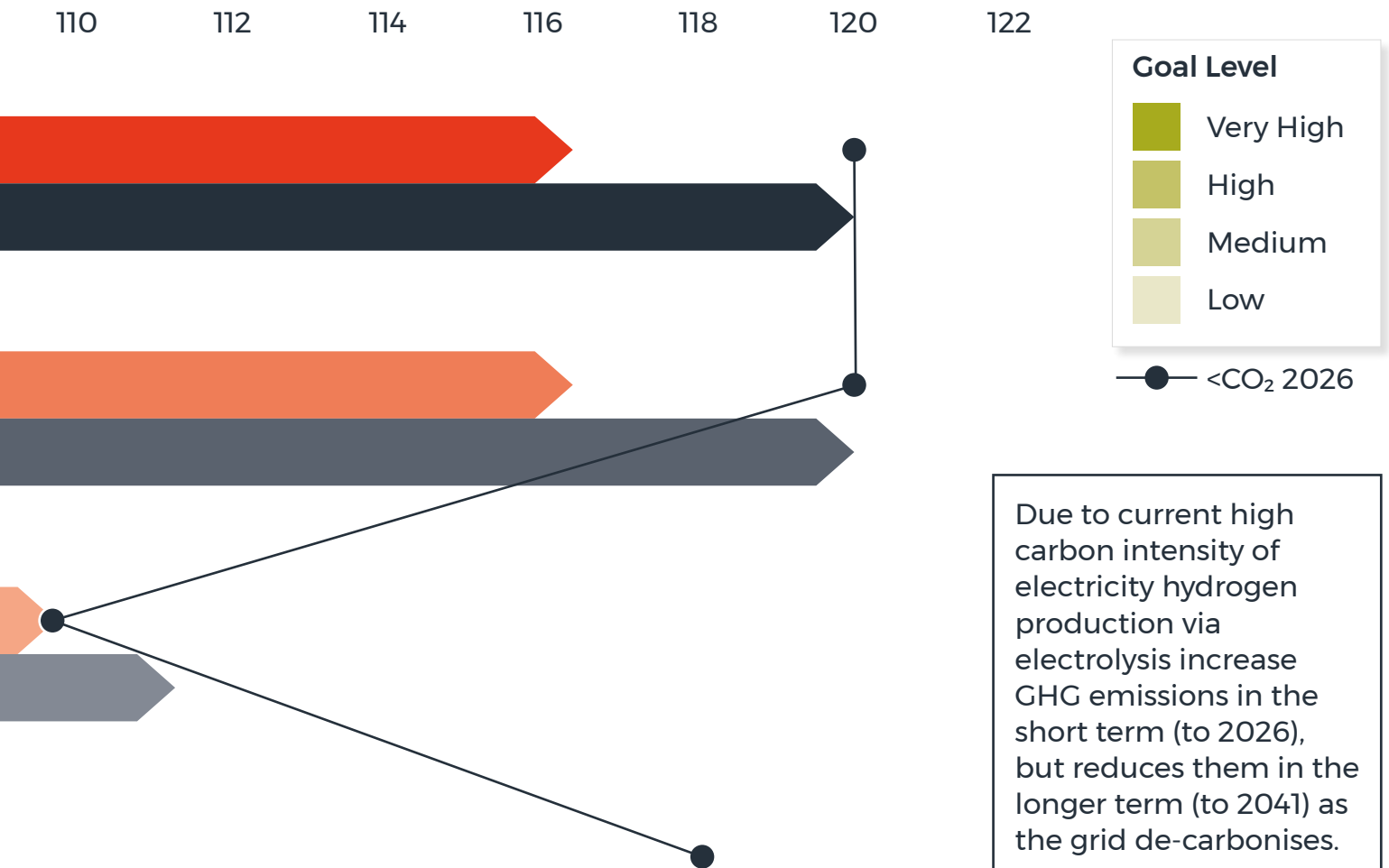
Annual CHG Reduction (KtCO₂) →

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Proportion of savings in 2026 (at High goal level)





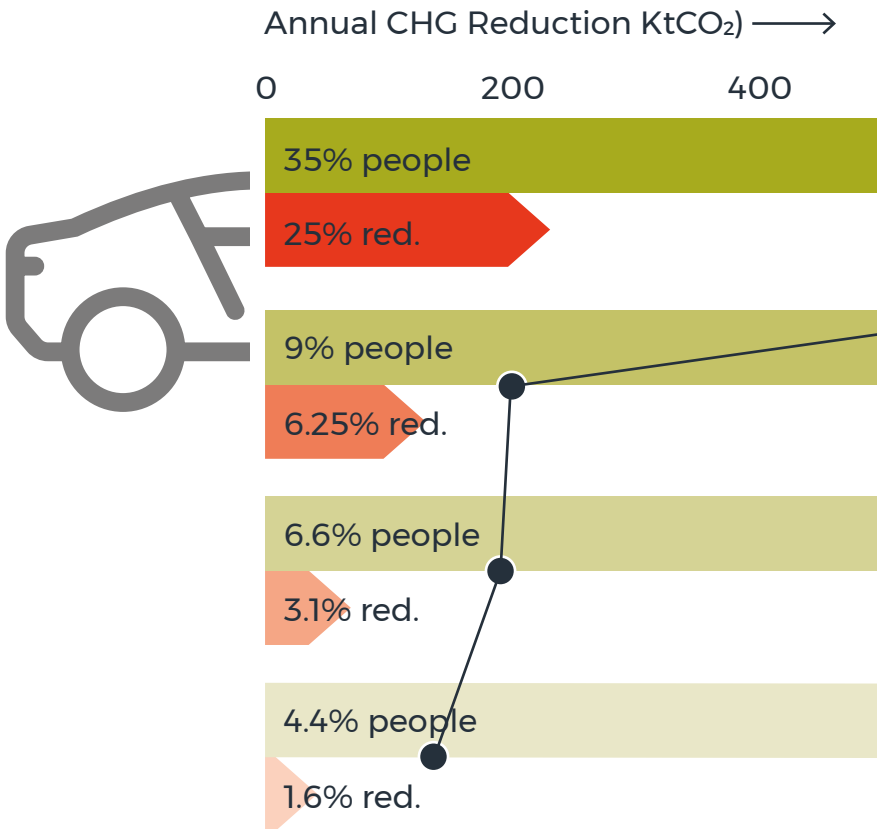
Transport

Goal 9 – Avoiding travel

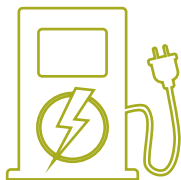


Increased take up of working from home or working at local hubs. 5-10% work from homes (pre-pandemic levels).Reduction in travel by 25% for retail and business (excluding commuting)

- Car
- Cycling

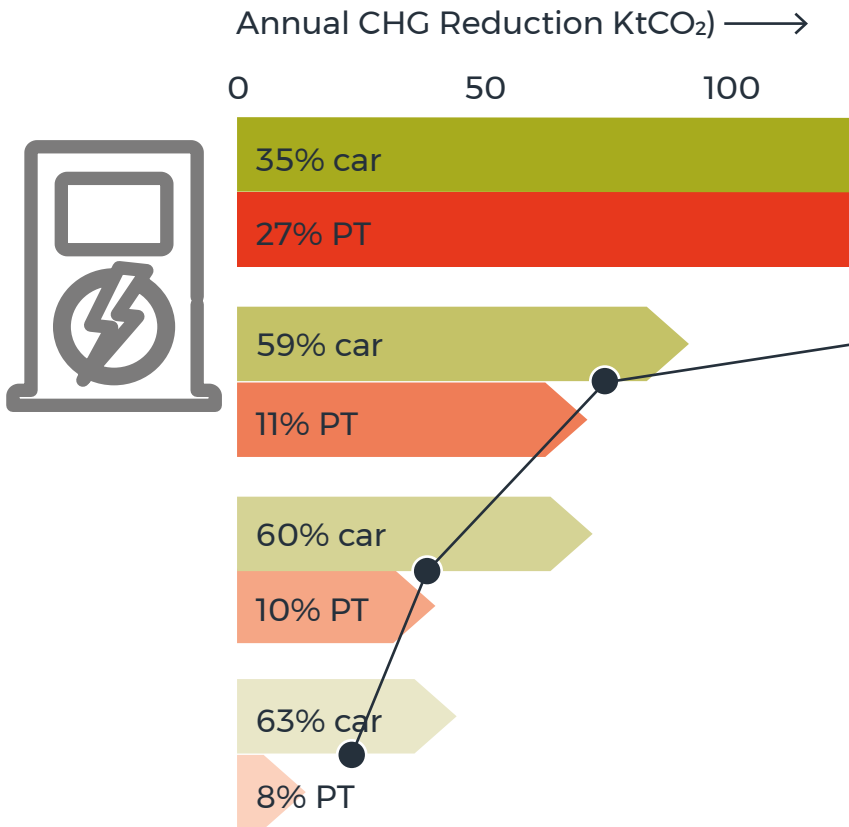


Goal 10 – Shifting travel



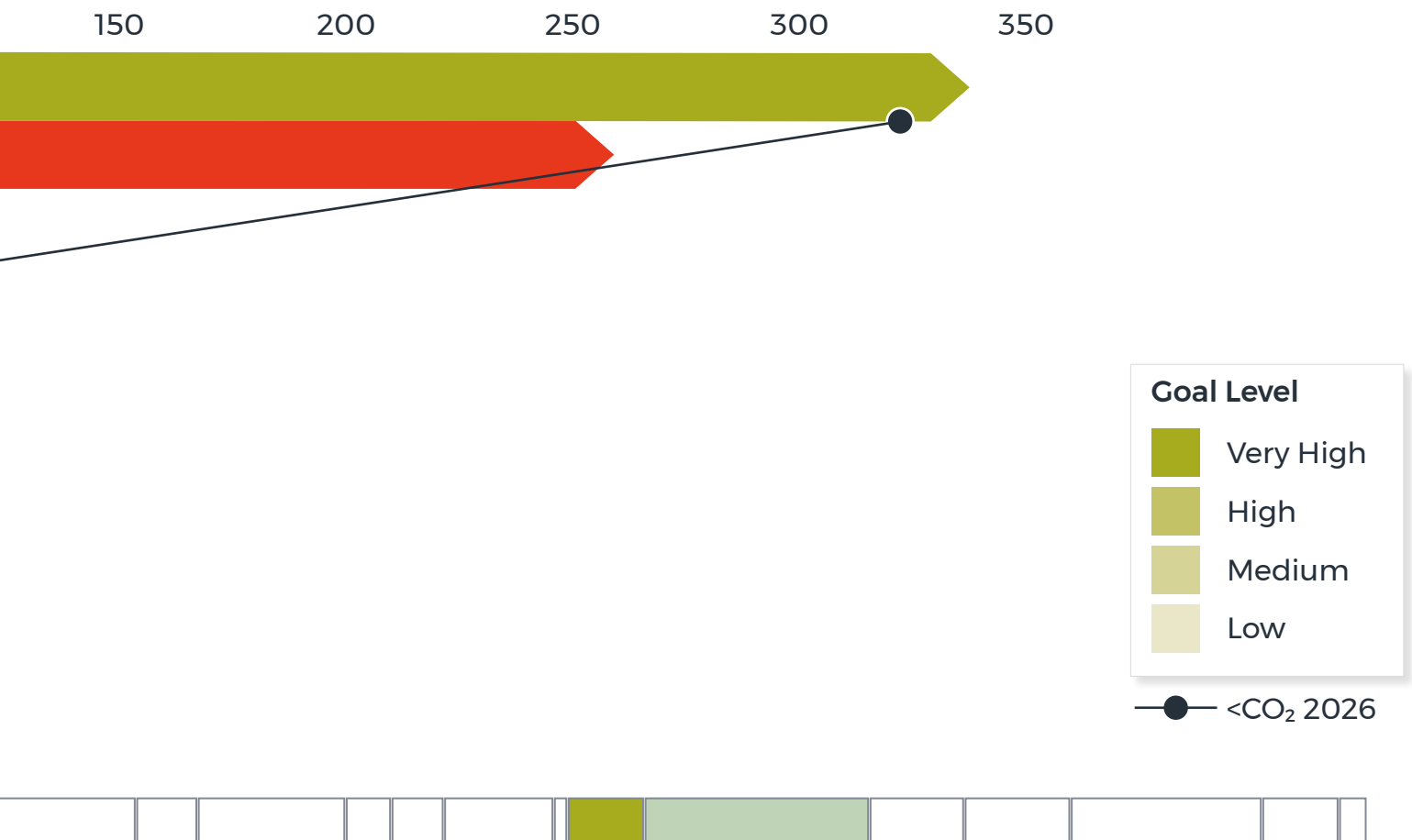
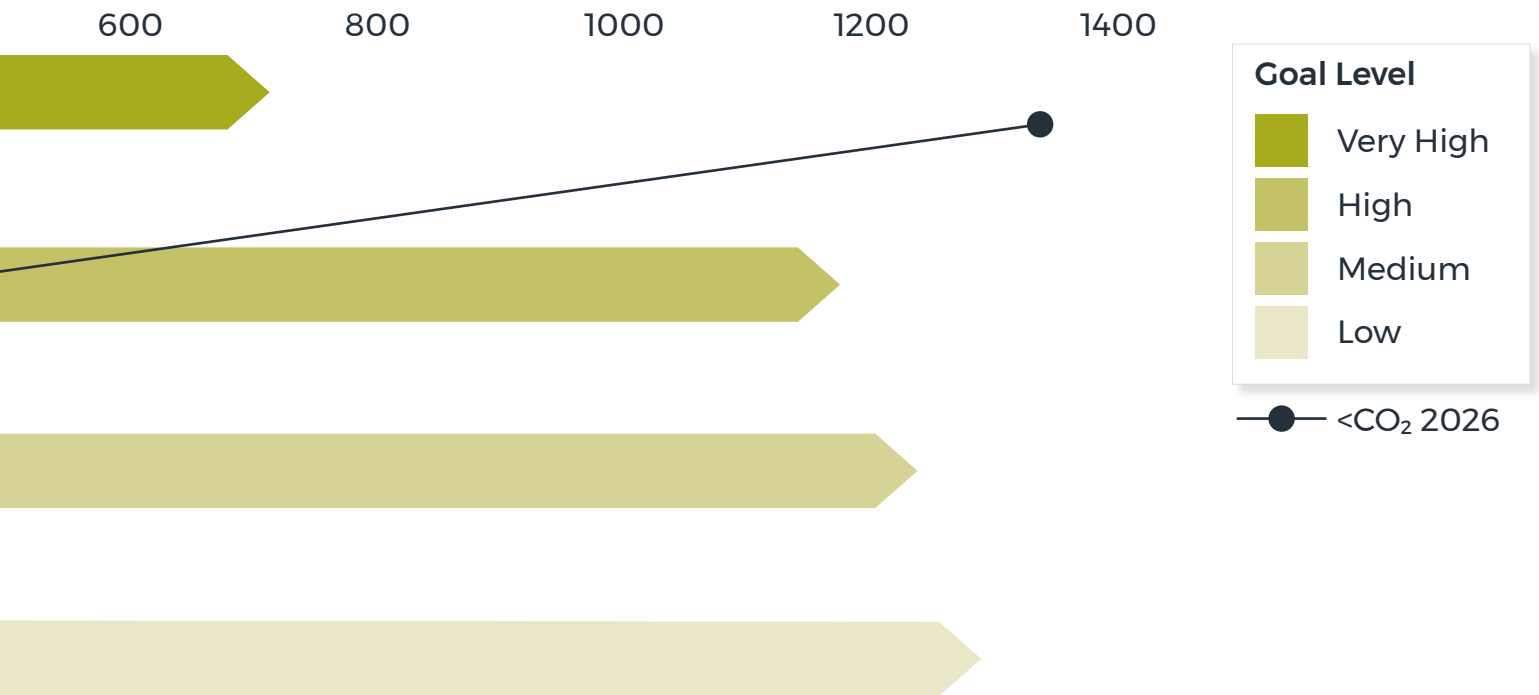
Long term strategy shift in travel in line with city regions such as Munich, Stuttgart and Dusseldorf, where car use accounts for typically 35 - 45% of all journeys, compared to 67% in WMCA.

- WFH
- Trips Reduction



Proportion of savings in 2026 (at High goal level)



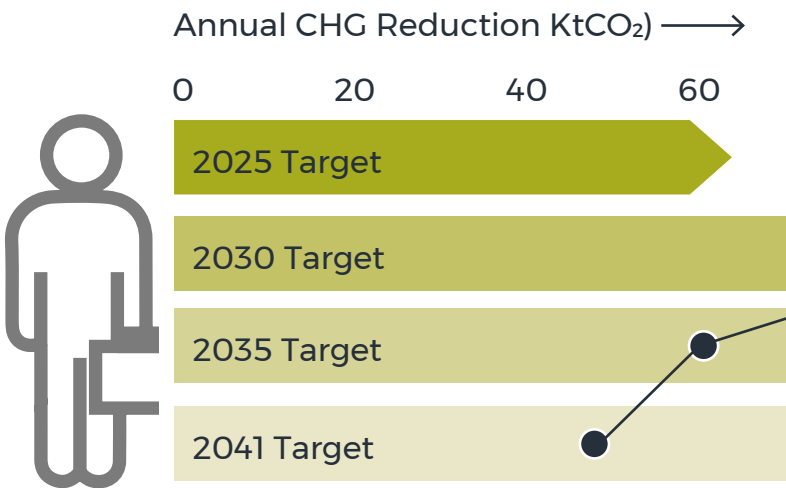


Transport

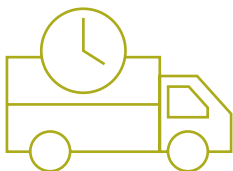
Goal 11 – Improving passenger service fleets



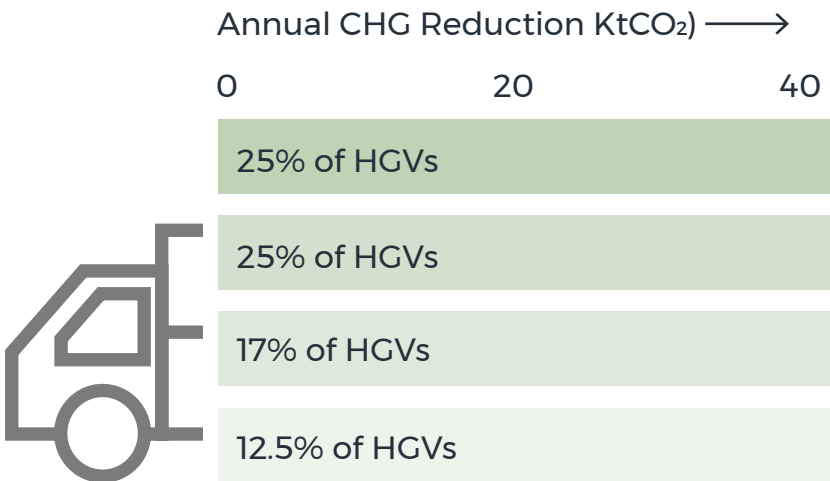
Mandate the electrification of 21,300 taxis and 2,300 buses throughout the region.



Goal 12 – Improving freight fleets



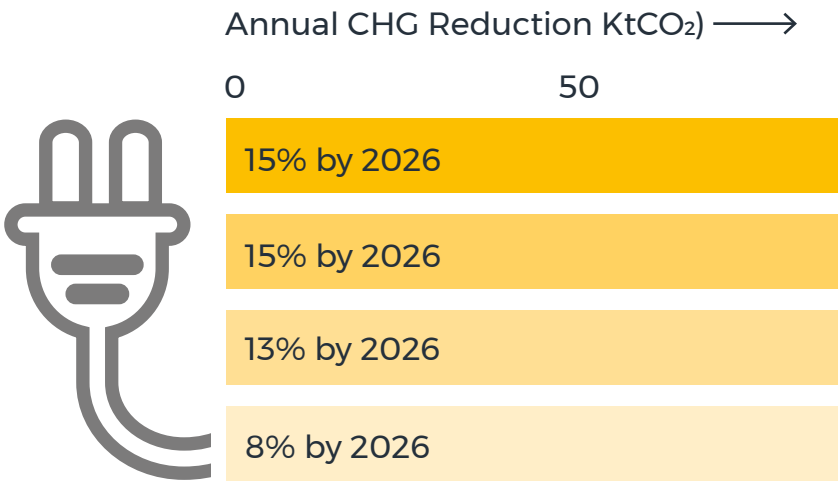
In line with Midlands Connect Tool, consider the decarbonisation of HGVs nationwide. Assumed electrification, but realise the solution may be a mix of technologies



Goal 13 – Improving private vehicles

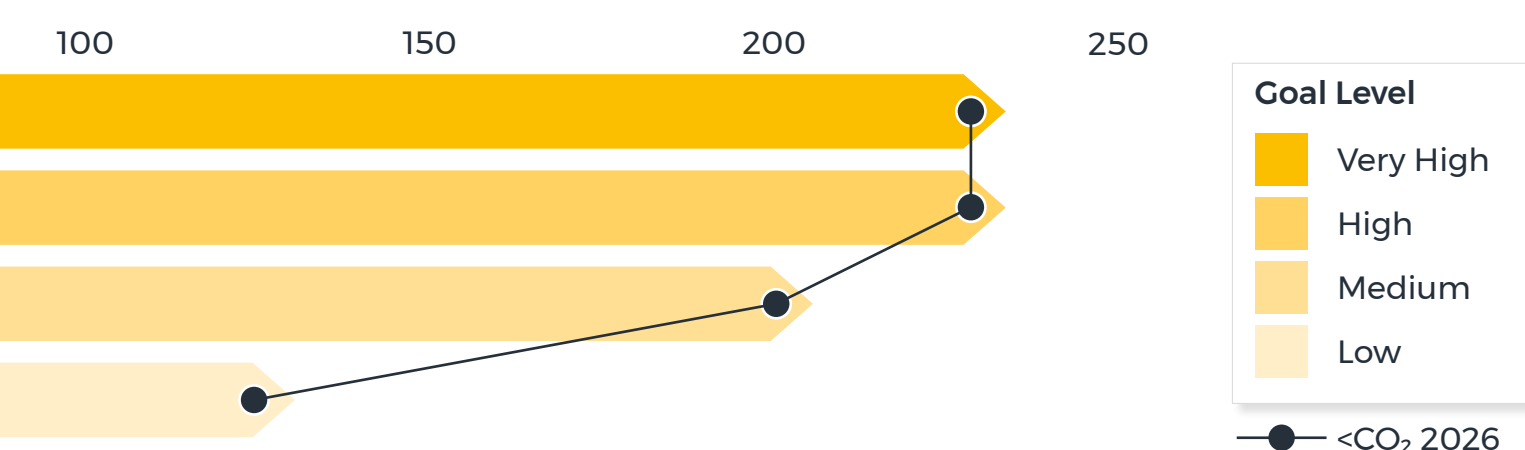
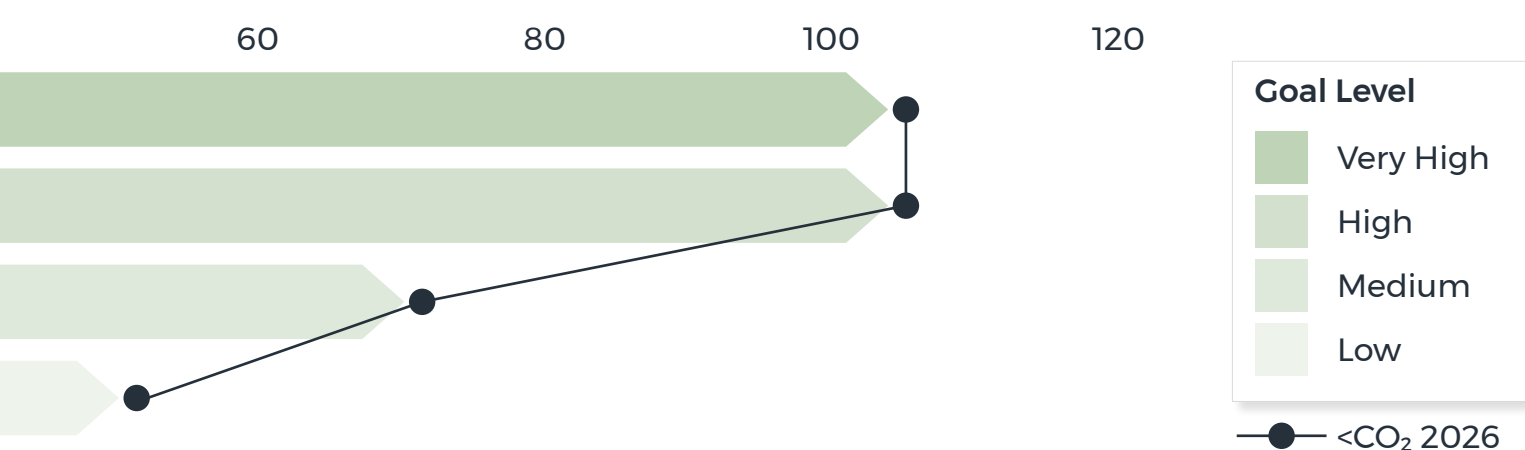
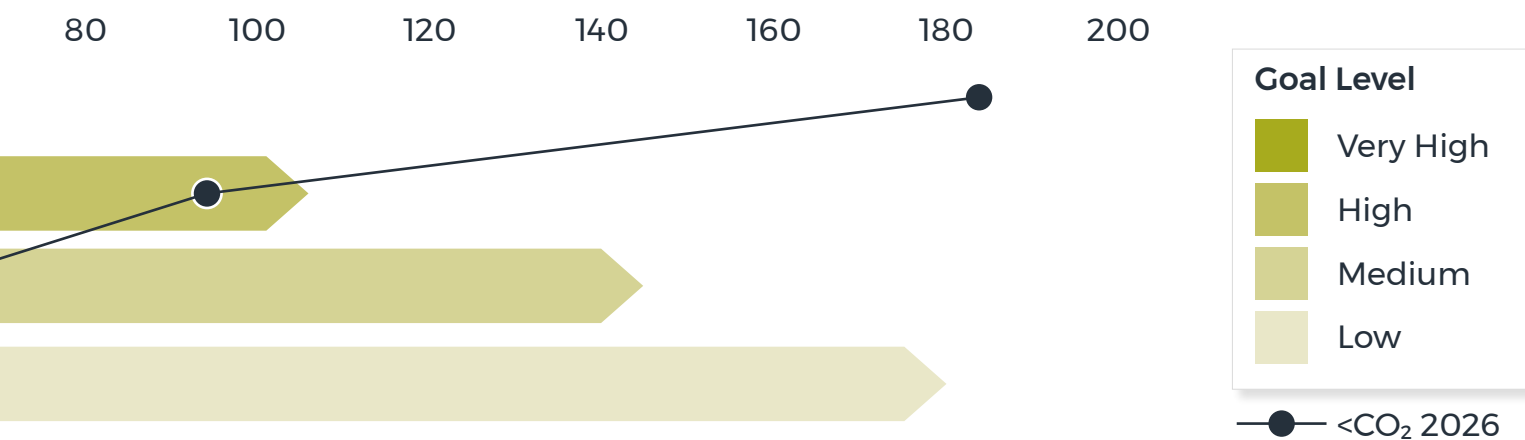


An accelerated uptake during the 2020s, ahead of the 2030 ICE Ban, will increase carbon savings in the shorter term. The CCC projections were used as trajectories.



Proportion of savings in 2026 (at High goal level)



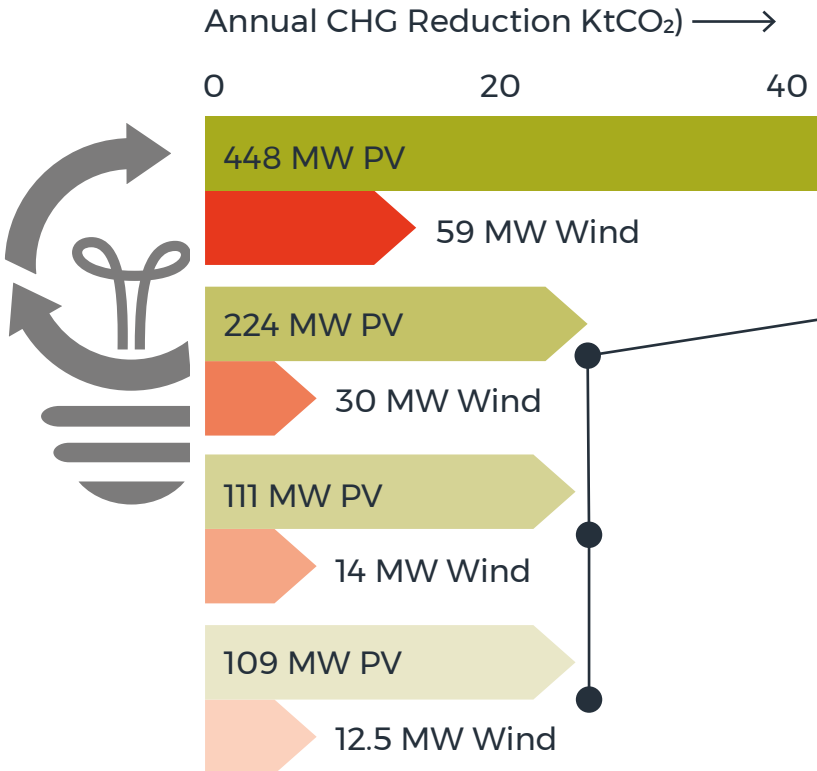


Strategic Land Use

Goal 14 – Renewables

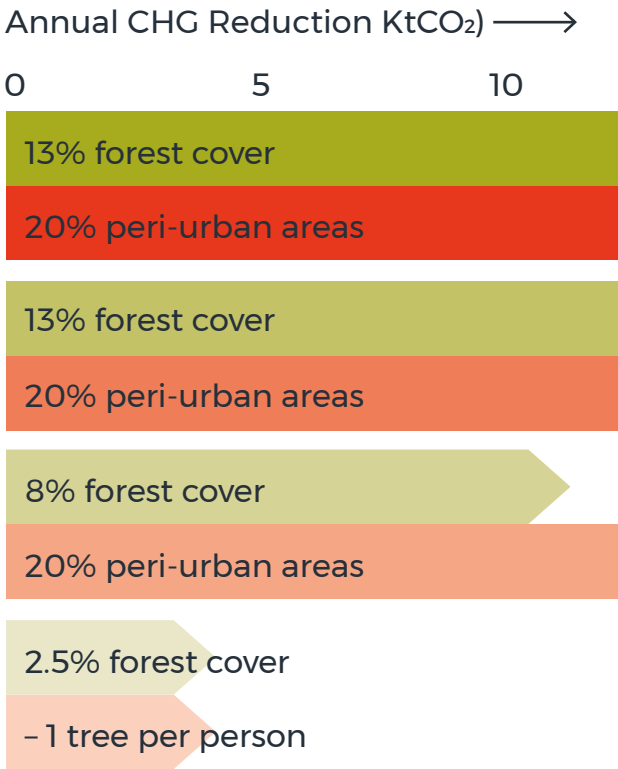
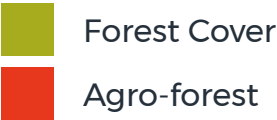
Utility scale Solar PV and Wind across the region on poorer quality land.

GIS mapping has been undertaken to understand what area is most suitable.



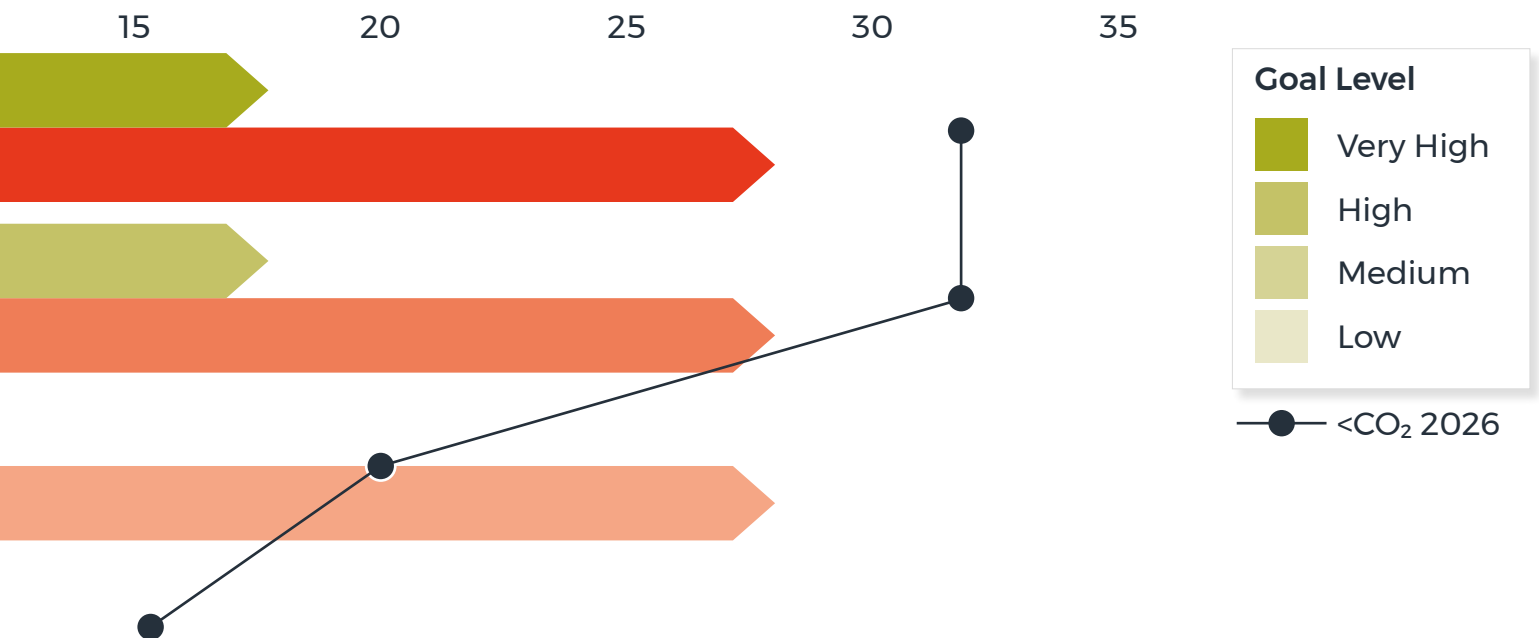
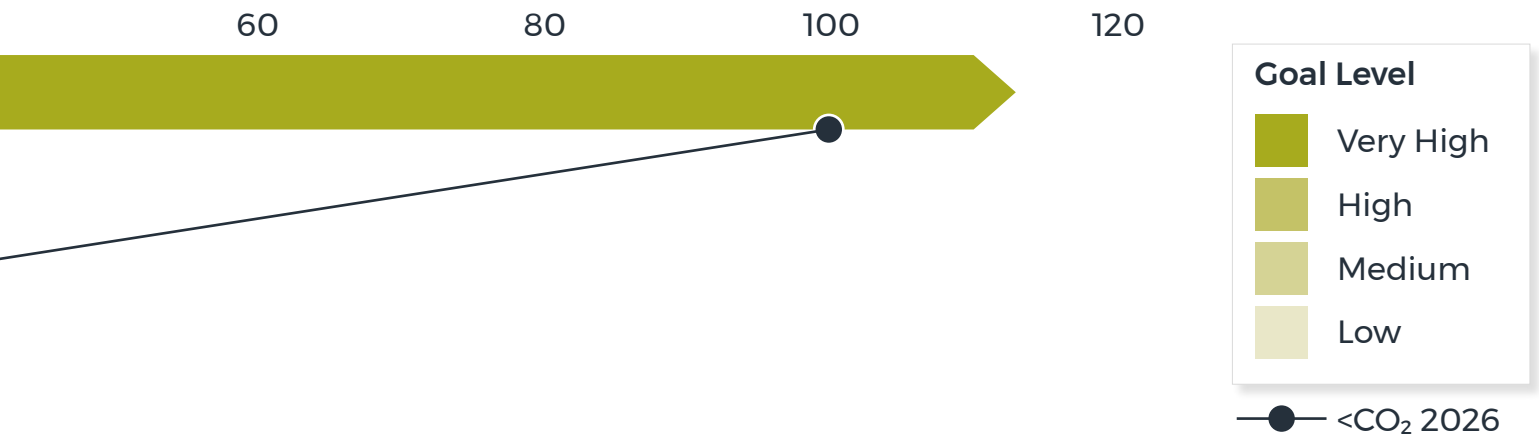
Goal 15 – Natural Capital

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.

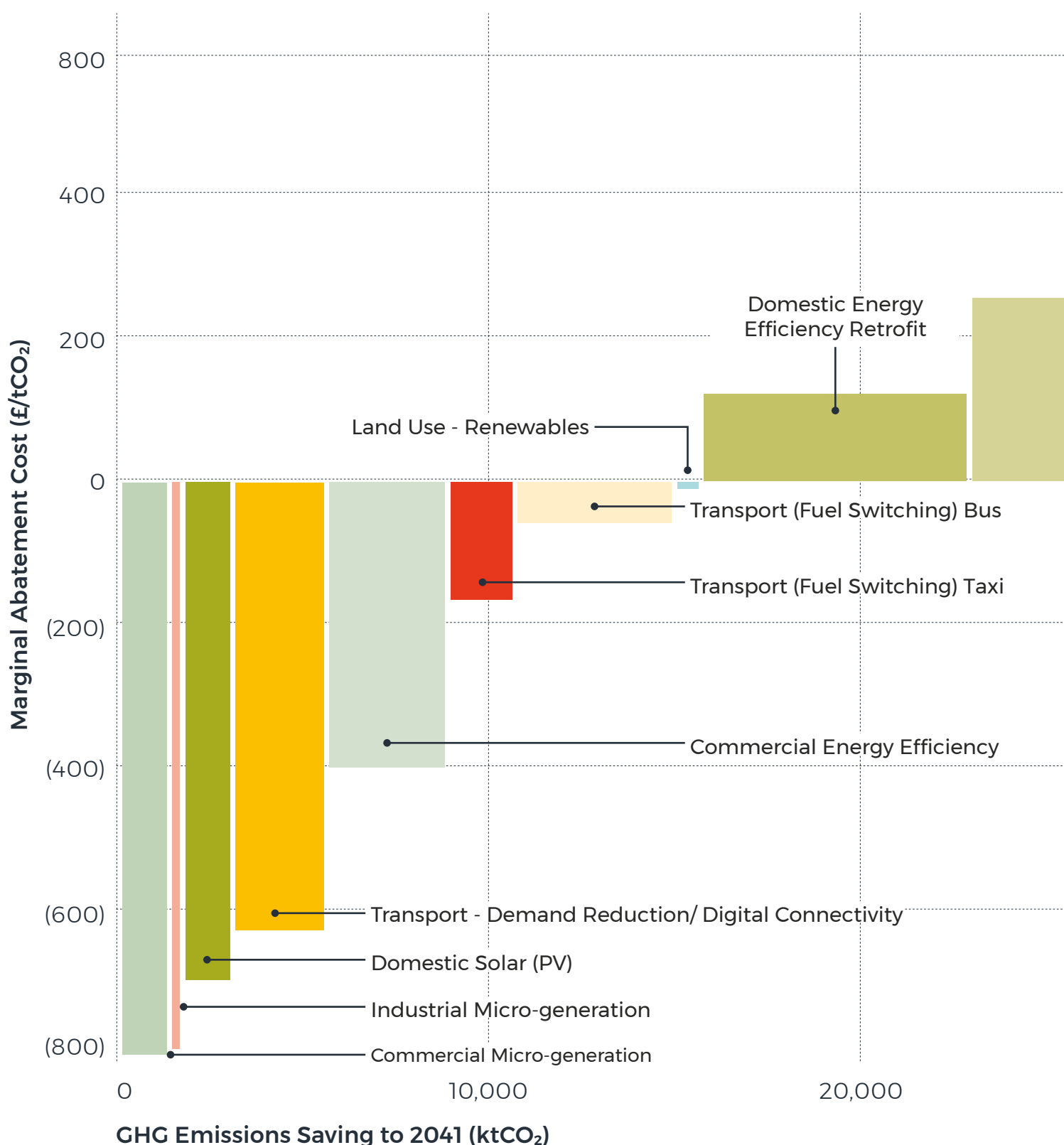


Proportion of savings in 2026 (at High goal level)





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



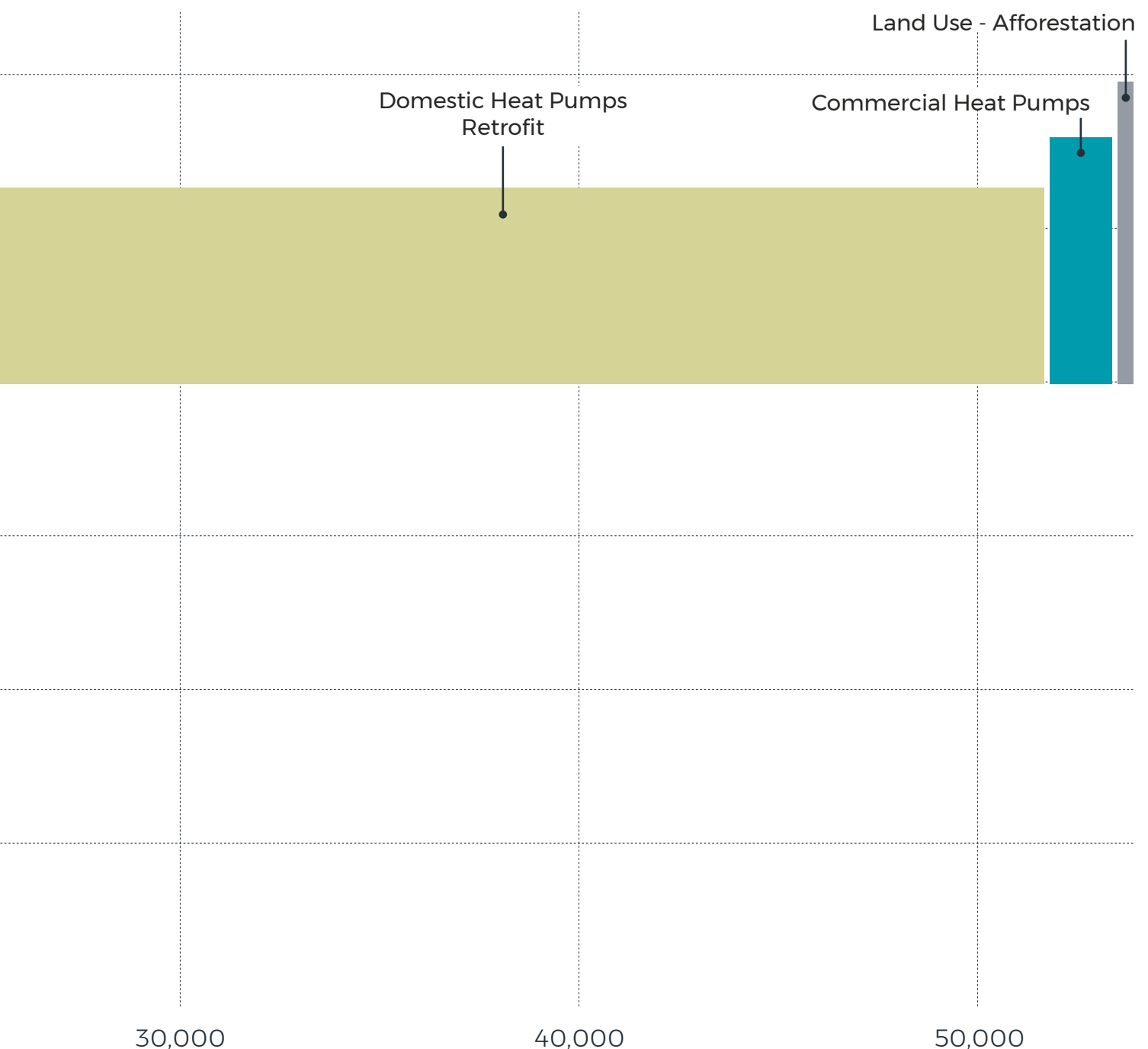
The MACC indicates broadly which measures will be more or less cost effective in terms of emissions reduction. These are ranked left to right.

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.

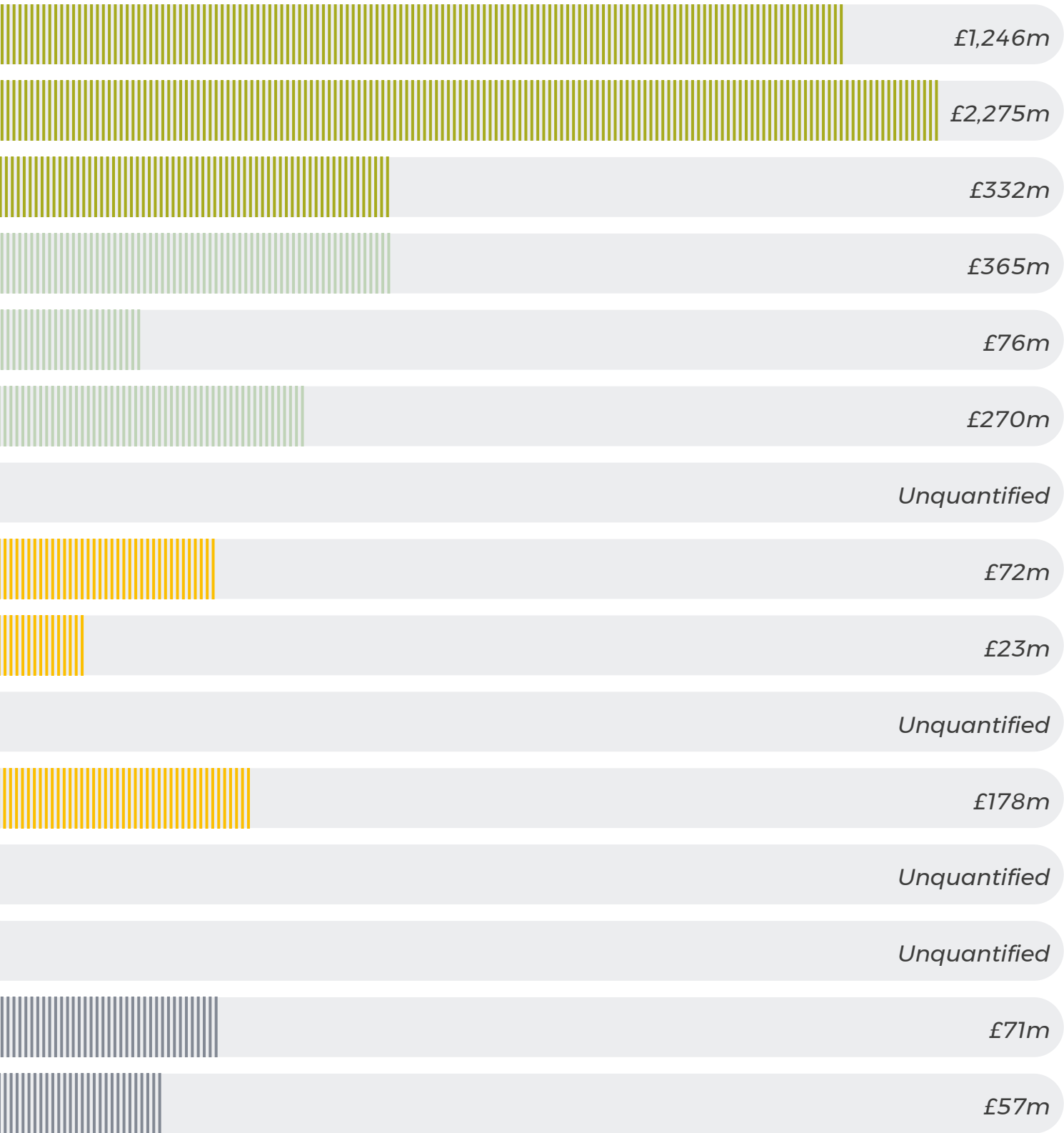


Summary of investment required and delivery outcome to 2026

Measures

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

Investment to 2026



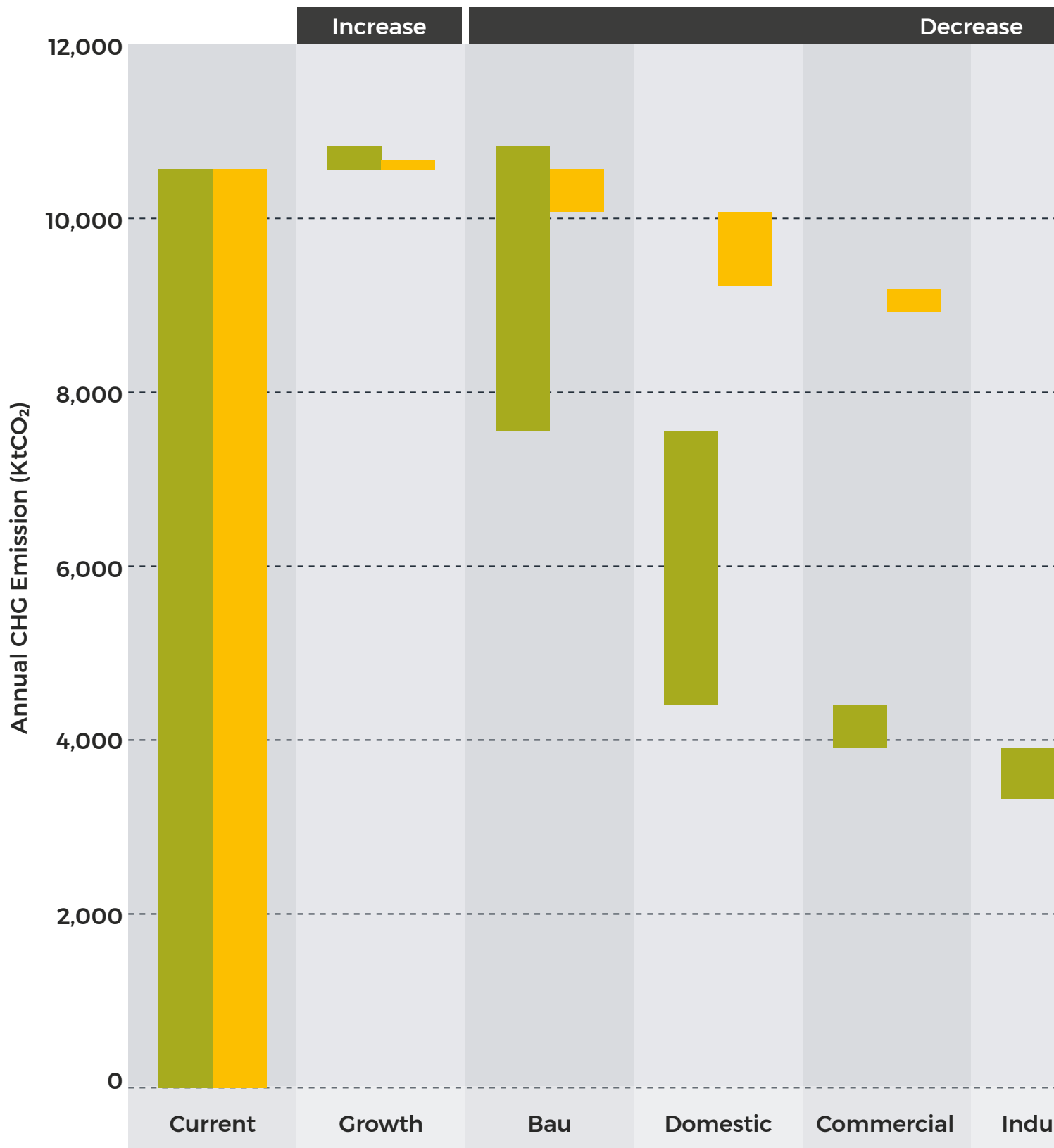


CARBON MODELLING RESULTS —



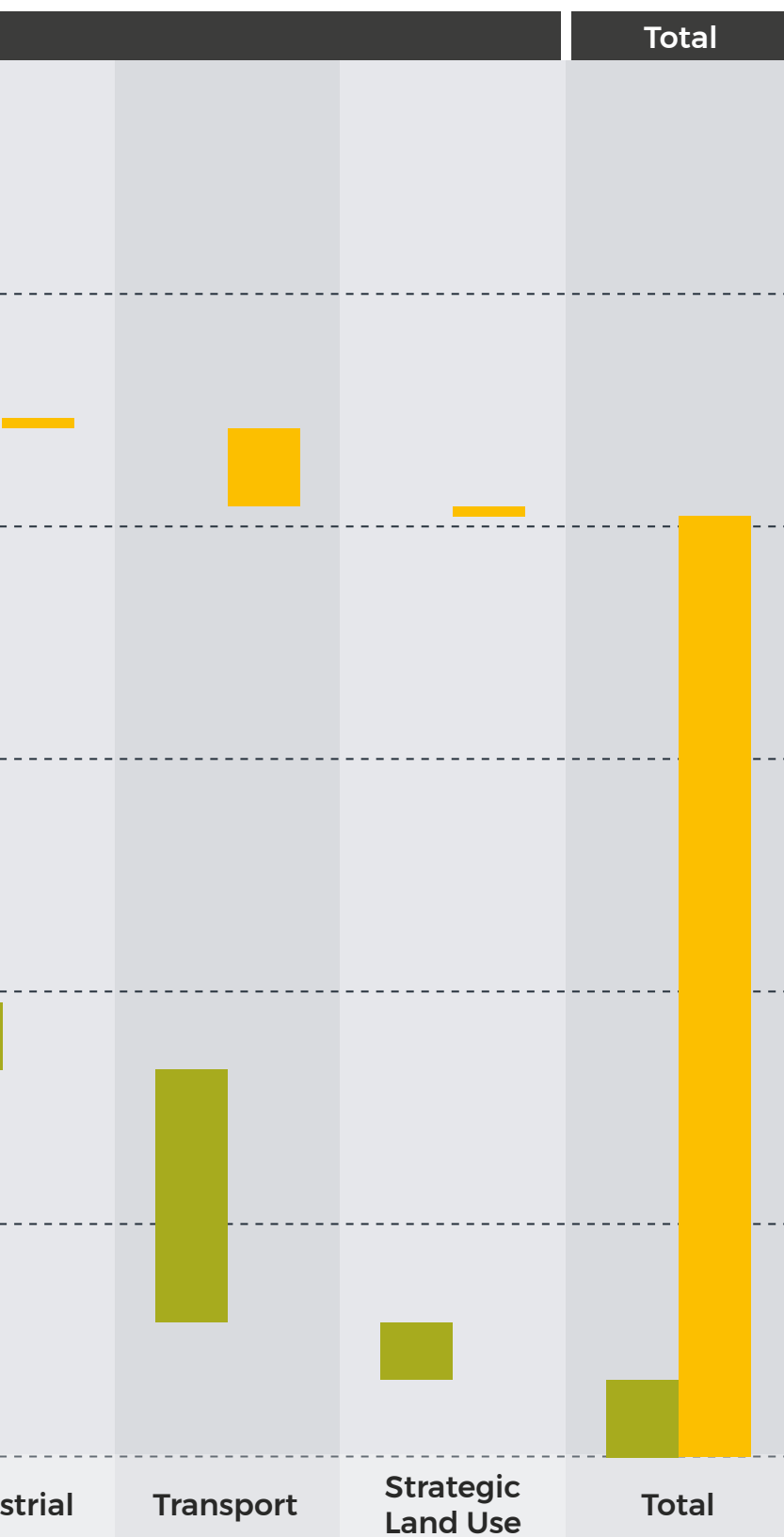


Modelling shows the region needs to commit to the central **‘Accelerated’** scenario to deliver a **94% reduction by 2041.**





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



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 CO₂ per year.**

The suggested Tyndall Centre target for the region to stay within the Paris Commitment is to emit no more than **4.9Mt CO₂ by 2026.**

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

■ 2041 ■ 2026

What we would need to do reach 4.9Mt CO₂ by 2026?

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**.



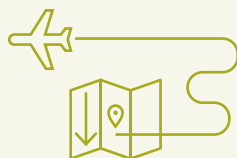
Maximise rooftop solar across domestic, commercial and industrial sites as well as ground mount – **2.1GW potential of solar** to be installed.



Electrify 100% of taxis (21,000) and buses (2,300) within the region.



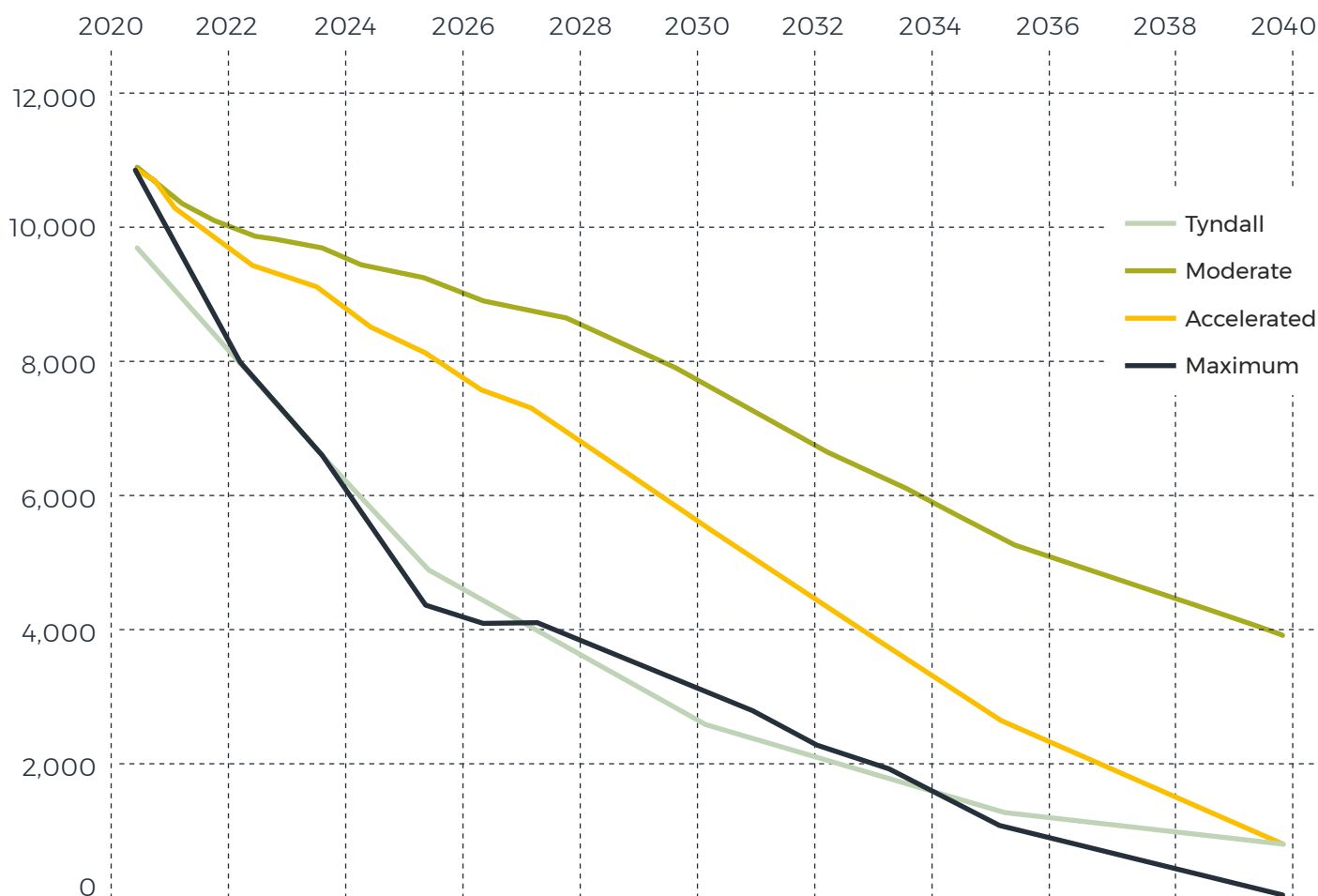
Demand management to encourage reduction in travel, and mode and destination shifting, and to avoid demand rebound.



Cutting car share from 63% of trips to 35%.



Historic and Projected (Inc. Actions) vs. Budgeted GHG Emissions



Ambition and Timeline under 'Accelerated' Scenario to 2026

Given the impetus to de-carbonise 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.

	2021	2026
Domestic	Energy Efficiency	Energy efficiency in 25% dwellings
	Heating Retrofit	Low carbon heating system retrofit in 292,000 dwellings
	Solar PV	415 MWp of rooftop solar
Commercial	Energy Efficiency	Energy efficiency in 50% buildings
	Heating Retrofit	Low-carbon heating system retrofit in 18,000
	Solar PV	350 MWp of rooftop solar
Industrial	Energy Efficiency and Heating Retrofit	4% deployment of H2 and 5% of CCS for High Temp process, 2.5% energy efficiency, 25% electrification for LT processes
	Solar PV	48 MWp of PV
Transport	Avoid	9% of people tele-commuting 50% of time, 6% less personal and retail trips
	Shift	Bike increase to 5% of trips, Car decrease to less than 60%
	Improve	50% of taxis, buses and 25% of HGVs
Natural Capital	Renewables	30 MW Wind and 225 MWp of solar PV
	Natural Capital	Tree coverage in 3% of WMCA area, and 5% of peri-urban area
Systems Management		Upgrade and manage coordination across the energy associated systems (transport, digital)

What does net zero look like?



WHERE DO WE NEED TO BE?

Goal		Deployment required for net zero
Domestic	Energy Efficiency	1.1m homes (100%)
	Heating Retrofit	1.1m homes (100%)
	Solar PV	830MWp
Commercial	Energy Efficiency	100%
	Heating Retrofit	73,400 buildings
	Solar PV	705MWp
Industrial	Energy Efficiency	15% energy efficiency
	Heating Retrofit	33% deployment of H2 and 40% CCS for high temp. 100% electrification of low temp
	Solar PV	96MWp
Transport	Avoid	35% people telecommuting 50% of time, 25% less personal / retail trips
	Improve	100% taxis & buses electrification
	Shift	Shift to 35% trips by car
Natural Capital	Renewables	59MW wind and 448MWp of solar potential
	Natural Capital	13% WMCA tree coverage

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 ARE WE NOW?

Currently installed in West Midlands

Accelerated scenario delivery for 2026

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

Almost all homes are on fossil fuel boilers

292,000 dwellings

Approximately 63MWp to date.

415MWp

TBC

50% potential

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

Approximately 26MWp to date across non-domestic in total

353MWp

Emerging technologies

10% EE, 17% H2, 20% CCS

Not yet commercialised technology

17% H2, 20% CCS.

Approximately 26MWp to date across non-domestic in total

96MWp

5-10% work from homes (pre-pandemic levels)

9% people telecommuting and 6.25% reduction in trips

~1% of buses

100% electrification by 2030

65% of trips by car currently

59% trips by car

<20MW of solar

30MW wind and 224MWp solar

1% WMCA tree coverage

13% forest cover/20% peri-urban areas



DELIVERY PLAN



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.



People will need to make significant changes to their **lifestyles** which will positively impact on their **health and well-being**.



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**.


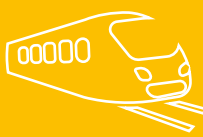


Private and voluntary sector are needed to **collaborate and deliver projects**







The Delivery Plan for 2026 (1/2)

	 Domestic	 Commercial
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 (FPRR).</p> <ul style="list-style-type: none"> ▲ 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 administering 	<p>WMCA to fund business case and Energy Capital lead the work.</p> <ul style="list-style-type: none"> ▲ Promotion of the campaign and 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 administering.
Investment required to 2026	£3.5bn in first FYP	£0.4 bn gross investment in first FYP
Stakeholder	Housing associations, local authority housing, homeowners and private landlords, supply chain, public, national government - BEIS	Commercial forums (e.g. Better Business Partnership, supply chain, Federation of Small Businesses), LEPs, Energy Capital, BEIS, WPD
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
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 organisation representatives.

	 Industry	 Transport
<p>Energy</p> <p>and the</p> <p>on</p> <p>aging</p> <p>ational</p> <p>ives</p> <p>amme</p>	<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"> ▲ Co-ordinating with UK government ▲ Finance – Management of finance, grants, private investment ▲ Co-ordination with industry 	<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>
FYP	<p>The gross investment cost within the first FYP is difficult to quantify due to the TRL of the proposed interventions</p>	<p>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.</p>
<p>Building</p> <p>ation for</p> <p>Capital,</p>	<p>LEPs, Industry, BEIS, Cadent, WPD, Energy Capital</p>	<p>TfWM, Local authorities, Highways England, Private fleet and transport operators, the public, WPD, Energy Capital, DfT, BEIS</p>
<p>EPS to</p> <p>ing</p>	<p>Work with Energy Capital and LEPS to develop local area energy planning</p>	<p>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.</p>
<p>ment</p> <p>e and</p> <p>ns and</p>	<p>Energy Capital to lead on an industrial de-carbonisation taskforce, building on work started in partnership with the Black Country Consortium.</p>	<p>Proposals for Intra-City Transport Fund. Draft Local Transport Plan consultation, autumn 2021 and adoption in early 2022.</p>

The Delivery Plan for 2026 (2/2)

	 Land Use - Natural Capital	 Land Use - Energy
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"> ▲ Promotion of the opportunities around tree planting and other nature-based solutions ▲ Co-ordinating with local authorities ▲ Programme Management 	<p>It is proposed that the team will be working closely with local authorities and local authorities to unlock investment. The delivery may be different to the emphasis will need to be on scale.</p>
Investment required to 2026	<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 A budget of ~£200k per annum would be appropriate with 1 or 2 staff dedicated to its management, within the wider team.</p>
Stakeholder	<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, business representatives, universities, developers</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 Ca and rooftops, as well as local authorities to install renewables to delivery and business investment.</p>
Next Steps	<p>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.</p>	<p>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.</p>

 <p>Use - Renewables</p>	 <p>Cross - cutting</p>
<p>This is led by Energy Capital, the WMCA Environment Team and regional stakeholders to identify opportunities. The routes to be taken for each opportunity but need to be on delivering at pace</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"> ▲ 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
<p>Cost within first FYP per annum would be £2 staff dedicated to its delivery 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>
<p>Local authorities, investors and other stakeholders</p>	<p>Local authorities and key stakeholders such as Sustainability West Midlands to support delivery. All regional stakeholders to be engaged as appropriate</p>
<p>Energy Capital to identify available land and stakeholder opportunities, develop preferred route and business cases where LA owned</p>	<p>There are opportunities to work with the WMCA Environment Team to deliver the cross cutting work on business engagement, carbon literacy and behaviour change programmes.</p>
<p>Develop and the initial management and administration to promote this with others, develop the full business case, co-ordinating with the stakeholders.</p>	<p>The WMCA should fund the initial management and administration to promote this with others, develop the full business case, co-ordinating with the stakeholders.</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

WMCA's role in systems management & governance

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.

Auditing including governance, risk management and financial control

Dissemination of learnings

Annual monitoring and scrutinise performance and reporting against targets

Review of changes in national policy

Technological assessments and reviews of emerging best practices

External/independent auditing



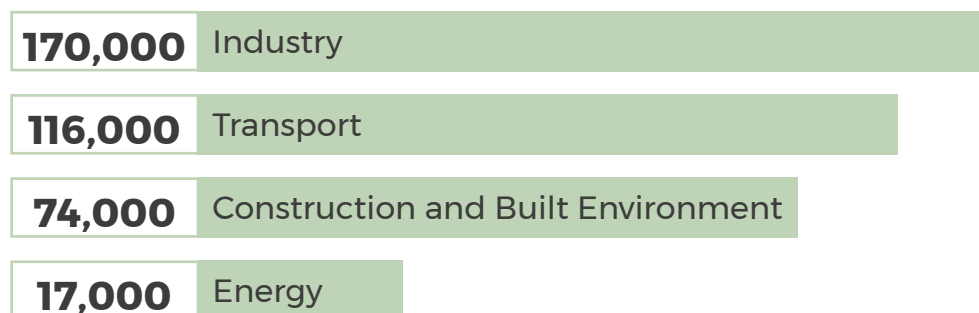
JOBS & SKILLS



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 re-mediation 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.



(Number of jobs)

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 services**
Low-carbon financial, IT, and advisory service
- 3 **Low-emission vehicles & infrastructure**
Low-emission vehicles & infrastructure, fuel cells and energy storage systems
- 4 **Energy efficient products**
Insulation, lighting, monitoring and control systems
- 5 **Low-carbon heat**
Renewable heat, heat networks and CHP
- 6 **Alternative fuel**
Bioenergy and hydrogen production

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



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



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.



New jobs created and others lost

Sector	Goals	Jobs created
Domestic	Energy Efficiency	Retrofit coordinators, installers and designers
	Fuel Switching	Heat pump installers
	Micro-generation	Solar PV installers
Commercial	Energy Efficiency	Retrofit coordinators, installers and designers
	Fuel Switching	Heat pump installers
	Micro-generation	Solar PV installers
Industrial	Energy Efficiency and Fuel Switching	Retrofit coordinators, installers and designers, Heat pump installers
	Micro-generation	Solar PV installers
Transport	Demand Reduction (WFH)	skills, jobs in more rural areas in local digital
	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

Jobs lost

Gas boiler maintenance repairs

Gas boiler maintenance repairs
and gas transmission

Reduced demand for City services
such as food and beverage stores,
Vehicle manufacturers

Petrol and diesel engine manufacturers

Petrol and diesel engine manufacturers

Vehicle manufacturers

Vehicle manufacturers

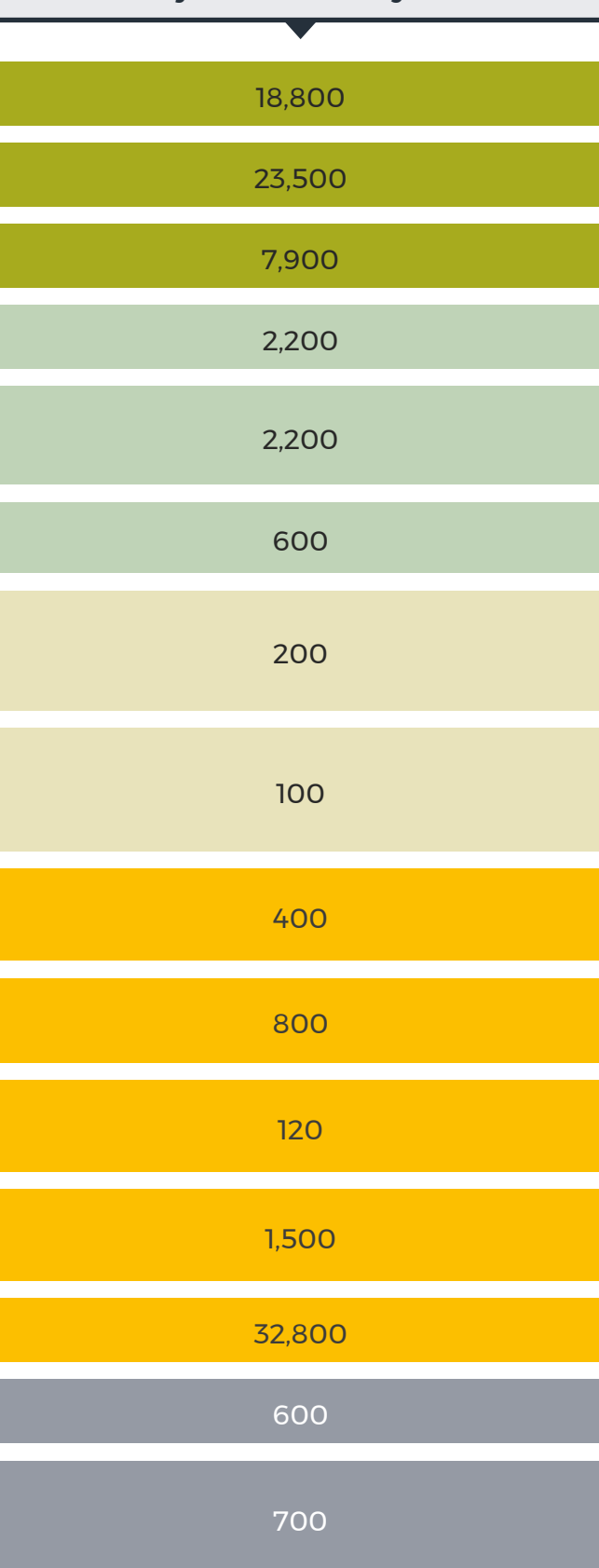
Petrol and diesel vehicle manufacturing



A big opportunity for the region

Sector	Goals	Net jobs created by 2026
Domestic	Energy Efficiency	5,500
	Fuel Switching	6,900
	Micro-generation	1,800
Commercial	Energy Efficiency	500
	Fuel Switching	500
	Micro-generation	100
Industrial	Energy Efficiency and Fuel Switching	10
	Micro-generation	10
Transport	Fuel Switching (HGVs)	0
	Fuel Switching (Buses, Taxis)	500
	Demand Reduction (Trips)	40
	Mode Shift	1,500
	EV Uptake	3,400
Land Use	Renewables	40
	Natural Capital	200

Net jobs created by 2041



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 re-skill 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%**)

Construction

Transport

Manufacturing

Water collection, treatment and supply

Sewerage and waste collection

Energy generation, transmission and distribution

Electrical, plumbing and other building services



A DAY IN THE LIFE



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

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.

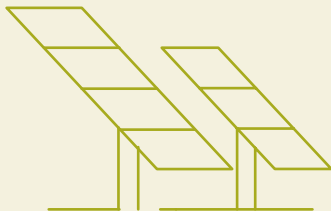
Mid-Morning



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.

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.

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.

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.



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.



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!



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.



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.



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.



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.

Contact

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