

Greater Manchester Path to Carbon Neutral

A look at how Greater Manchester has prepared for and is delivering on the Net Zero challenge

GM has clear ambitions to lead

- We aim to be carbon neutral by 2038
- On track to achieve our previous target – 48% by 2020
- All Districts have declared a climate emergency that requires action
- Failure to act will incur major economic, social, political and environmental costs with delay hitting those least able to pay for it
- OBR forecast that ending the UK's emissions will cost £496bn by 2050, less than the 2008 financial crises or COVID response. Delays could double that
- Our Mission-based approach requires cross-sector collaboration

Met Office

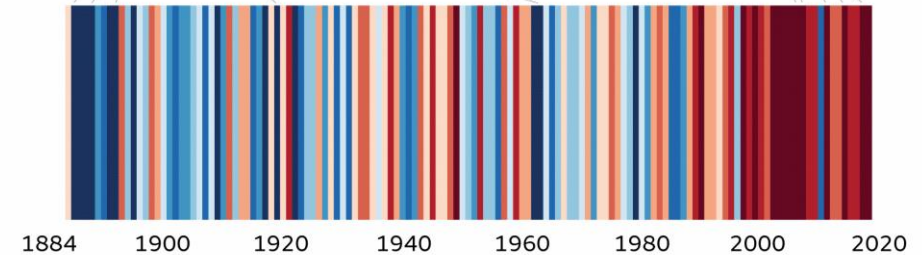
UK annual temperature

5 coolest years

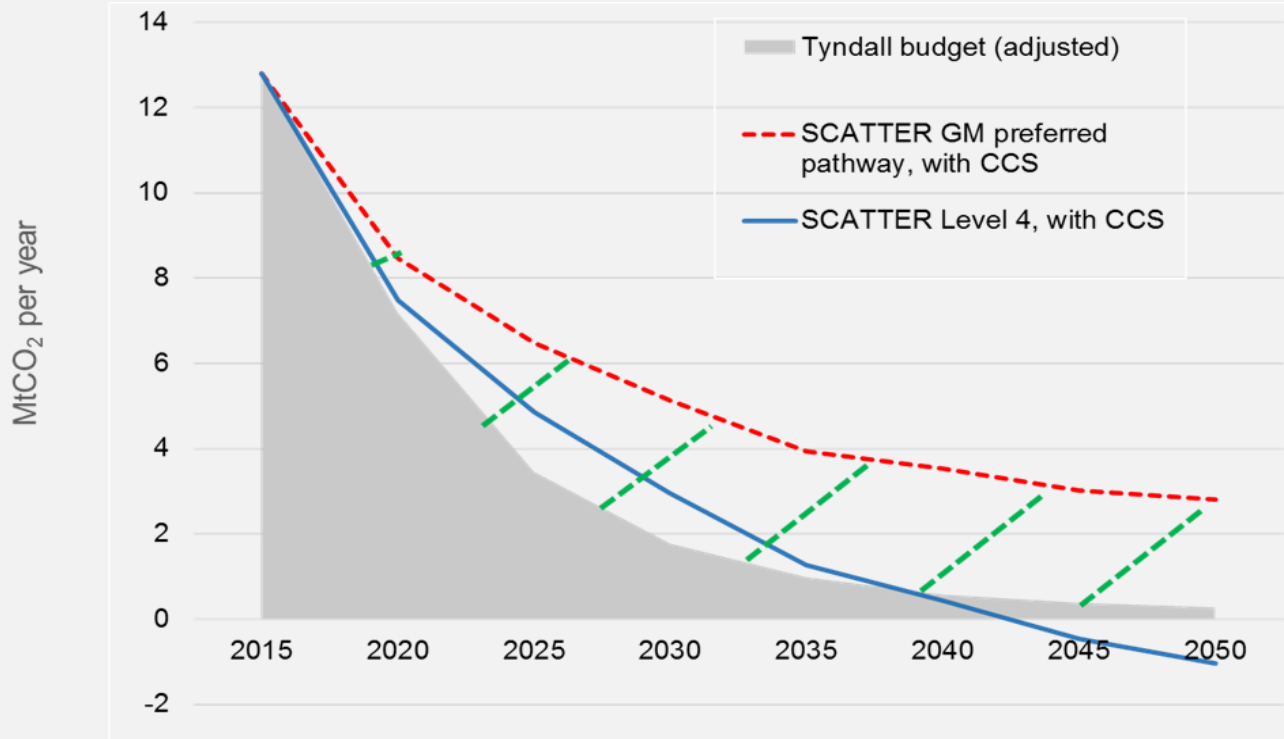
1892, 1888, 1885, 1963, 1919

5 warmest years

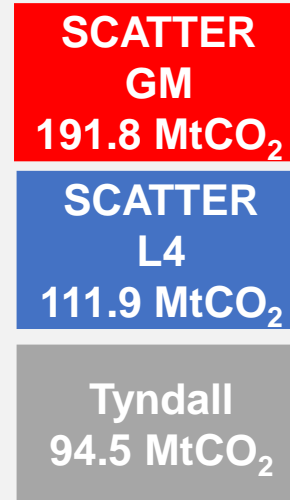
2014, 2006, 2011, 2007, 2017



Models are useful in informing the pathway....

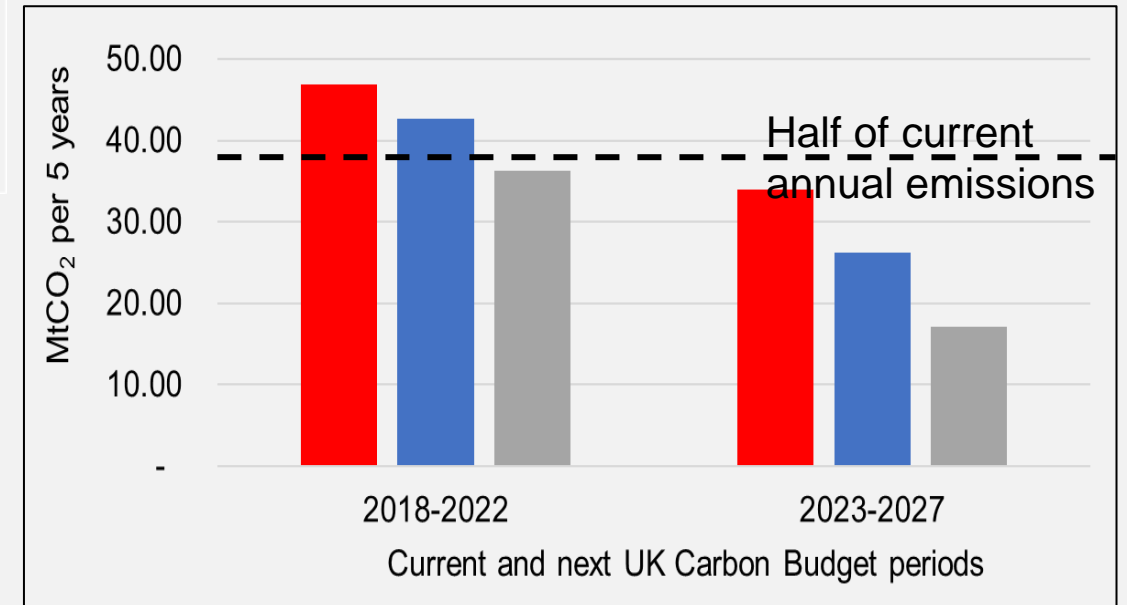


they show us that we all need to take action now...

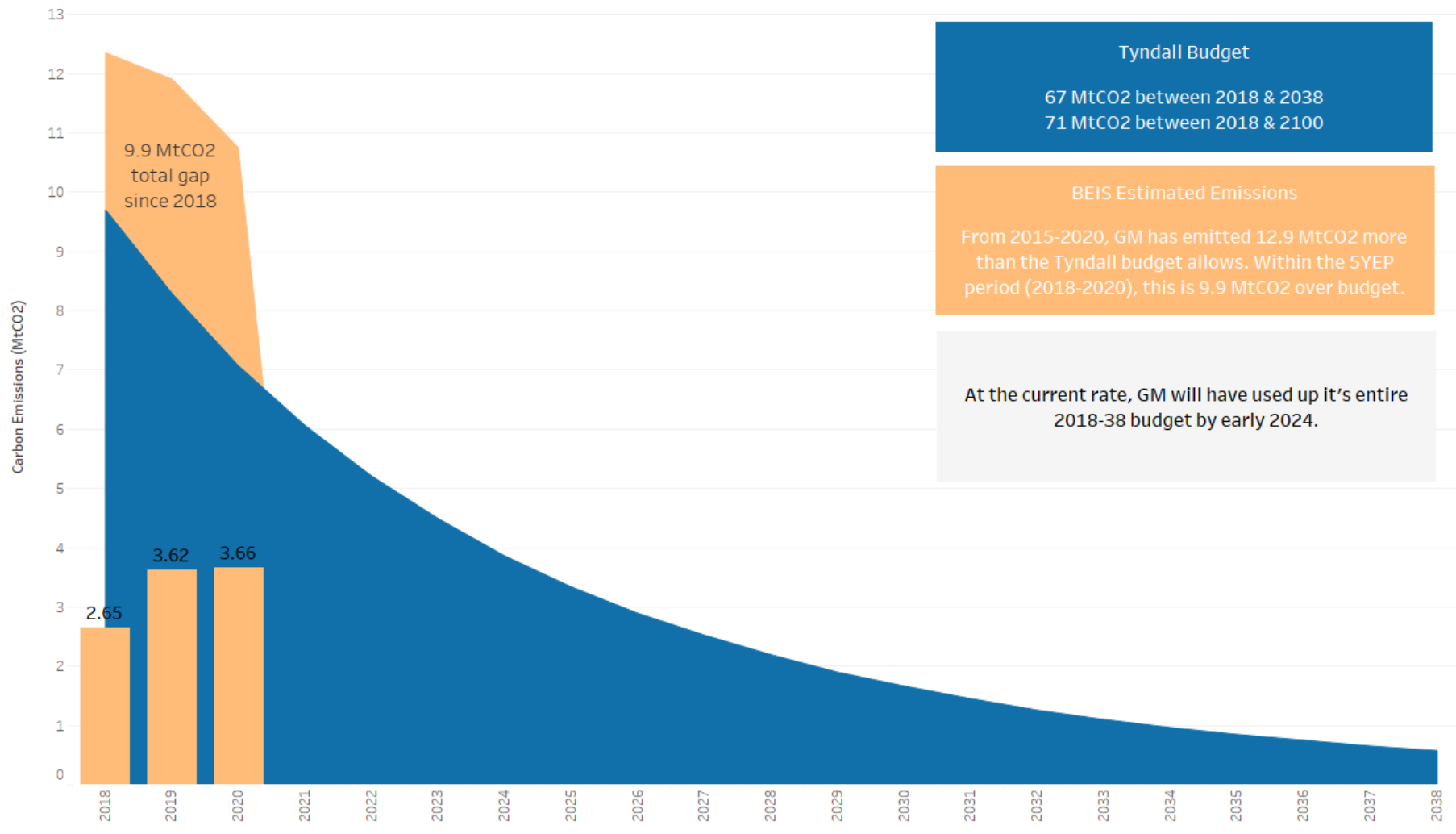


Focus on the innovation that can close the gap:

- Technology
- Finance and funding
- Partnerships
- Leadership
- Engagement and education
- Skills



The Mission: Carbon Neutral by 2038



To achieve the 2038 mission, the GM 5-Year Environment Plan outlines our 'fair' carbon budget contribution of **67 mega tonnes for 20 years (2018-2038)**. The critical focus is not exceeding our total budget (67MtCO₂).

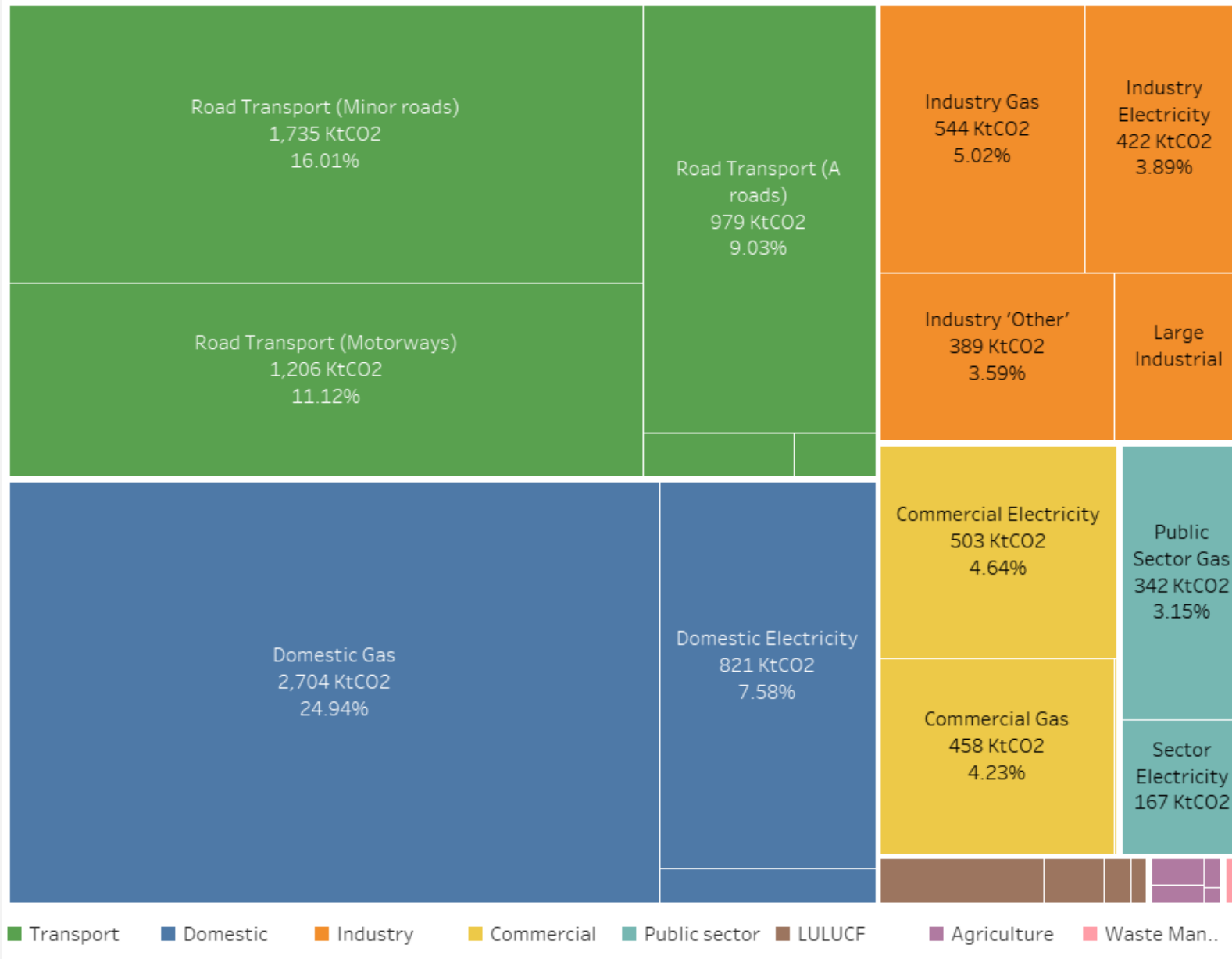
Across 2018-2020*, GM's emissions are 9.9MtCO₂ **above** the Tyndall budget, i.e. an additional 9.9MtCO₂ savings need to be made **on top of** the Tyndall budget. **This gap has been increasing year on year.**

Key point is that significant cuts must happen now.

At our current (2020) rate of emissions, we will have exhausted our carbon budget within the next 4 years (2024).

*across 2015-2020 as previously reported, this is 12.9MtCO₂.

The Mission: Carbon Neutral by 2038



- Transport and domestic gas remain our two largest sources of carbon emissions and the two areas where we are failing most significantly to make the progress we need.
- We need to transition away from the use of fossil fuels, towards zero emission solutions.
- This will require the region to electrify its heating and local transport and move heavy haulage and industry towards hydrogen
- To enable this the region will need to generate more renewable energy locally that can meet our increasing demands (including green hydrogen production)
- **A whole system approach needs to be adopted.**

We face environmental threats and challenges, but tackling them will present opportunities for Greater Manchester...

5 environmental threats and challenges to Greater Manchester

Climate change – mitigation

More radical local and national action to accelerate CO₂ emissions reductions

Air Quality

Health impacts of particulates and nitrogen dioxide – NO₂ levels in breach of legal limits

Production and consumption of resources

Throwaway society and particular issues with plastic and food waste

Natural Environment

Multiple benefits still yet to be fully realised or accounted for – lack of other sources of investment

Climate change – resilience and adaptation

Increasing risk of extreme weather events – particularly flood risk but also heat stress

3 opportunities in tackling them

People

Improve health and quality of life, increase productivity and reduce inequality

Places

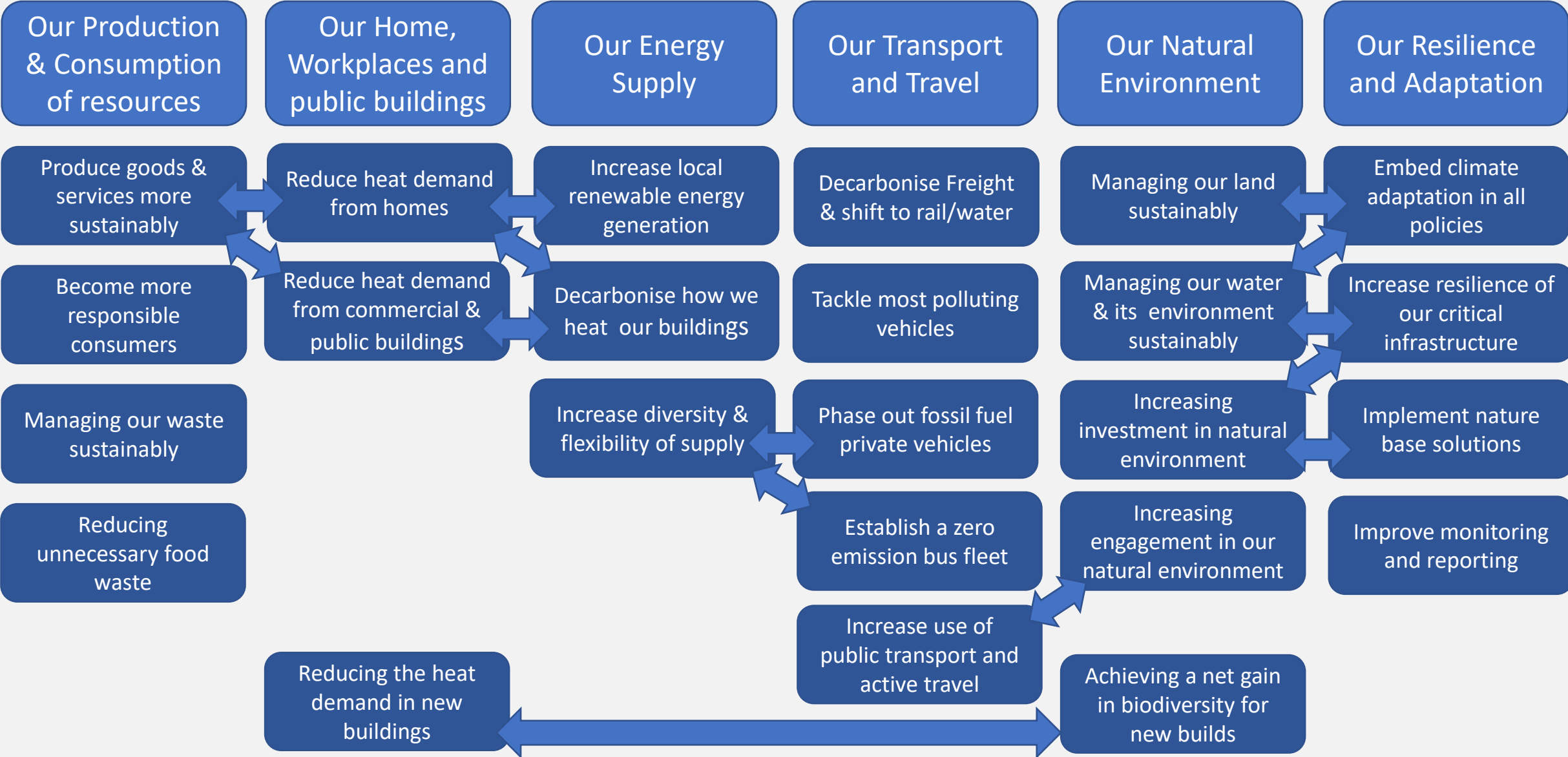
Create vibrant and sustainable places and good quality homes

Economy

First mover advantage – increase prosperity and productivity

5 Year Plan Priorities

↔ Key Inter-relationships



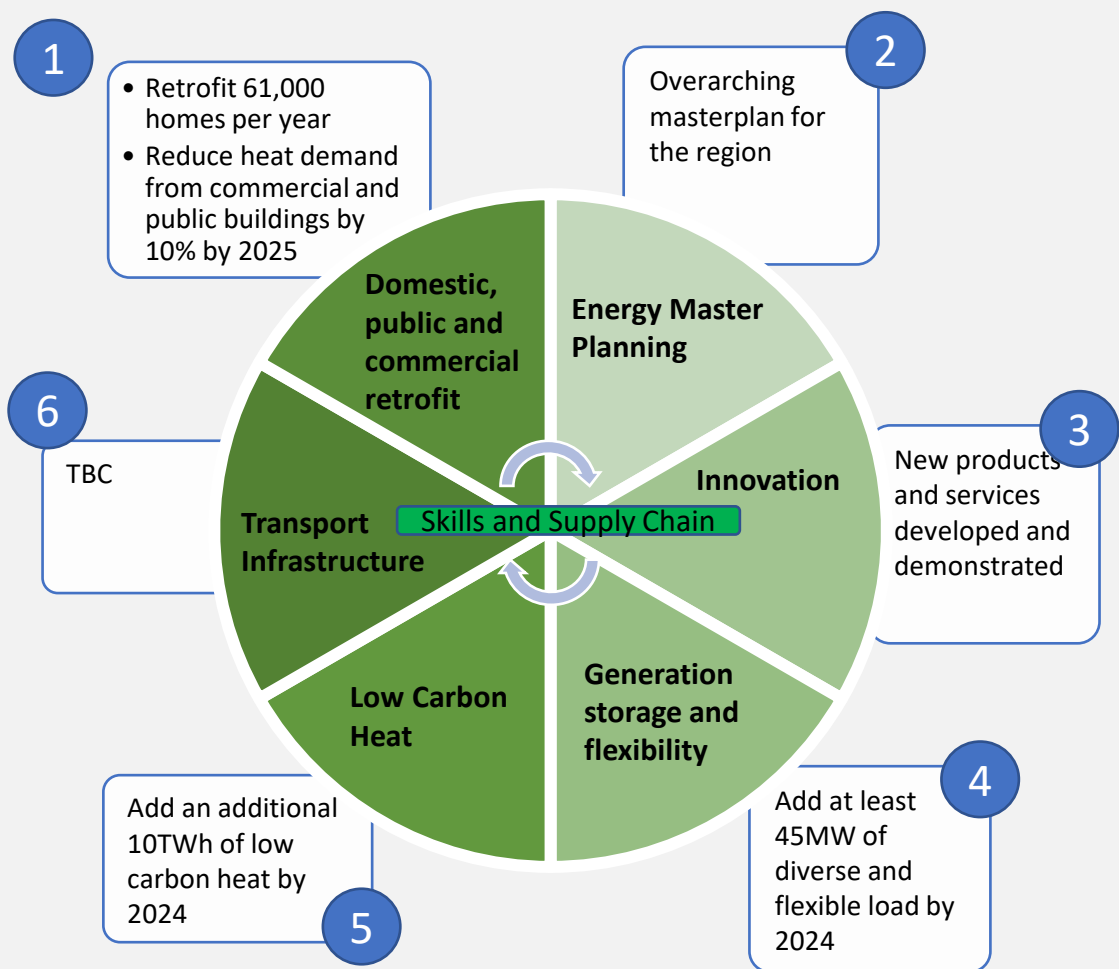
Retrofitting Buildings & Renewable Energy



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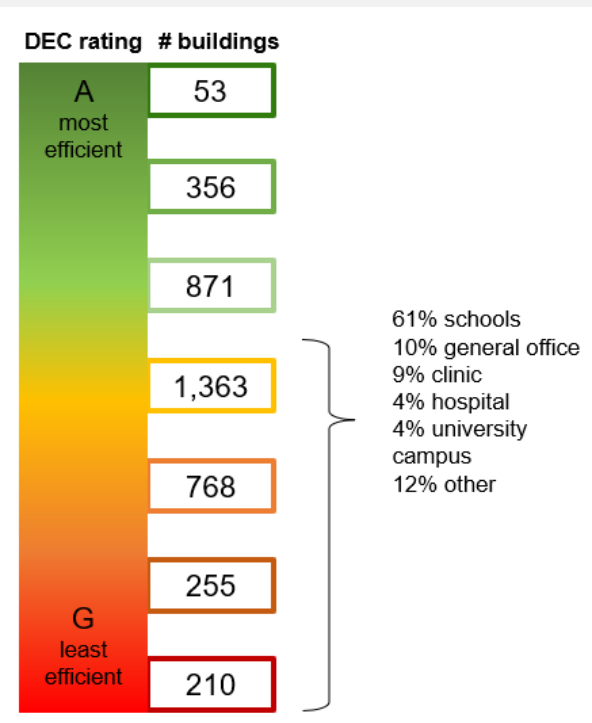
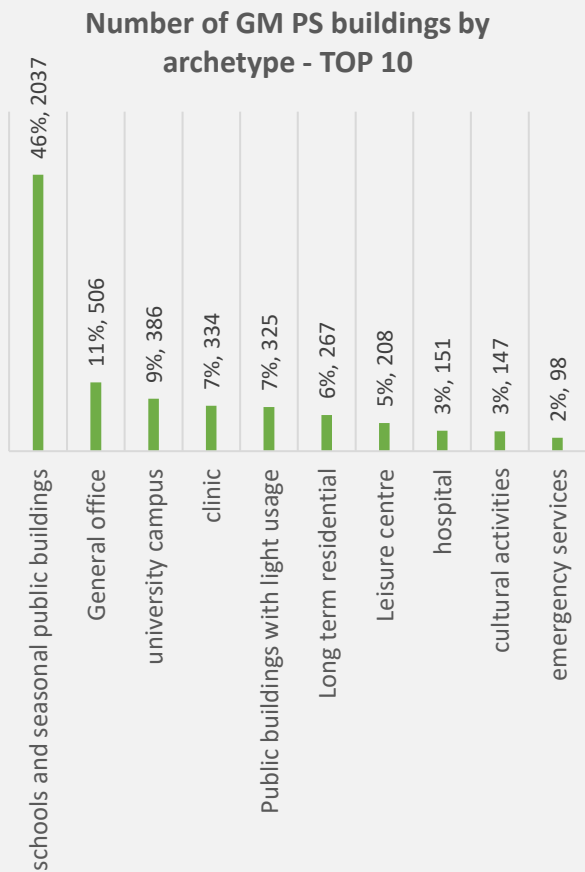
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Low Carbon

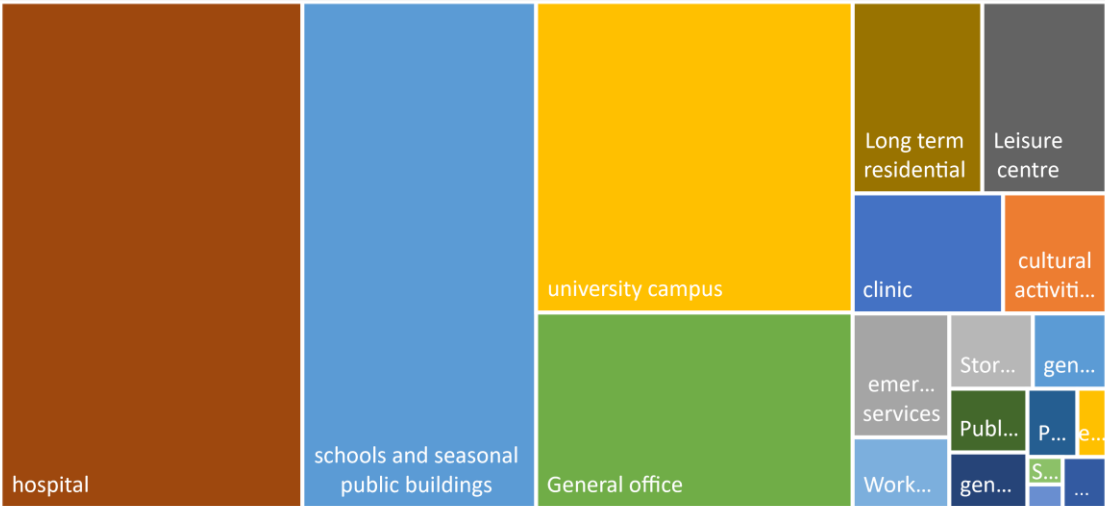


Project/Task & Finish Group	Lead	Priority/ 5YEP KPI	Outcome	RAG
Your Home, Better	GMCA/Retrofit Works	1	Deliver able to pay retrofit	
Retrofit Skills T&F	UoS/ Retrofit Taskforce	1	Work with the retrofit taskforce to deliver skills plan for retrofit	
Social Housing Decarbonisation Scheme 1,2	GMCA/RPs	1	Deliver grant funded programme of social housing retrofit	
Green Homes Grant LAD	GMCA/Oldham	1	Deliver grant funded programme of domestic retrofit	
ERDF Project– Arrowfield Zero Carbon Communities	Southways Housing	1	200 properties transitioned from gas to electrified heating	
People Powered Retrofit – One Stop Shop	Carbon Coop	1	Launch of offer for early adopter, owner occupier able to pay	
Public Sector Decarbonisation Scheme 1, 3a, 3b	DoPE Group	1	Deliver grant funded programme of public buildings retrofit	
Local Energy Market	GMCA	2	11 Local Area Energy Plans and market maker platform	
Energy Innovation Agency (EIA)	Universities/Bruntwood/SSE/GMCA/ Hitachi	3	Support businesses and bring new technologies to market	
Explore Hydrogen Innovation	MMU/Cadent	3		
Trafford Energy Park	Carlton Power	3	Local green hydrogen production	
Go Neutral	GMCA	4	Develop pipeline to deliver 85MW of Solar PV	
Heat Pump Offer	Octopus	5	Heat Pump offer for households	
CDDP 3	AECOM	6	4 outline business cases to deploy decarbonised heat	
EV Charging Infrastructure	TFGM	6	TBC	

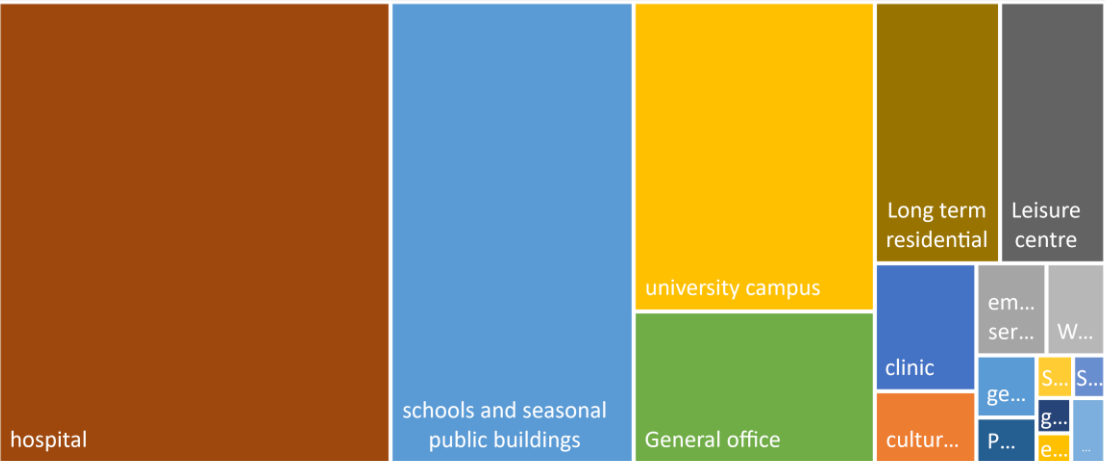
E.G. Public Sector Decarbonisation Data insights



Electricity consumption by archetype



Thermal consumption by archetype



Delivery Across All Districts during 2021/22

Funded programmes	Energy, Buildings, Transport	Narrative	Secured	Impact CO ₂ e per annum
Transport Schemes, infrastructure and innovation	Transport	EV infrastructure programme, Bee Network, e-hubs, GM Clean Air Plan	tbc	tbc
Low Carbon Skills Fund	Buildings	130+ building level feasibility studies	£983k	Enabler
Public Sector Decarbonisation Scheme	Buildings	retrofitting over 150 public buildings this year	£78m	9,000
GM LEM	All	The creation of Local Area Energy Plans for all districts and design of a Energy Trading Platform	£6.2m	Enabler
GHG LAD Scheme Phase 1	Buildings	retrofitting fuel poor homes this year.	£4.7m	11,163
GHG LAD Scheme Phase 1b	Buildings	retrofitting fuel poor homes this year.	£5.5m	25,520
GHG LAD Scheme Phase 2	Buildings	retrofitting fuel poor homes this year.	£17.2m	45,000
Go Neutral – Renewable Generation	Energy	Commences with PV, EV and storage on public land/buildings	£20m	29,952
Total			£132.5m	120,365

£1m+
Revenue
Investment

£132m+
Capital
Investment

0.12 MTonnes
of CO₂ Savings

Next Steps: Public Sector Decarbonisation

- Already delivered £78m of PSDS Funds under Phase 1 of PSDS, retrofitting nearly 150 buildings
- Phase 3 of the Public Sector Decarbonisation Scheme (PSDS Ph3) will provide £1.425 billion of grant funding over the financial years 2022/2023 to 2024/2025, through multiple application windows.
- The GMCA consortium secured circ. £15m grant under Phase 3a which needs to be delivered by 31st March 2023. The guidance for the next application window, Phase 3b, will be published in August 2022, with the application window planned to open in September 2022.
- GMCA is currently working with partners to confirm interest and scope for a potential PSDS 3b submission of ~£20m. This might provide an opportunity to engage with other GM based organisations that have not previously been part of the GMCA-led consortia e.g. Leisure Trusts.

Next Steps: Social Housing Decarb Fund

- Note our current delivery of Social Housing Decarbonisation Fund through our initial award of £10m grant from SHDF (Wave 1);
- Note the forthcoming funding opportunity presented by the Social Housing Decarbonisation Fund (SHDF) Wave 2;
- Approve the proposed application of £30m for Wave 2, with GMCA acting as the accountable body and if successful, delegate authority to GMCA Treasurer and Solicitor sign a Grant Funding agreement and defray the funding via the funding partners i.e., ~17 Registered Providers and/or Local Authorities

How could more emissions be reduced from buildings?

Reducing Greenhouse Gases

AVOID

All new build need to be net zero carbon

EXAMPLES:

- Use planning system (e.g. building standards)
- Support the development of off site manufacturing
- Support the release of more brownfield land for net zero affordable homes
- Develop 30,000 Zero Carbon Homes

SHIFT

Increase energy efficiency and reducing demand

EXAMPLES:

- Retrofit of social housing stock
- Retrofit of public and Commercial buildings
- Provide a regional proposition for the able to pay domestic market
- Increase enforcement of MEES for Private Rented
- Encourage behaviour change
- Create an integrated skills and delivery programme which is PAS2035 and Trust Mark supported

IMPROVE

Generate more renewable and low carbon energy

EXAMPLES:

- All public buildings have installed onsite renewable energy
- Maximise the identified opportunity from the GO NEUTRAL programme, ground mounted, solar car port etc
- Install energy storage regionally and locally to facilitate time of use
- Increased use of sleeved energy via a GM wide energy trading platform

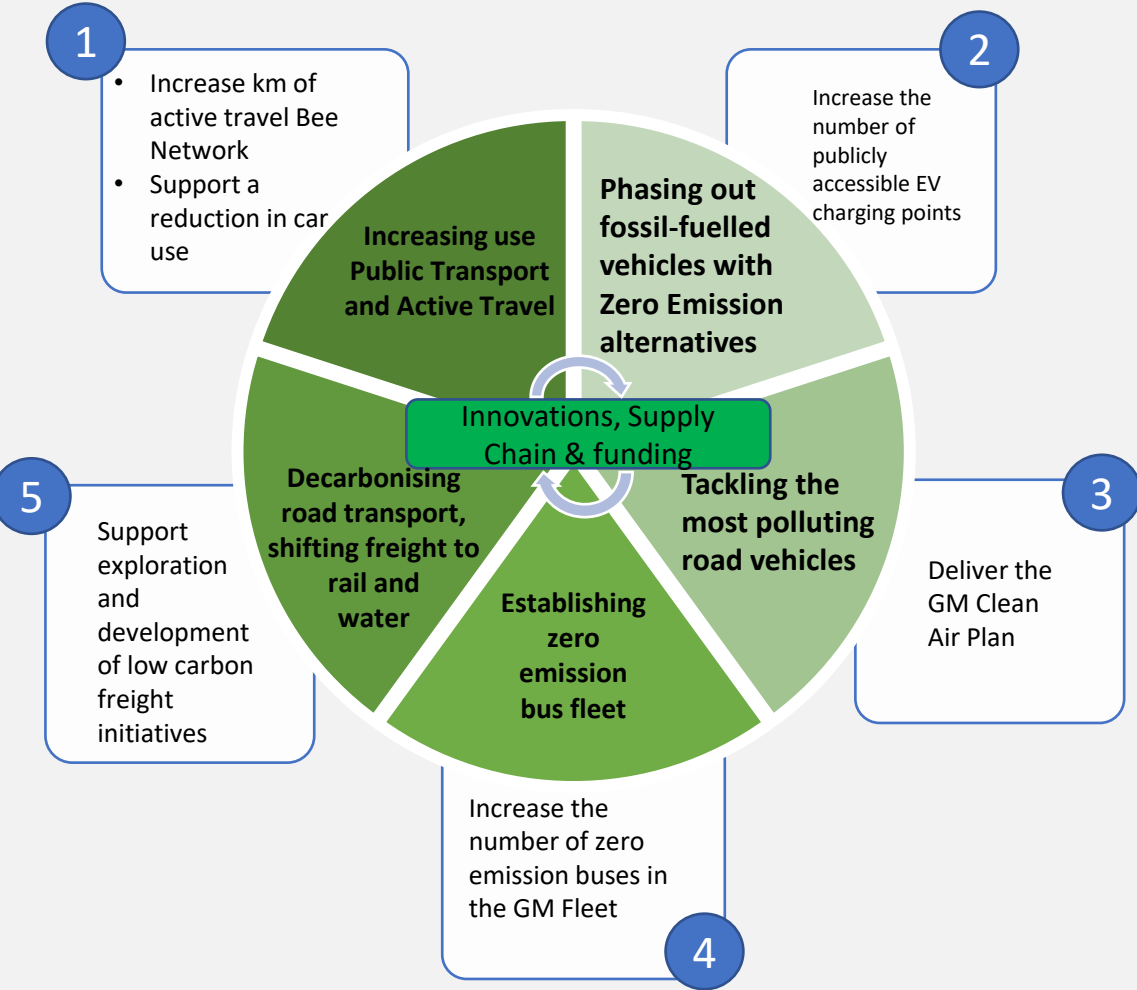
Transport



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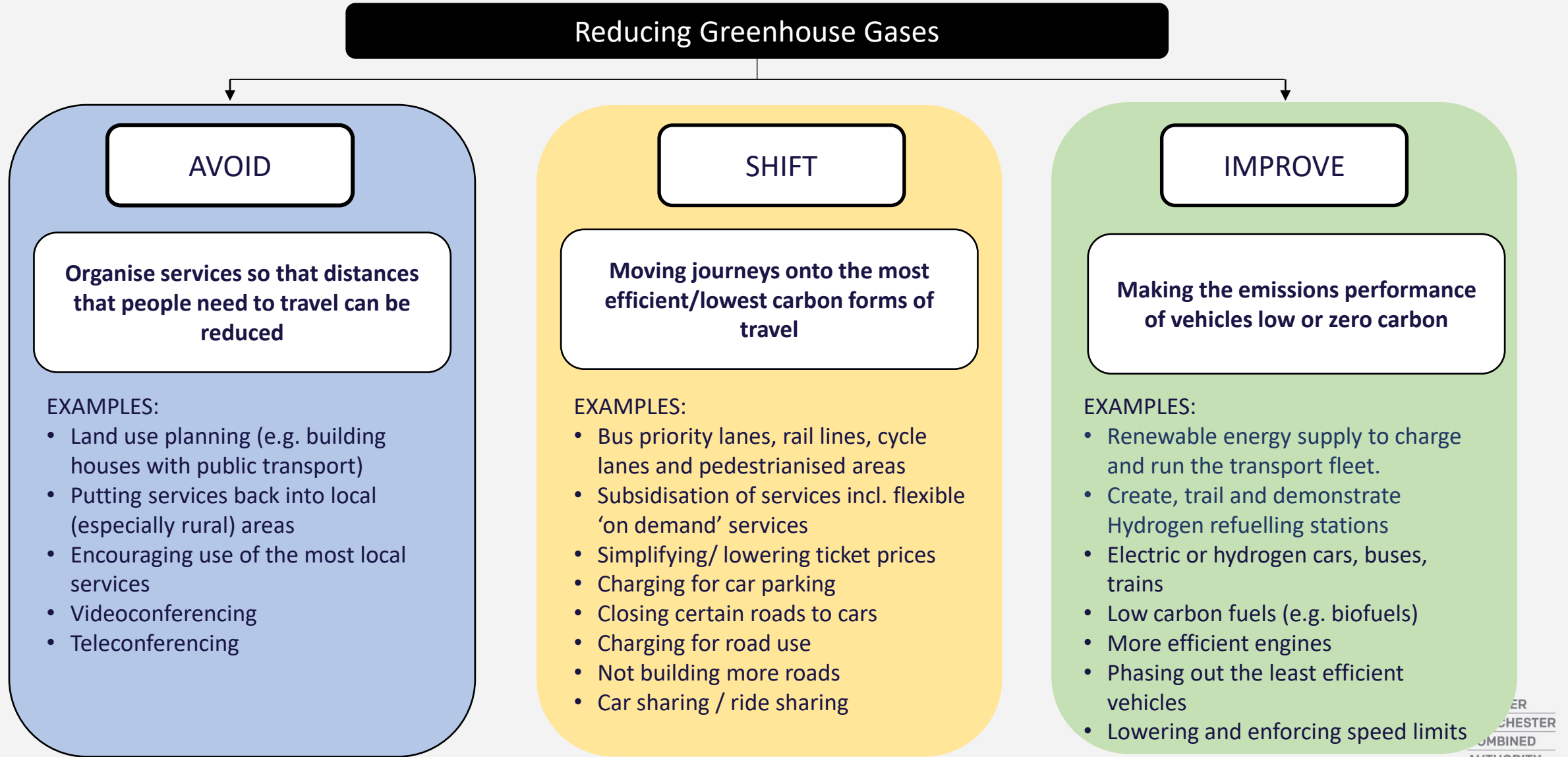
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Transport



Project/Task	Lead	5YEP priority/KPI	Outcome	RAG
Active Travel Bee Network	TfGM	1	To provide cycling and walking routes to get people moving	
Bike Hire Scheme	TfGM	1	Promote the use of Bikes	
E-Hubs Pilot – cargo bikes	TfGM	1	To promote the use of cargo bikes	
E-scooter trials	TfGM	1	Trial e-scooter rental	
ZEBRA funding	TfGM	2	introduction of 170 zero emission buses by 2024	
CRSTS funding	TfGM	2	A third of the bus fleet as zero carbon by 2027.	
Clean Commercial vehicle fund: HGV – replacement and retrofit	TfGM	3	Clean Air Plan funds to replace or retrofit HGV vehicles that are not Euro 6 compliant	
Clean Bus Fund: replacement and retrofit	TfGM	3	replace or retrofit buses that are not Euro 6 compliant	
Deliver the GM Clean Air Plan	TfGM	3	tackle NO2 Exceedances at the Roadside by 2026	
EV charging network to support 200k vehicles	TfGM	4	Increased number of publicly owned EV connectors in GM	
Establish how the public sector can best influence the rollout of EVC	TfGM	4	Commission Greater Manchester EVCI Study	
Pilot of Sustainable last mile activities in regional centre	TfGM	5	Support exploration and development of low carbon freight initiatives	

How could more emissions be reduced from travel?



Source: Jillian Anable – reducing carbon emissions from travel –Climate Assembly

Local Area Energy Plans



Local Area Energy Planning is Key

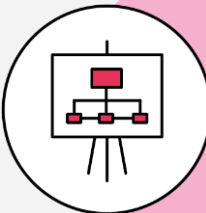
Local Area Energy Planning (LAEP) is a concept developed by the ESC to enable data-driven, spatial and collaborative planning, to help unlock investment and delivery of smart local energy systems – summarised by these 7 steps.



Each local area is different - its people, geography, building stock, energy networks and ambitions and priorities



Local Area Energy Planning provides a data driven, spatial and collaborative means, involving local government & network operators, of exploring a range of possible future local energy scenarios to cost-effectively decarbonise

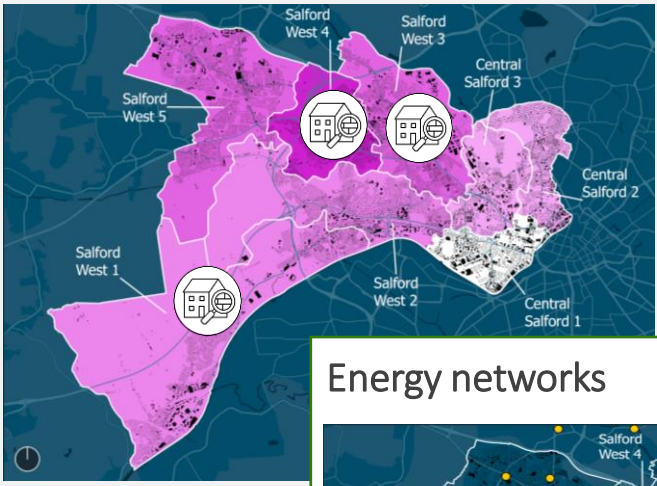


Resulting in the identification of energy network and system choices to support carbon neutral aspirations - informing what local action is needed and where

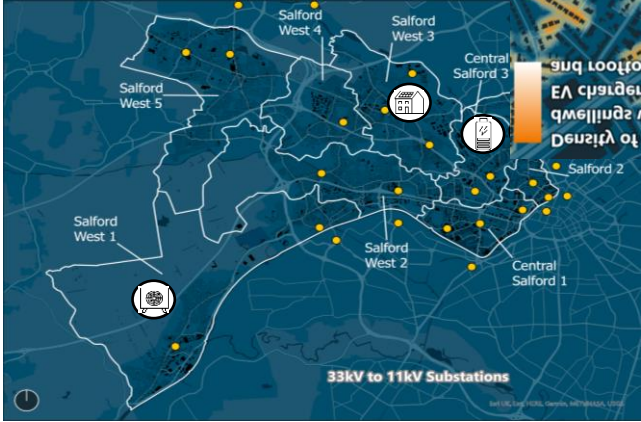


The Plans

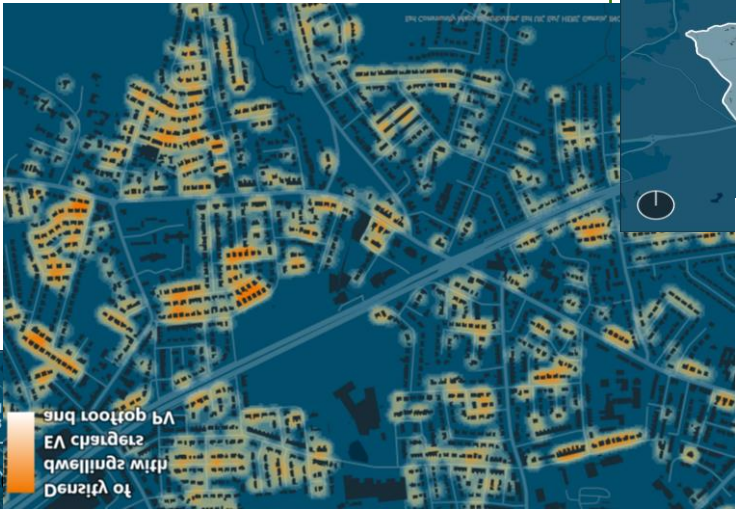
Retrofit Analysis



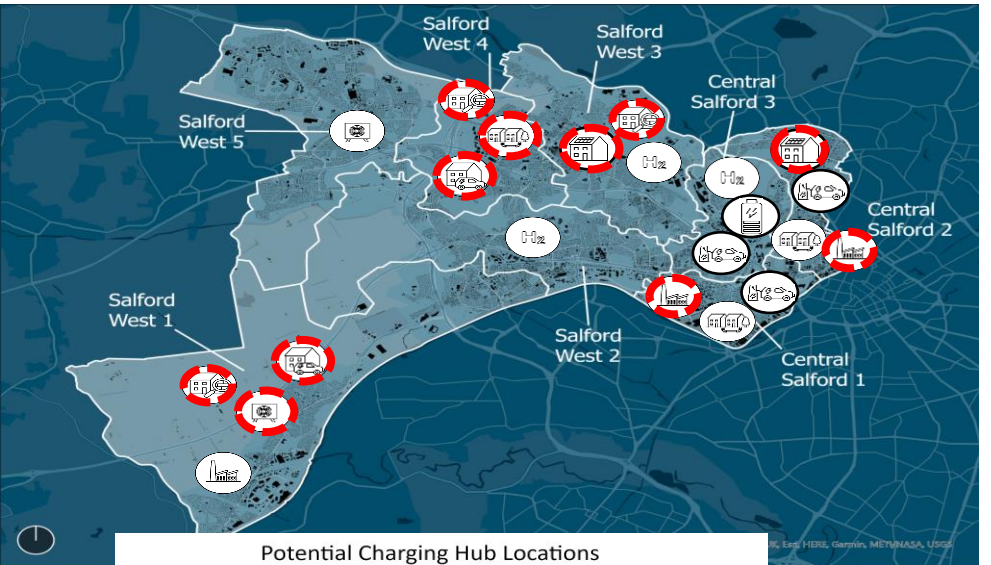
Energy networks



Solar PV and EV density by 2038 Salford west 4

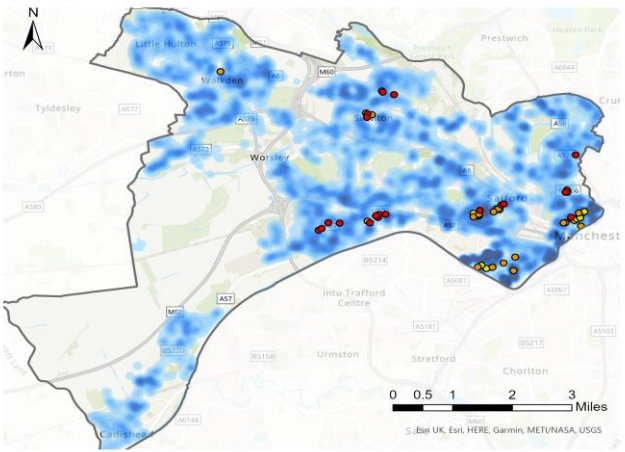


Priority Areas for demonstration and scale



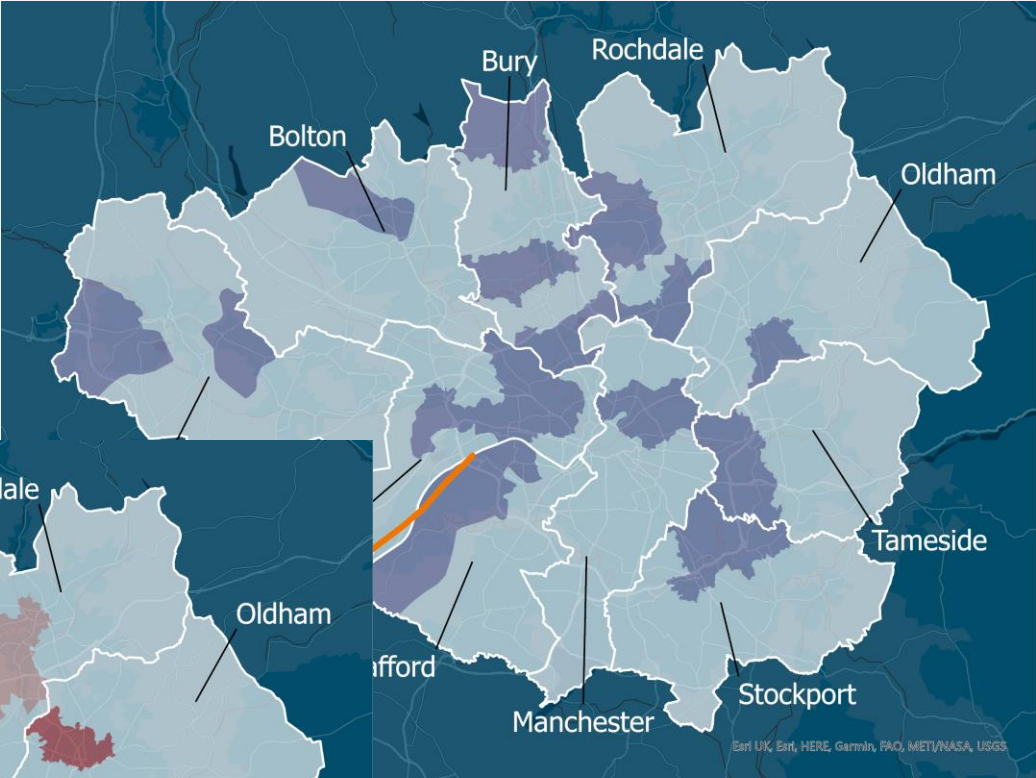
Potential Charging Hub Locations

- Density of cars without off-street parking
- High
 - Low
- Top 20 potential charging hub locations for further study
- Car Parks
 - Public Land
 - Unoccupied Buildings

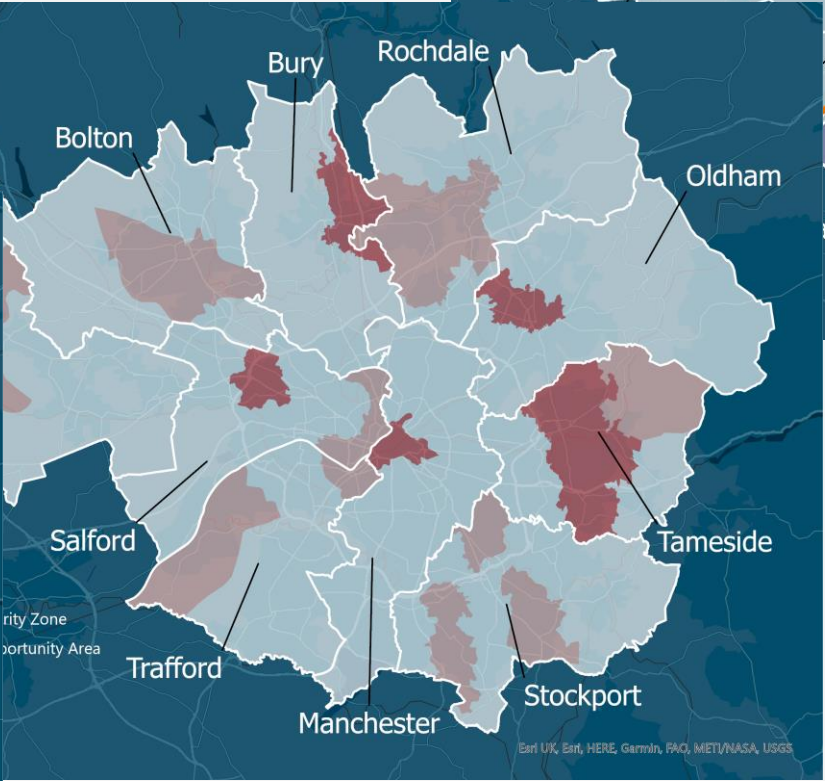
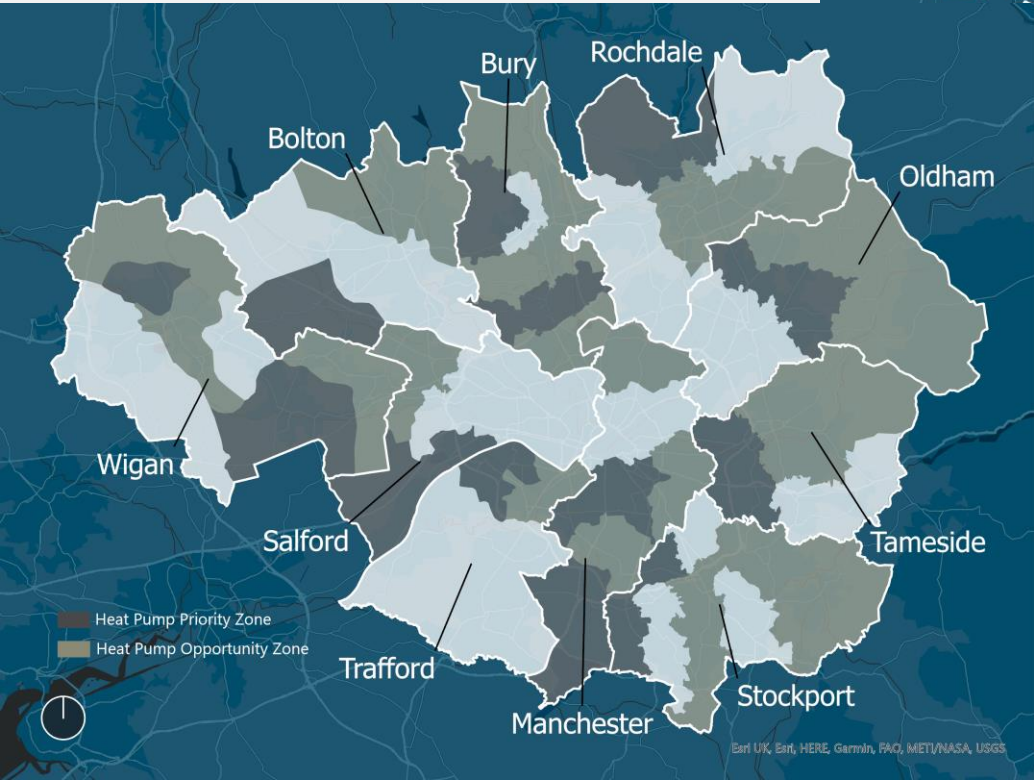


Heat Pump, District heat & Heating zones

District Heat Priority Areas and Opportunity Zones



Heat Pump Priority Zones and Opportunity Areas



Hydrogen for Heat Opportunity Areas

Next Steps: Local Area Energy Plans

1. Note and comment upon and approve the draft GM Local Area Energy Plan, its contents and the research undertaken to inform its development.
2. Establish a small specialist Programme Delivery Unit centrally, which will provide additional resources to Districts to enable delivery. This can be funded via existing Retained Business Rates approvals.
3. Use this unit to provide capacity to Districts to accelerate the deployment of renewable energy generation and storage, support the work on decarbonising the public estate and help Districts with domestic retrofit measures, help define a regional position on heat networks and the role of hydrogen.
4. Undertake further work on delivery mechanisms to support the transformation outlined in the LAEPs, including how we can draw in further private finance for delivery.
5. Commission some work to produce a Strategic Outline Business Case over the next few months and bring this back for approval in late 2022 or early 2023.

New Buildings



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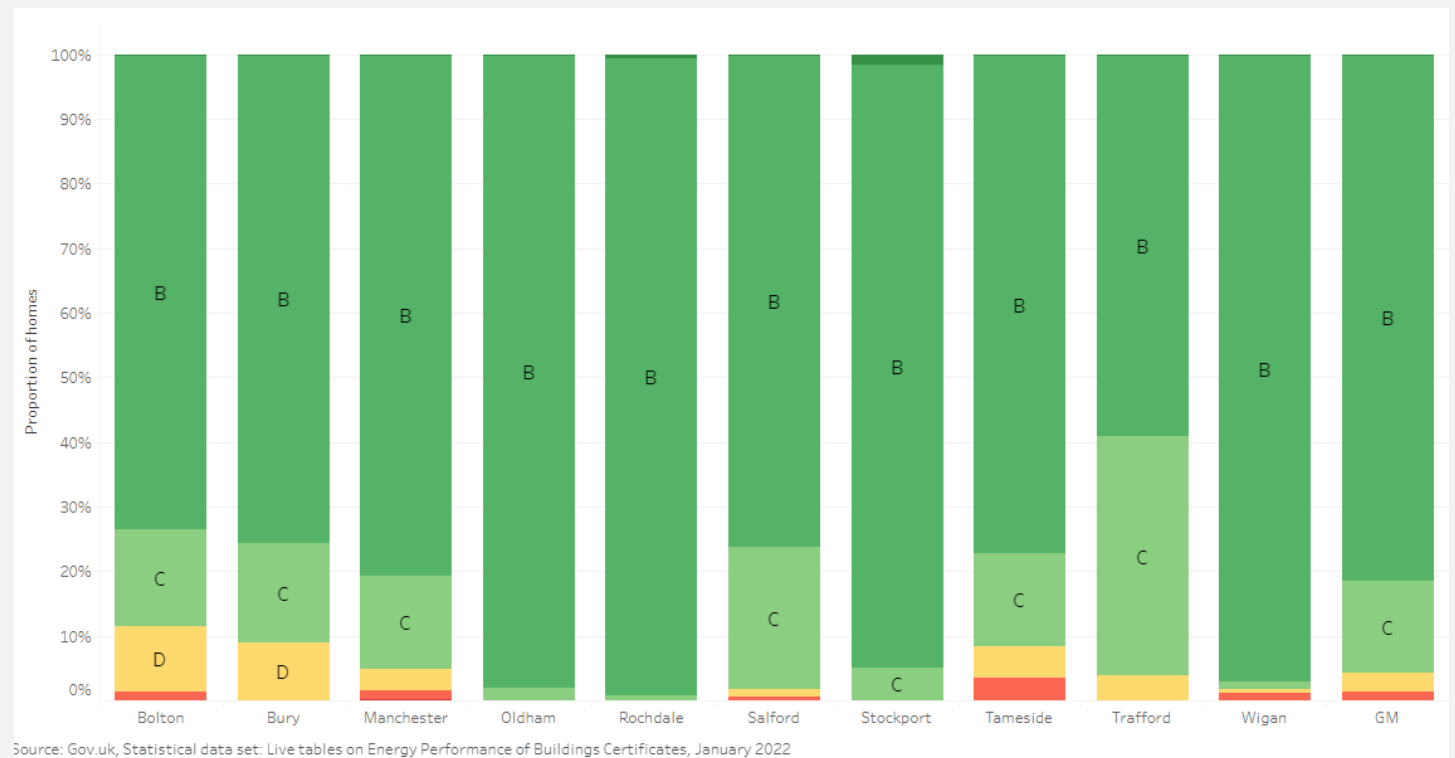
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New ambition: 30,000 net zero carbon social rented homes by 2038

- Endorsed by the Combined Authority
- Builds on existing commitments:
 - 50,000 additional affordable homes by 2038 (GM Housing Strategy)
 - 30,000 of those to be social or affordable rent (GM Housing Strategy)
 - New development to be net zero carbon from 2028 (Places for Everyone)
- 'A Whole System Challenge'

Where are we starting from?

Energy performance of new build homes



Doing housing differently: the transition to net zero carbon new build

- Moving net zero carbon from pilots to business as usual
- Statutory plan process via Places for Everyone (PfE) embedding net zero requirement in policy ahead of national timescales
- Need aggregated demand to drive investment in supply chain and manufacturing to support modern methods of construction (MMC)
- Demand for social rented housing high and likely to increase as cost of living crisis bites on top of pandemic and Brexit impacts
- Opportunity of new Affordable Homes Programme, including requirements for a portion of MMC delivery

Next steps: New Buildings

- Establishing Truly Affordable Net Zero Homes (TANZ) Task Force to meet ‘whole system challenge’, chaired by Cllr Western
- TANZ will be a cross-sector group with a specific focus on housing’s contribution to meeting the PfE commitment that all new development will be net zero carbon by 2028
- Will formalise and co-produce a detailed implementation plan to advance the delivery of net zero carbon homes across five delivery areas:
 1. Land supply, site evaluation and pipeline
 2. Design and procurement
 3. Construction skills and capacity
 4. Funding our ambitions
 5. People and communities

Conclusions: The Gaps



Overcoming Barriers to carbon neutrality

Theme	Barrier Type	Barrier
Transport	National leadership	Over the last 20 years, costs of motoring have fallen by 15% whilst costs of bus have increased by 40% and rail fares by 20%. Government needs to develop national fiscal measures that encourage growth in more sustainable transport modes, to complement the work of local transport authorities in improving their public transport and active travel networks.
Existing Buildings	Investor Uncertainty	Lack of long-term market confidence – e.g., need UK Buildings and Heat Strategy to underpin investment decisions especially the role of Hydrogen.
Existing Buildings	Incentivisation	Building upgrade expenditure not accurately reflected in the uplift of the buildings value – Creation of Energy Efficiency component of Stamp duty, tightening and increase enforcement of Minimum Energy Efficiency Standards (MEES) for all tenures
Existing Buildings	Financing	Current finance products make upgrades “uneconomic” – Create suite of Green Finance Products with low interest patient capital e.g. property based loans, Green Bonds, Green Mortgages. Equalise VAT treatment for new and retrofit building works. Support the development of Heat as a Service models inc. energy storage
Existing Buildings	Incentivisation	Landlords struggling to make viable investment case for property improvements – Increase uptake of warm rental agreements, stamp duty changes will support this and MEES will underpin the bottom of the market - accessing cheaper financing
Energy Markets - Generation	Investor certainty	Uncertain how local energy markets will develop and de facto bans on onshore wind – Work with the market to develop new products, services and finance options.
Energy Markets - Taxation	Incentivisation	Environmental levies are placed on electricity not gas, making the economics of transition harder disincentivising the switch to heat pumps, and subsidising gas consumption – New taxation based on environmental harm initially based on gas and electricity then tackling vehicle excise duty.
Heat Decarbonisation	Incentivisation	Multiple market failures all underpinned by a lack of confidence throughout the value chain as to when new heating systems will be required, and the nature, size and longevity of any incentivisation schemes – set ambitious new build standards with near term requires and outline a phased approach to phasing out of Fossil Fuel Heating systems .
Governance	Leadership	There is a disconnect between GMs ambitions and the resources deployed to realise them resulting in opportunities being lost or taken forward at a sub optimal scale – ensure the resources are commensurate with the Challenge and GMs stated ambitions.
Governance	Leadership	Not all strategic decisions are aligned to and some work actively against our Climate Change Goals e.g. continued investment in non net zero infrastructure.

Areas for future consideration

Direct Control - Corporate Changes

- Consider how to embed Local Area Energy Plans in to all LA activity Plans
- Appropriately resource climate change mitigation and adaptation programmes
- Seek agreement on 'invest to save' propositions for the PSDS, Go Neutral and DEEP programmes.
- Consider longer term lease agreements and power purchase agreements for energy assets
- View our executive decisions through the lens of our Climate Emergency (Co-benefits Assessment Tool)

Leading

- Set a future transport direction and timescales to stimulate rapid change
- Set an example eg local authority fleets & estate to move to lower carbon fuels asap
- Support future direction for hydrogen vehicles to support roll-out of hydrogen infrastructure

Enabling

- Consider adopting measures to "nudge" energy efficiency
- Seek agreement on a suite of land assets for rapid EV hubs/ forecourts
- Seek agreement on timescale to move all LA owned homes away from fossil fuels

Convening and Commissioning

- Support the LEP to enable SMEs and major industry to rapidly transition to net zero (Bee Net Zero)
- Consider how to use public procurement mechanisms to stimulate change
- Concerted lobbying of Government and other influencers to effect change outside of our control

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