

Shaping the Future - A Local Government View

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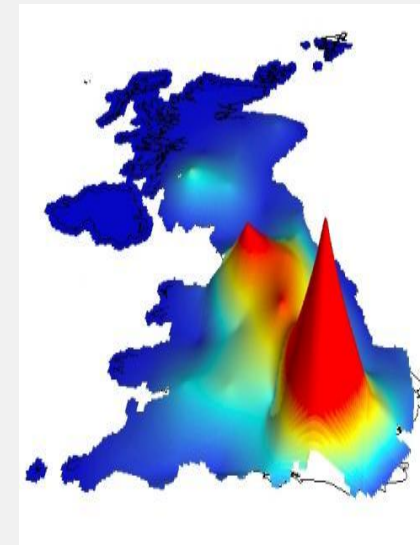
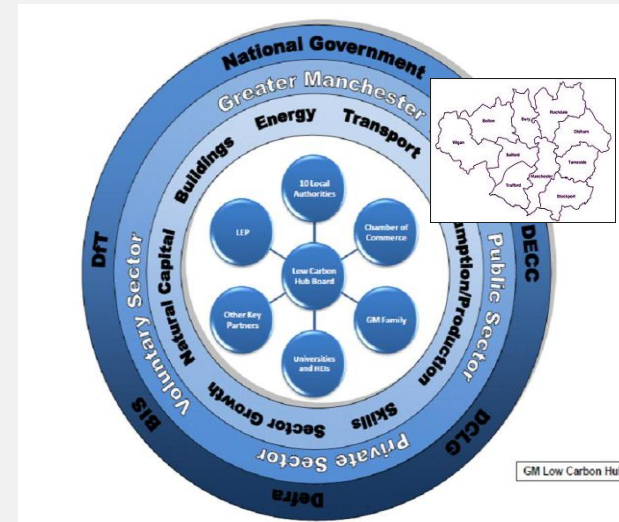
Greater Manchester Combined Authority

Combined Authority (GMCA)

- AGMA established in 1986, GMCA formed in 2011
- 10 Local Authorities of Greater Manchester working at scale
- Established a Low Carbon Hub in 2012
- A centre of excellence for achieving economic gain through integrated delivery of carbon reduction.

Greater Manchester (GM)

- UK's **largest** & fastest growing regional economy: GVA **£46bn**
- 2.7 million residents and a (ttw) workforce of 7.2 million people
- Low carbon and environmental goods sector worth **£6.7 billion**, 2400 companies, which supports 45,000 jobs - growing at 6% pa
- 1.2m households, 25% are social homes
- 95% of homes use gas for space and water heating; **5%** of postcodes in GM 'off-gas'
- Homes in GM account for **37%** of total energy demand
- **77%** of domestic demand is **heating and hot water**



GMCA

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BURY

MANCHESTER
OLDHAM

ROCHDALE
SALFORD

STOCKPORT
TAMESIDE

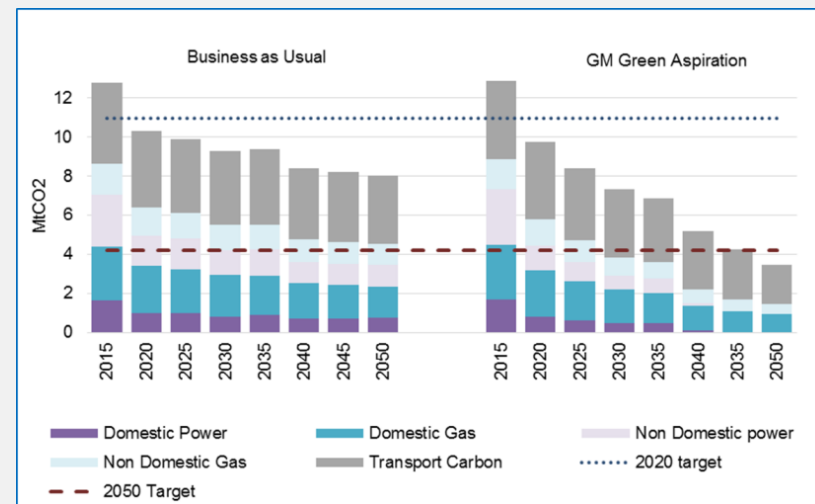
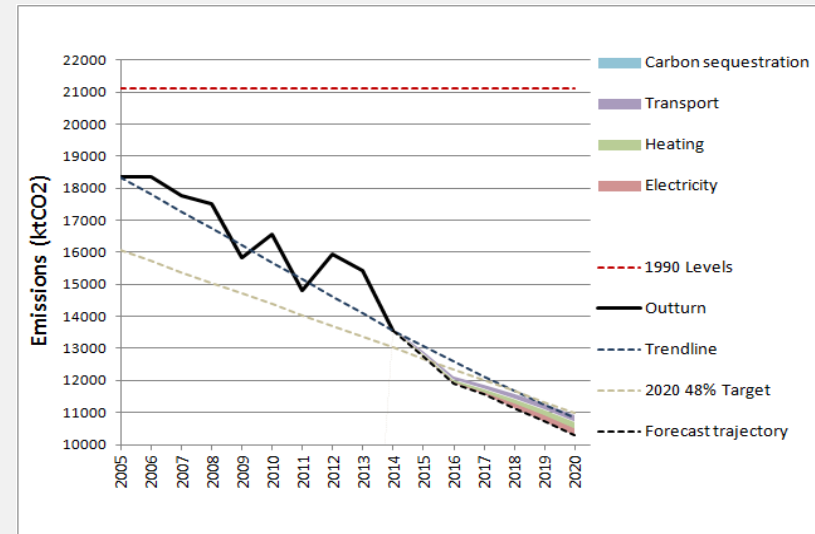
TRAFFORD
WIGAN

Greater Manchester Emissions Strategy

Themes

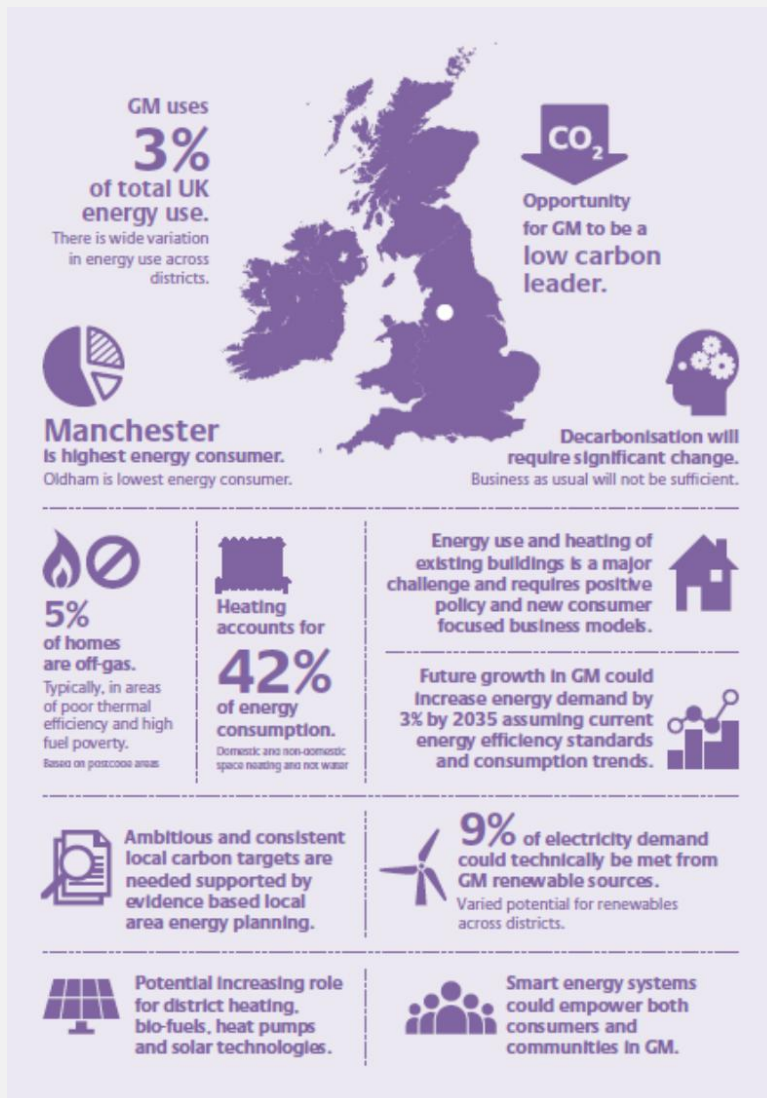
- Energy
 - Buildings
 - Transport
 - Sustainable Consumption & Production
 - Natural Capital
 - Skills and Growth
 - Climate Resilience
- } Cross cutting

- Implementation Plan outlines actions to meet carbon target to 2020
- 'Business as Usual' not enough for 2050
- Significantly scale up our energy efficiency and generation activities with smart energy infrastructure



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Research & Evidence

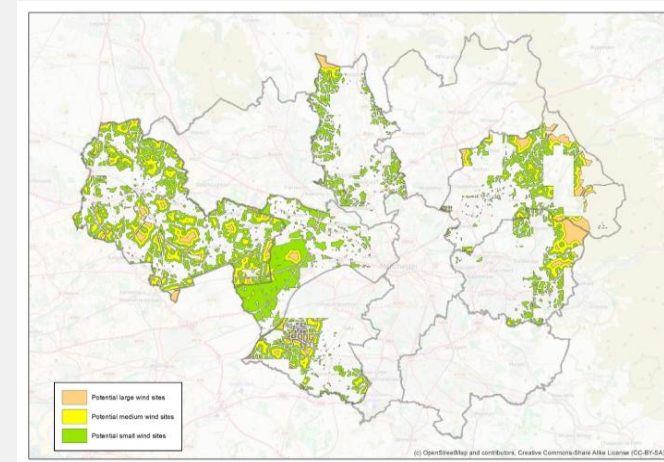
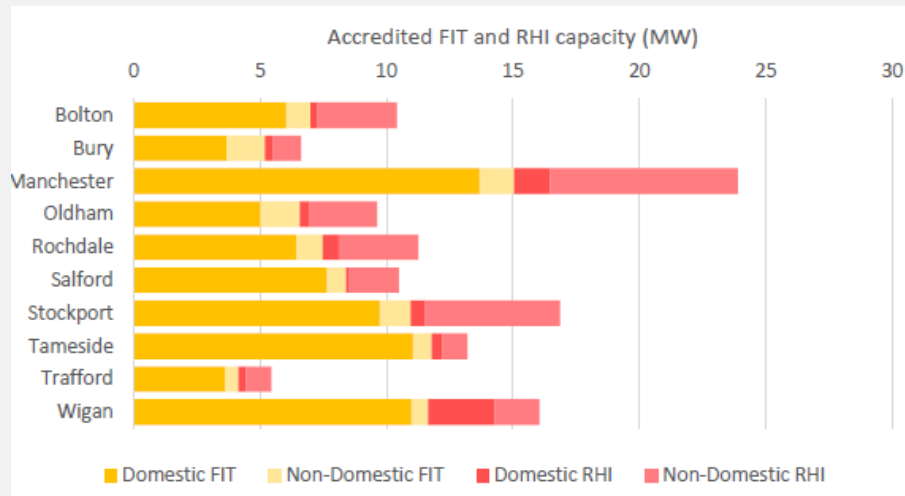
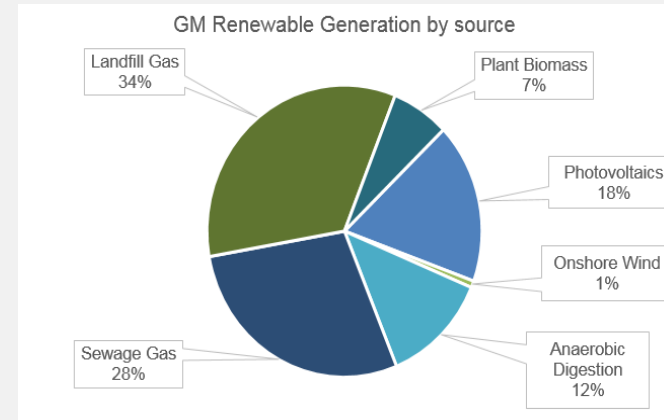


An Evidence Based Approach:

- GM spends over £5 bn/pa on energy (all)
- Use of electricity and gas in buildings accounts for 72% of direct CO₂ emissions
- Longer term targets require energy efficiency, low or zero carbon heating
- GM has 140MW of installed renewable electricity & 29MW of heat capacity.
- However, technical potential for 9% of our electricity demand and 68% of our heat demand to come from renewable sources.

Evidence: Low Carbon Generation

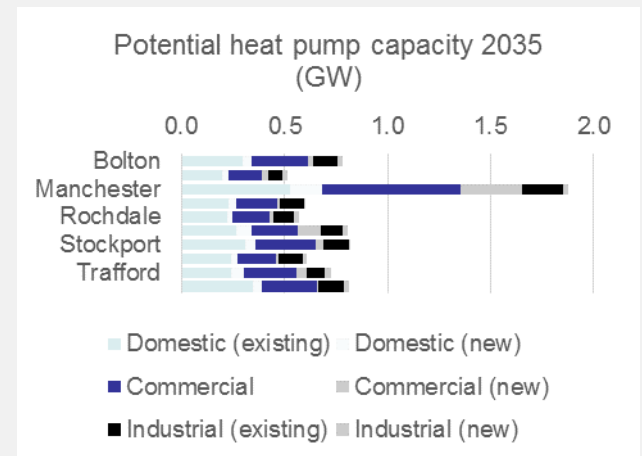
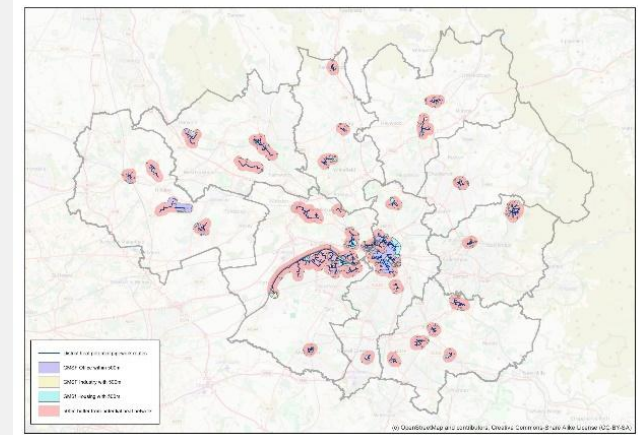
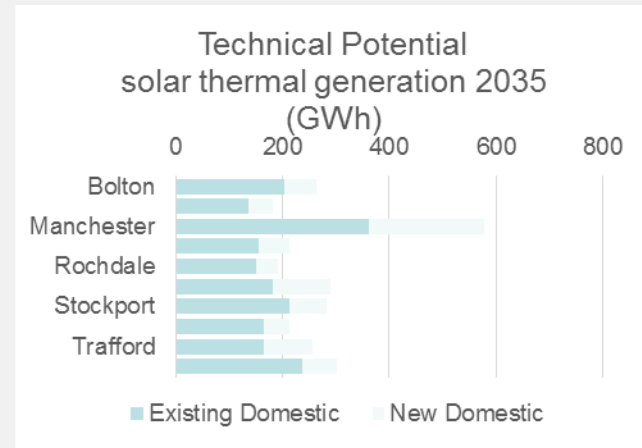
- **140MW** of installed renewable electricity capacity.
- **29MW** of installed renewable heat capacity
- The majority of GM renewable generation is from Landfill, sewage and AD gas (74%).
- Wide variation in installed small scale renewables (<5MW) across districts
- Limitations to role of onshore wind in GM in current policy/planning environment



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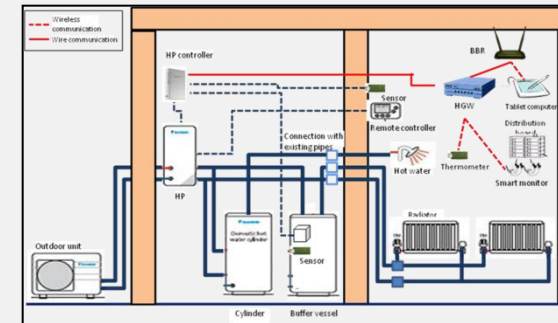
GM Energy Potential

- Significant technical potential in GM for future energy demand met by:
 - **Heat networks**
 - **Solar technologies (heat and power)**
 - **Heat pumps**
 - **Biofuel**
- Other technologies (**hydro, geothermal**) could have role but lesser technical potential in GM.
- Important to recognise **economic barriers** to realising technical potential
- Increasing decentralised generation may create **challenges for networks**
- Number of **potential game changers** including **hydrogen and storage**



Existing Projects

- **Smart Systems and Heat (SSH)** –national pilot with the Energy Systems Catapult to deliver advanced energy master-planning and a potential £30million demonstrator
- **NEDO** project – a £20+ million partnership with the Japanese Gvt Agency to pilot Demand Side Response in 550 social homes with air source heat pumps
- **Buildings Efficiency** - Award Winning £9m Green Deal domestic energy efficiency programme & a £10m ECO Fuel Poverty Programme. £20m investment opportunity identified with Salix for non-domestic
- **Heat Networks** - £2.7m ELENA funding for project development capacity on heat networks and LED street-lighting. £10m funding for first two networks agreed.
- **Transport** - Electric Vehicle recharging Infrastructure, £23m Velocity Cycling Network, Extension of Metrolink
- **Business support** - £3m Green Growth programme.



Smart Systems and Heat Programme



Whole System Analysis

Convene key stakeholders, develop and apply research, analysis and modelling capabilities to help UK make strategic choices about transition pathways and innovation priorities collaborating with industry, Government and academia



Innovation & Commercialisation

Whole systems architectures; systems integration; consumer insights; subject matter experts; development; “product” management; energy knowledge exchange; collaboration; targeted support for SMEs



Test & Demonstration Platform

Whole systems; facilities, capabilities and best practice; alliances and partnerships; appropriate scale; multi-vector; technical, commercial, business; Consumers insights; mitigate risk and reduce time to market; realistic pricing of risk

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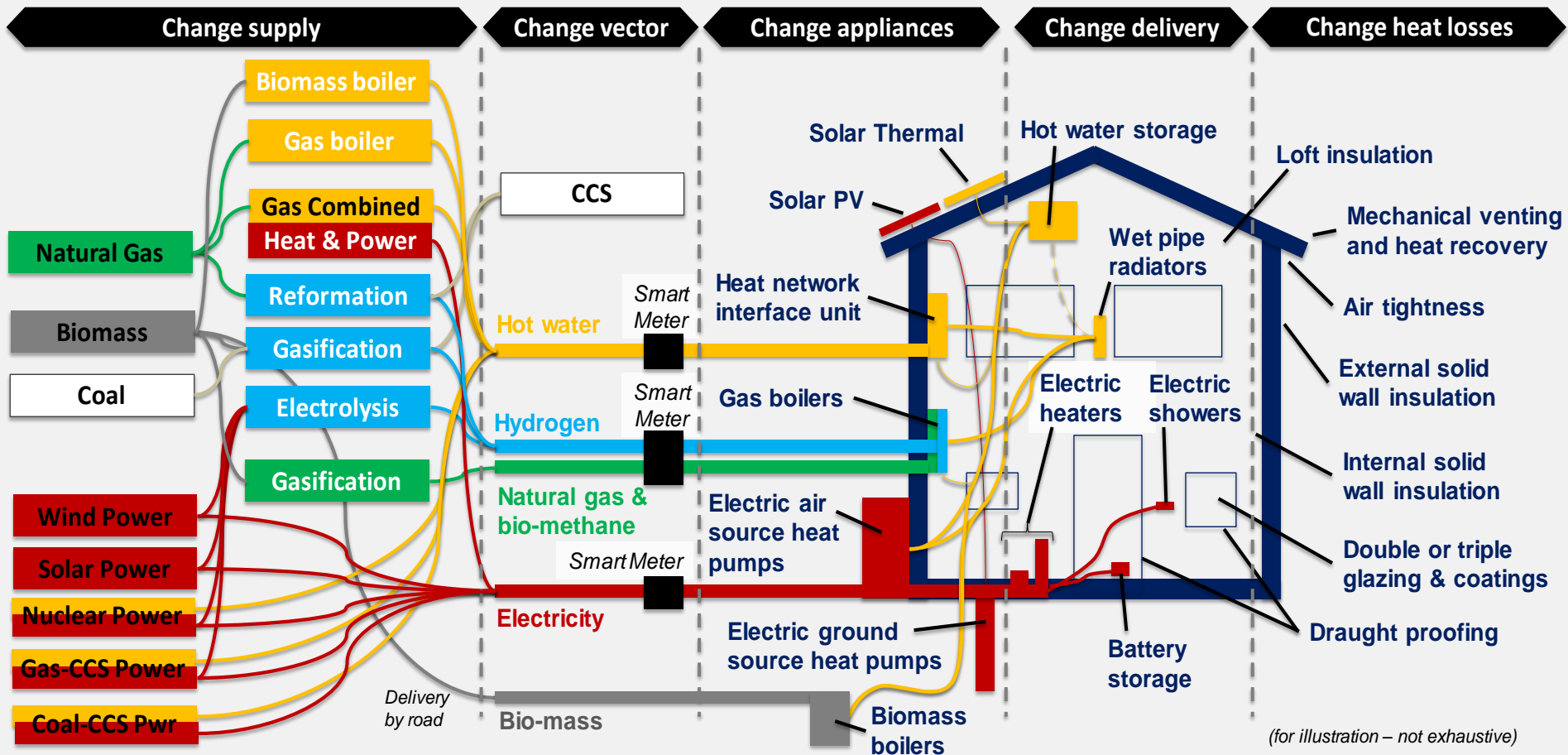
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Decarbonising Domestic Energy



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EnergyPath Networks

Strategic, spatial planning to meet future carbon targets in a local area – focusing on decarbonising building energy demands, specifically heat

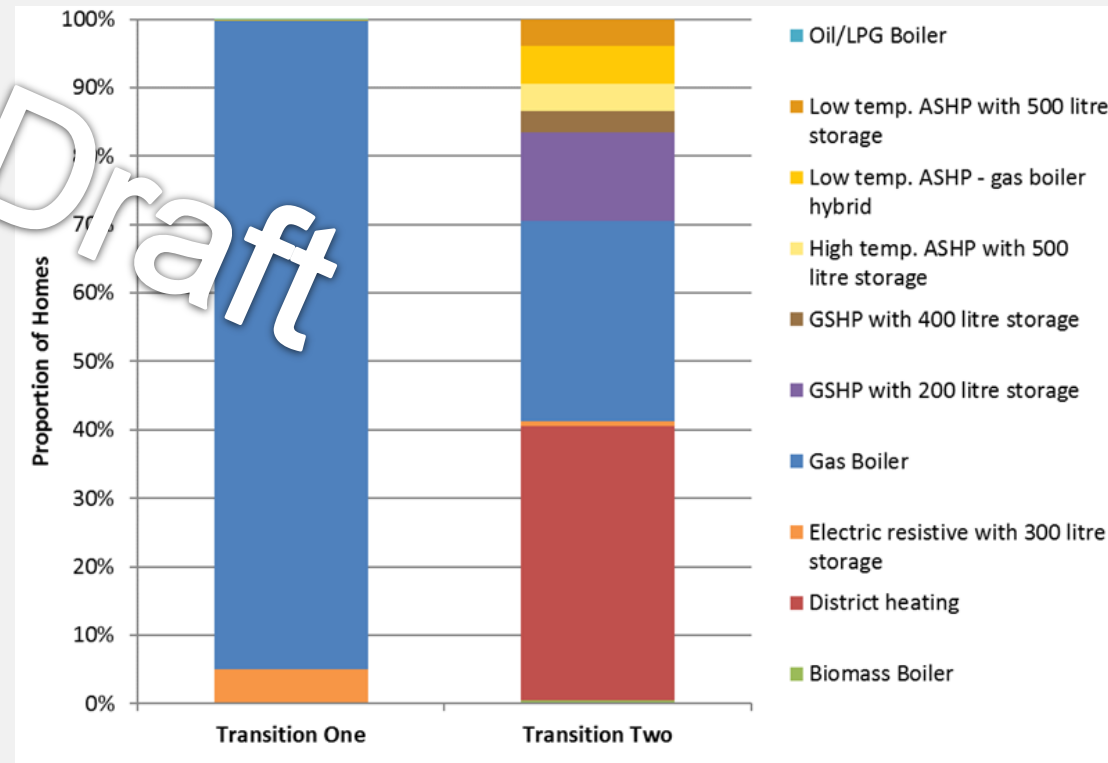
- Takes a ‘systems’ view
 - What? Where? When?
 - For investments in Buildings, Networks and Energy Production
 - Across Heat, Electricity, Gas
- Supports proactive planning and investment
- Identifies local energy network build and reinforcement
- Aids consensus building - stakeholders and local communities
- Works on a cost to society basis, so without current subsidies and taxes

Potential Future System - Domestic

To reach the proposed emission level, domestic heating systems in Districts may have to radically change between now and 2050

Our (draft) modelling suggests the most cost effective pathway would be for:

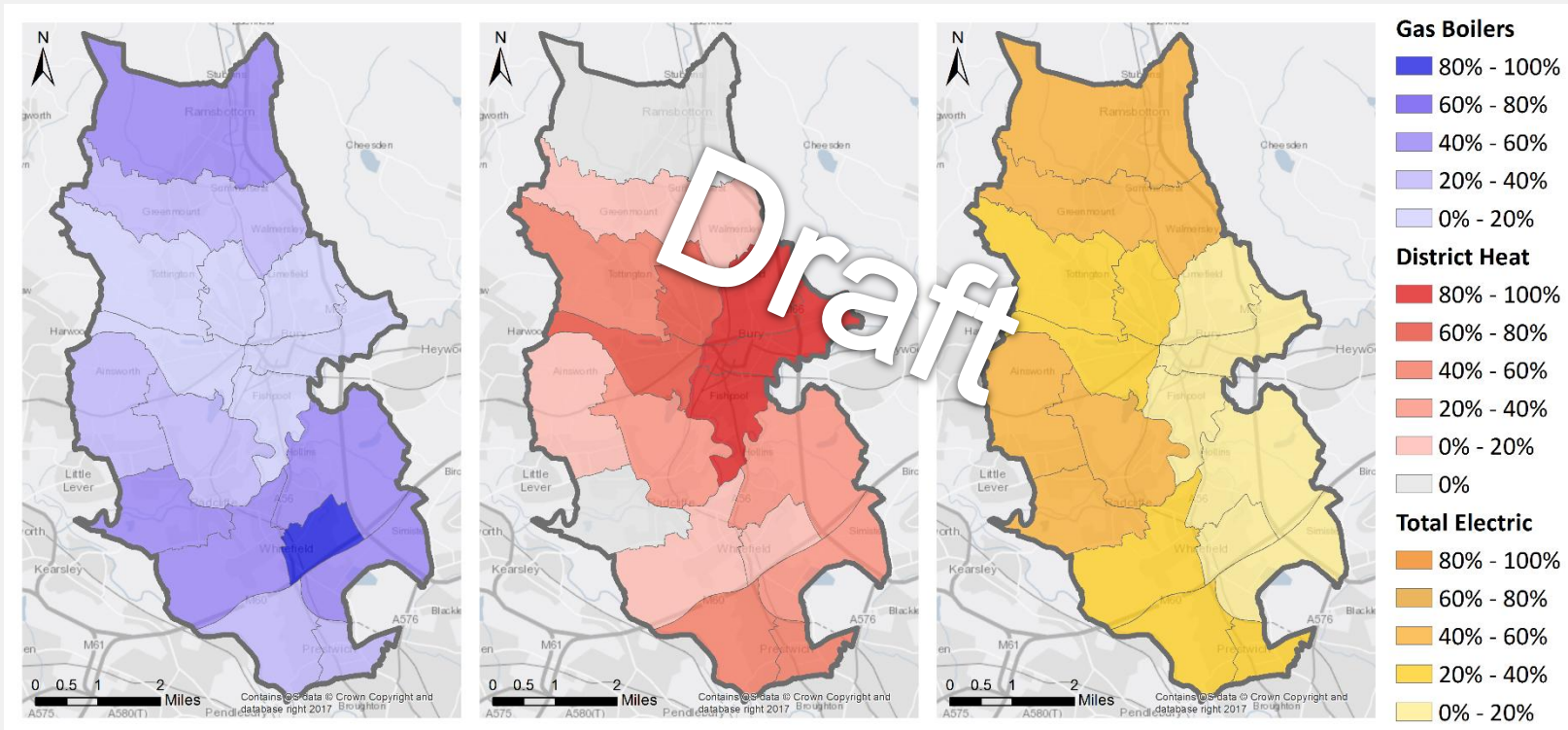
- **30%** of domestic buildings to stay on gas
- **40%** to switch to district heat
- **30%** to use an electric heat pump option



Draft

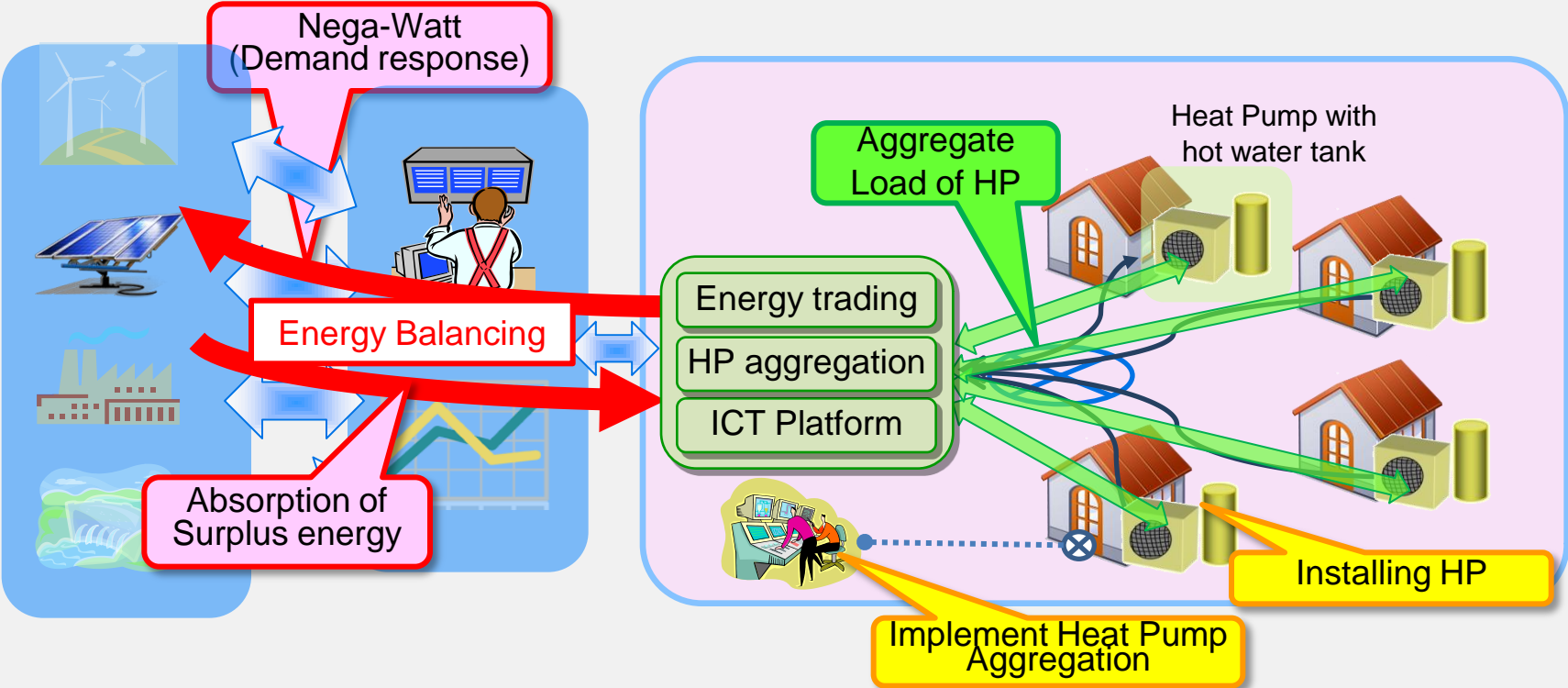
Domestic Buildings – Transition 2

The modelled type of domestic heating systems varies significantly across District



Domestic Smart Energy Proposition

Reduce energy demand and cut carbon emissions by bringing together low carbon energy technologies with advanced IT.

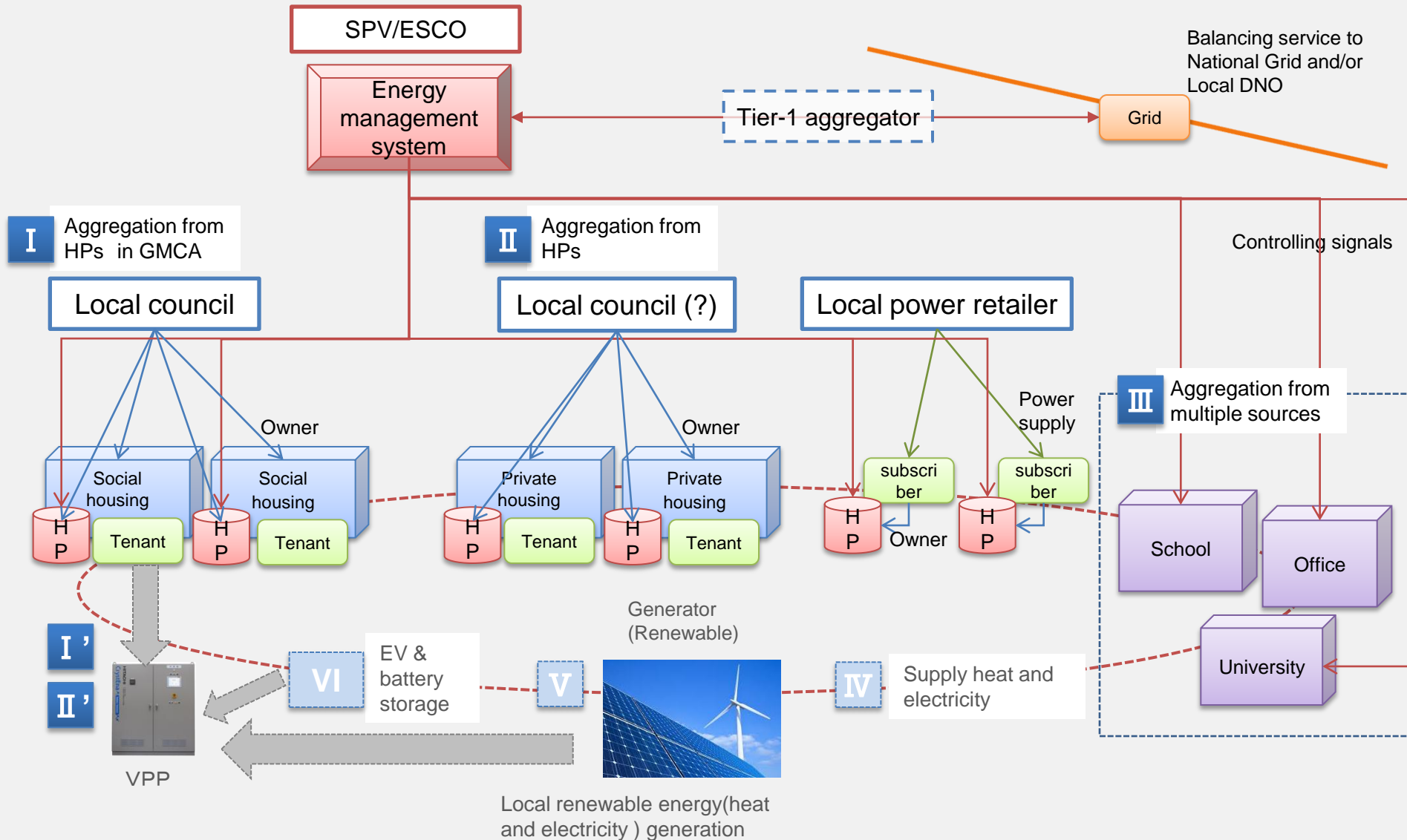


Supply Side

Electricity Market

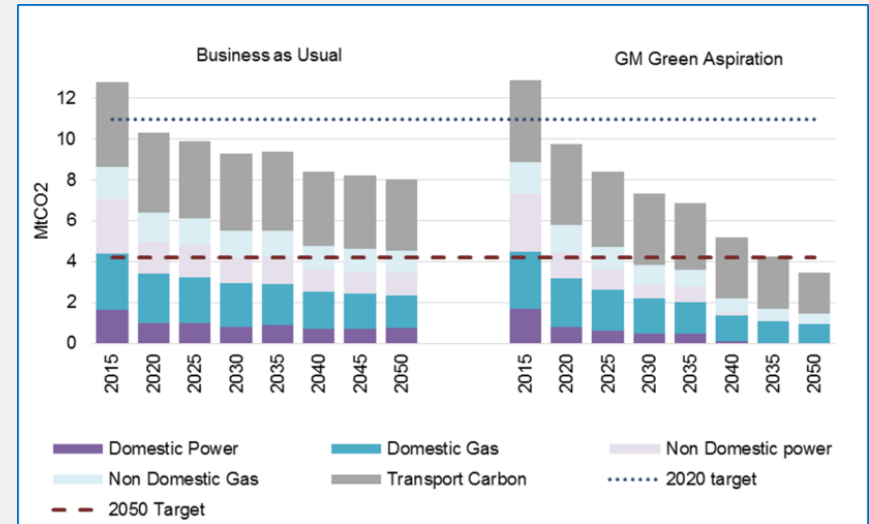
Demand Side

Future Possibilities for Delivery



Conclusion

- We have an opportunity to create a new vision for Greater Manchester
- 'Business as Usual' not enough to achieve carbon neutral by 2050
- We must significantly scale up our environment, energy generation & efficiency activities
- Partner collaboration, with citizens, business and academia is key to accelerating progress.



We need to:

- Maximise the value of existing partnerships, strategic approaches and joined up thinking
- Create frameworks which provide capacity for viable project development.
- Build business cases for investment in viable natural capital, energy and transport solutions.
- Incentivise investment by others through stronger local policies.