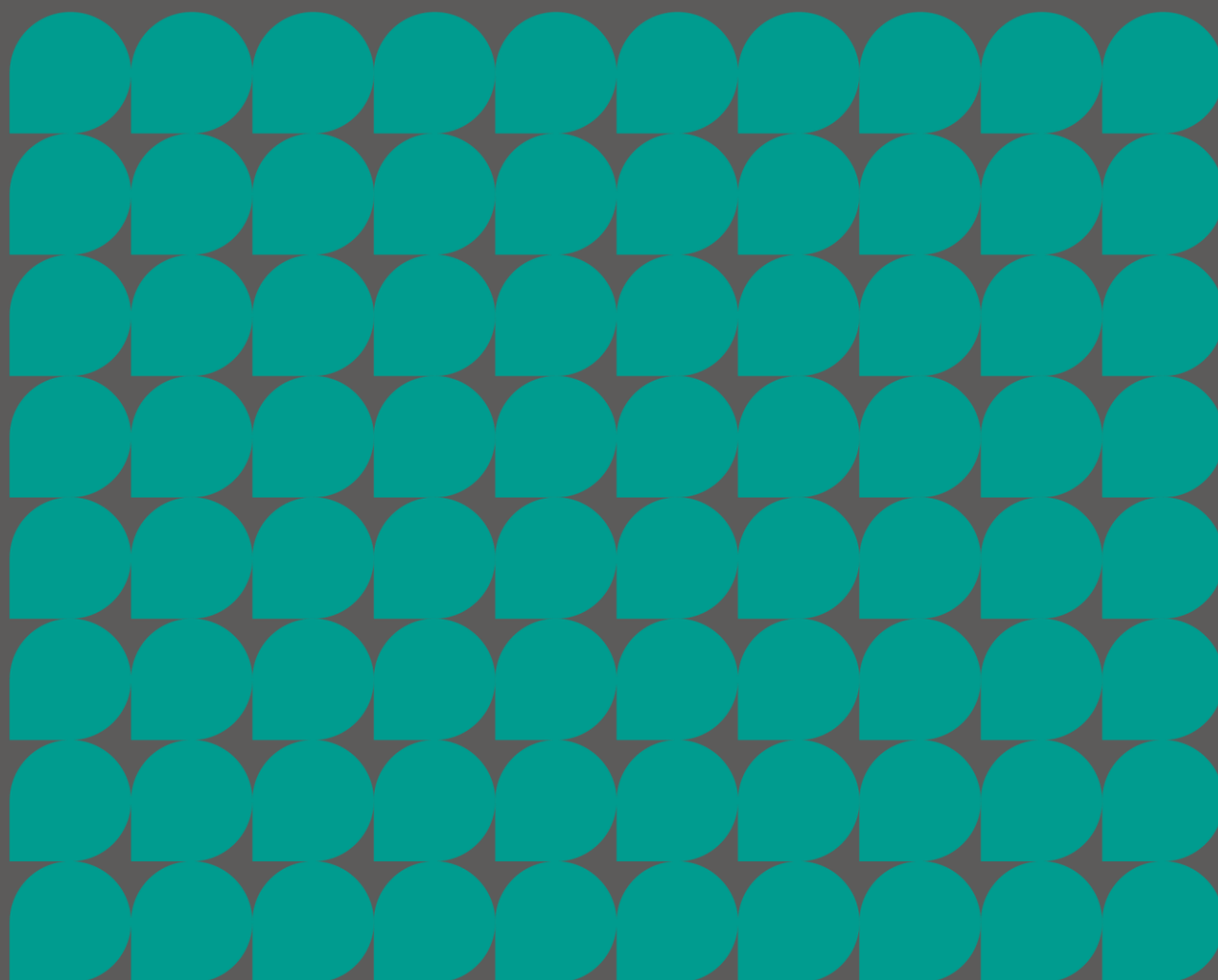


# Places for Everyone

Carbon and Energy Topic Paper

July 2021



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# 1 Introduction

- 1.1 In November 2014, the AGMA Executive Board recommended to the 10 Greater Manchester local authorities that they agree to prepare a joint Development Plan Document (“Joint DPD”), called the Greater Manchester Spatial Framework (“GMSF”) and that AGMA be appointed by the 10 authorities to prepare the GMSF on their behalf.
- 1.2 The first draft of the GMSF DPD was published for consultation on 31st October 2016, ending on 16th January 2017. Following substantial re-drafting, a further consultation on the Revised Draft GMSF took place between January and March 2019.
- 1.3 On the 30 October 2020 the AGMA Executive Board unanimously agreed to recommend GMSF 2020 to the 10 Greater Manchester Councils for approval for consultation at their Executives/Cabinets, and approval for submission to the Secretary of State following the period for representations at their Council meetings.
- 1.4 At its Council meeting on 3 December Stockport Council resolved not to submit the GMSF 2020 following the consultation period and at its Cabinet meeting on 4 December, it resolved not to publish the GMSF 2020 for consultation.
- 1.5 As a joint DPD of the 10 Greater Manchester authorities, the GMSF 2020 required the approval of all 10 local authorities to proceed. The decisions of Stockport Council/Cabinet therefore signalled the end of the GMSF as a joint plan of the 10.

- 1.6 Notwithstanding the decision of Stockport Council, the nine remaining districts considered that the rationale for the preparation of a Joint DPD remained. Consequently, at its meeting on the 11th December 2020, Members of the AGMA Executive Committee agreed in principle to producing a joint DPD of the nine remaining Greater Manchester (GM) districts. Subsequent to this meeting, each district formally approved the establishment of a Joint Committee for the preparation of a joint Development Plan Document of the nine districts.
- 1.7 Section 28 of the Planning and Compulsory Purchase Act 2004 and Regulation 32 of the Town and Country Planning (Local Planning) (England) Regulations 2012 enable a joint plan to continue to progress in the event of one of the local authorities withdrawing, provided that the plan has 'substantially the same effect' on the remaining authorities as the original joint plan. The joint plan of the nine GM districts has been prepared on this basis.
- 1.8 In view of this, it follows that PfE should be considered as, in effect, the same Plan as the GMSF, albeit without one of the districts (Stockport). Therefore "the plan" and its proposals are in effect one and the same. Its content has changed over time through the iterative process of plan making, but its purpose has not. Consequently, the Plan is proceeding directly to Publication stage under Regulation 19 of the Town and Country Planning (Local Planning) England Regulations 2012.
- 1.9 Four consultations took place in relation to the GMSF. The first, in November 2014 was on the scope of the plan and the initial evidence base, the second in November 2015, was on the vision, strategy and strategic growth options, and the third, on a Draft Plan in October 2016.
- 1.10 The fourth and most recent consultation on The Greater Manchester Plan for Homes, Jobs and the Environment: the Greater Manchester Spatial Framework Revised Draft 2019 (GMSF 2019) took place in 2019. It received over 17,000 responses. The responses received informed the production of

GMSF 2020. The withdrawal of Stockport Council in December 2020 prevented GMSF 2020 proceeding to Regulation 19 Publication stage and instead work was undertaken to prepare PfE 2021.

- 1.11 Where a local planning authority withdraws from a joint plan and that plan continues to have substantially the same effect as the original joint plan on the remaining authorities, s28(7) of the Planning and Compulsory Purchase Act 2004 provides that any step taken in relation to the plan must be treated as a step taken by the remaining authorities for the purposes of the joint plan. On this basis, it is proposed to proceed directly to Publication stage under Regulation 19 of the Town and Country Planning (Local Planning) England Regulations 2012.
- 1.12 A comprehensive evidence base was assembled to support the policies and proposals in the GMSF 2020. Given the basis on which the Plan has been prepared, this evidence base remains the fundamental basis for the PfE 2021 and has remained available on the Greater Manchester Combined Authority (GMCA) website since October 2020. That said, this evidence base has been reviewed and updated in the light of the change from GMSF 2020 to the PfE2021 and, where appropriate, addendum reports have been produced and should be read in conjunction with evidence base made available in October 2020. The evidence documents which have informed the plan are available via the GMCA's website.
- 1.13 To help explain the PfE strategy, a series of topic papers have been produced to summarise the relevant evidence, previous consultation comments and outcomes from the Integrated Assessment. They also explain how the draft policies and allocations have been derived based on this feedback.
- 1.14 The GMCA has chosen to prepare topic papers to be transparent in how PfE has been prepared and to provide a more understandable summary of the background technical information.

1.15 This topic paper is about carbon and energy, which includes: energy efficiency, carbon emissions, decentralised energy, building standards, energy use and renewable energy.

## 2 National Policy and Evidence

2.1 This section summarises the key pieces of national policy, legislation, plans and programmes that relate to carbon and energy matters which PfE has had to respond to. Many of the policy requirements for plan making come from the National Planning Policy Framework (NPPF) which was published in July 2018.

### UK Climate Change Act 2008

2.2 The UK Climate Change Act 2008<sup>1</sup> enshrined a commitment for the government to achieve at least an 80 percent reduction in greenhouse gas emissions by 2050 from 1990 levels and to limit global temperature rise to as little as possible above 2°C. Government also set five yearly carbon budgets to act as stepping stones to achieve this target which summarise the legal limits of greenhouse gas emissions:

Budget	Carbon Budget	Reduction below 1990 levels
1 <sup>st</sup> carbon budget	3,018 MtCO <sub>2</sub> e	25%
2 <sup>nd</sup> carbon budget	2,782 MtCO <sub>2</sub> e	31%
3 <sup>rd</sup> carbon budget	2,544 MtCO <sub>2</sub> e	37% by 2020
4 <sup>th</sup> carbon budget	1,950 MtCO <sub>2</sub> e	51% by 2025
5 <sup>th</sup> carbon budget	1,725 MtCO <sub>2</sub> e	57% by 2030

**Table 1: Carbon Budget Limits (Source: Committee on Climate Change)**

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<sup>1</sup> [Climate Change Act 2008 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2008/27/section/1)



- 2.3 The Committee on Climate Change note that the first carbon budget (2008 to 2012) was met and the UK is currently on track to outperform on the second (2013 to 2017) and third (2018 to 2022). However, it is not on track to meet the fourth (2023 to 2027). To meet future carbon budgets and the 80% target for 2050, the UK will need to reduce emissions by at least 3% a year, from now on. This will require the government to apply more challenging measures and the Committee has made clear that this will require stronger new build standards for energy efficiency and low carbon heat. Failure to tackle building emissions is contributing substantially to this shortfall<sup>2</sup>.
- 2.4 In May 2019, the Committee on Climate Change (CCC)—as requested by the Government—set out a blueprint for how the UK could viably build a net zero greenhouse gas emission economy by 2050, to pursue the 1.5 degrees aspiration of the Paris Agreement. Subsequently (June 2019) parliament passed legislation requiring the government to reduce the UK’s net emissions of greenhouse gases by 100% relative to 1990 levels by 2050 via the Net Zero Amendment 2019<sup>3</sup> to the Climate Change Act.

## **Planning Act 2008**

- 2.5 Section 182 of the Planning Act 2008<sup>4</sup> puts a legal duty on local authorities to include policies on climate change mitigation and adaptation in Development Plan documents. It required a change to the Planning and Compulsory Purchase Act (2004) through the insertion of the following paragraph (subsection 1A):

*‘Development plan documents must (taken as a whole) include policies designed to secure that the development and use of land in the local planning*

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<sup>2</sup> [Updated energy and emissions projections 2018 \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/414127/Updated-energy-and-emissions-projections-2018.pdf)

<sup>3</sup> [The Climate Change Act 2008 \(2050 Target Amendment\) Order 2019 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2019/10/section/1)

<sup>4</sup> [Planning Act 2008 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2008/15/section/182)

*authority's area contribute to the mitigation of, and adaptation to, climate change'.*

## **Planning and Energy Act 2008**

- 2.6 The Planning and Energy Act 2008<sup>5</sup> enables local planning authorities to set requirements for energy use and energy efficiency in local plans. This includes requirements for a proportion of energy used in developments to come from renewable sources, to be low carbon, or to comply with energy efficiency standards that exceed the requirements of existing building regulations.
- 2.7 In early 2015, the Housing Standards Review reported and Government announced the withdrawal of the Code for Sustainable Homes. As a result, a number of changes to existing Building Regulations were introduced, along with new technical optional standards on Access, Water and Space.
- 2.8 In a Written Ministerial Statement in March 2015<sup>6</sup>, Government advised that local planning authorities should not set any additional local technical standards relating to the construction, internal layout or performance of new dwellings. The exception was energy performance, where the WMS said that Local Authorities would continue to be able to require energy performance standards higher than Building Regulations up to the equivalent of Code for Sustainable Homes Level 4 (equivalent to a 19% improvement on the Part L 2013 standard) 'until commencement of amendments to the Planning and Energy Act 2008'. No changes were announced in relation to requiring a proportion of energy used by development to be from renewable or low carbon sources (Part 1 subsection 1a/b).
- 2.9 Section 43 of the Deregulation Act 2015<sup>7</sup> would introduce an amendment to the Planning and Energy Act that restricts local authorities from setting energy

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<sup>5</sup> [Planning and Energy Act 2008 \(legislation.gov.uk\)](http://legislation.gov.uk)

<sup>6</sup> [Planning update March 2015 - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

<sup>7</sup> [Deregulation Act 2015 \(legislation.gov.uk\)](http://legislation.gov.uk)

standards above Building Regulations levels for new homes, but this amendment has not yet been commenced.

## Paris Agreement on Climate Change

2.10 The United Nations Framework Convention for Climate Change (UNFCCC) Paris Agreement on climate change commits the global community to take action to “hold the increase in global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C”. In December 2015, 195 countries adopted the first ever universal, legally binding climate deal. Less than a year later, the landmark Agreement was ratified in law by the UK as a sign of the continued commitment to climate action across the world<sup>8</sup>.

## Infrastructure Act 2015

2.11 The Infrastructure Act 2015 (section 49)<sup>9</sup> required the Government to request advice from the Committee on Climate Change with regard to the ‘likely impact of onshore petroleum on the carbon budget:

*The Secretary of State must from time to time request the Committee on Climate Change to provide advice (in accordance with section 38 of the CCA 2008) on the impact which combustion of, and fugitive emissions from, petroleum got through onshore activity [F1in England] is likely to have on the Secretary of State's ability to meet the duties imposed by—(a) section 1 of the CCA 2008 (net UK carbon account target for 2050), and (b) section 4(1)(b) of the CCA 2008 (UK carbon account not to exceed carbon budget).*

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<sup>8</sup> [UK ratifies the Paris Agreement - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

<sup>9</sup> [Infrastructure Act 2015 \(legislation.gov.uk\)](http://legislation.gov.uk)

2.12 In March 2016, the Committee on Climate Change reported that 'exploitation of shale gas on a significant scale would not be consistent with UK carbon budgets and the 2050 target'<sup>10</sup> unless three tests were met. These tests are:

- Test 1: Well development, production and decommissioning emissions must be strictly limited. Emissions must be tightly regulated and closely monitored in order to ensure rapid action to address leaks.
- Test 2: Consumption - gas consumption must remain in line with carbon budgets requirements. UK unabated fossil energy consumption must be reduced over time within levels we have previously advised to be consistent with the carbon budgets. This means that UK shale gas production must displace imported gas rather than increasing domestic consumption.
- Test 3: Accommodating shale gas production emissions within carbon budgets. Additional production emissions from shale gas wells will need to be offset through reductions elsewhere in the UK economy, such that overall effort reduce emissions is sufficient to meet carbon budgets.

Most relevant in land-use planning terms for national policy development are Test 2 and Test 3.

## **Clean Growth Strategy**

2.13 In October 2017, government published the Clean Growth Strategy (CGS)<sup>11</sup>, which described policies and proposals intended to allow the UK to meet its fourth and fifth Carbon Budgets (a 57% greenhouse gas emissions reduction on 1990 level), noting more must be done to decarbonise our homes. The CGS sets out three possible pathways to decarbonise the UK's economy by 2050:

1. Electric: including full deployment of electric vehicles (EVs), electric space heating, and industry moves to 'clean fuels'.

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<sup>10</sup> [The compatibility of onshore petroleum with meeting the UK's carbon budgets - Climate Change Committee \(theccc.org.uk\)](https://www.theccc.org.uk/publication/the-compatibility-of-onshore-petroleum-with-meeting-the-uks-carbon-budgets/)

<sup>11</sup> [Clean Growth Strategy \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/644211/clean-growth-strategy.pdf)

2. Hydrogen: including heating homes and buildings, fuelling many vehicles and the power industry
3. Emissions removal; including construction of sustainable biomass power stations with carbon capture and storage technology

2.14 All the analysed scenarios included an assumption that heat networks would supply 17% of UK domestic heat demand and at least 17% of UK non-industrial business and public sector heat demand, indicating the importance of these solutions within a future low carbon energy system.

## National Infrastructure Assessment

2.15 In providing advice on the UK's long-term infrastructure needs the National Infrastructure Commission<sup>12</sup> recommended the following in relation to low cost low carbon:

- At least 50% renewable electricity generation by 2030
- Buildings which require less energy to heat and progress to zero carbon heat, through developing the evidence base on the different options, identifying areas for potential future cost reduction and progressing towards trialling low carbon hydrogen supply and manufacture at scale, including carbon capture and storage.
- Pilots to test hydrogen and heat pumps as low carbon heating options

## National Industrial Strategy

2.16 The government sets out grand challenges at the forefront of industries and future prosperity for the UK within the National Industrial Strategy White Paper<sup>13</sup>. Achieving 'Clean Growth' is one of the challenges and to maximise the advantages for UK industry from global shift to clean growth the strategy proposes:

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<sup>12</sup> [National Infrastructure Assessment Report](#)

<sup>13</sup> [Industrial Strategy: building a Britain fit for the future \(publishing.service.gov.uk\)](#)

- To develop smart systems to cheap and clean energy across power, heating and transport
- To transform construction techniques to dramatically improve efficiency
- To make our energy intensive industries competitive in the clean economy
- To put the UK at the forefront of the global move to high efficiency agriculture
- To make the UK the global standard setter for finance that supports clean growth
- Support key areas of innovation, investing £725m over 4 years

To meet the grand challenge of achieving ‘Clean Growth’ an ambitious mission has been set to halve energy use in all new builds by 2030<sup>14</sup>.

## **National Planning Policy Framework**

2.17 Paragraph 8 outlines overarching objectives to achieving. Subsection C makes clear that as part of the environmental objective that the land use planning system should support the transition to a low carbon future in a changing climate.

2.18 Chapter 9 of the NPPF has a focus on the promotion of sustainable transport. In relation to carbon Paragraph 103 is clear that significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. Additional support is also given for planning policies to provide for walking and cycling infrastructure (Para 104d) and to set standards for parking for ultra low emission vehicles (Para 105e).

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<sup>14</sup> [Policy Paper The Grand Challenges \(www.gov.uk\)](https://www.gov.uk/government/policy-papers/policy-paper-the-grand-challenges)

- 2.19 Paragraph 118 recognises that some undeveloped land can have a critical function of carbon storage and planning policies/decisions need to be mindful of this.
- 2.20 Paragraph 148 (Chapter 14) is clear that the planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.
- 2.21 Paragraph 149 advises that plans should take a proactive approach to mitigating and adapting to climate change.
- 2.22 Paragraph 150 (b) further states that new development should be planned in a way that can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards. In response to representations on the NPPF consultation Government further clarified<sup>15</sup> that:
- 'Local Authority respondents stated the view that the text in the revised Framework restricted their ability to require energy efficiency standards above Building Regulations. To clarify, the Framework does not prevent local authorities from using their existing powers under the Planning and Energy Act 2008 or other legislation where applicable to set higher ambition. In particular, local authorities are not restricted in their ability to require energy efficiency standards above Building Regulations. The Government remains committed to delivering the clean growth mission to halve the energy usage of new buildings by 2030'.*

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<sup>15</sup> [Government response to the draft revised NPPF consultation \(publishing.service.gov.uk\)](https://www.gov.uk/government/consultations/government-response-to-the-draft-revised-nppf-consultation)

2.23 Paragraph 151 advises that to help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
- b. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- c. identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

2.24 Paragraph 149 further notes that Plans should take a proactive approach to mitigating and adapting to climate change with a specific footnote reference (number 48) referring to the Climate Change Act 2008 to provide the link between planning and the objectives of the Act.

2.25 When determining planning applications, Paragraph 153 references that local planning authorities should expect new development to:

- a. comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
- b. take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

2.26 Paragraph 209 (a) originally advised that Minerals Planning Authorities should 'recognise the benefits of on-shore oil and gas development, including unconventional hydrocarbons....and put in place policies to facilitate their extraction'. This was subsequently removed as a result of Stephenson vs SoS



MHCLG [2019]<sup>16</sup>. Talk Fracking challenged the adoption of NPPF Paragraph 209(a) on the ground that evidence submitted to the consultation process on greenhouse gas emissions had not been taken into account. They also contended that the Government's policy was not compliant with the tests set out by Committee on Climate Change with regard to the impact of shale gas production on the achievement of the carbon budgets.

2.27 In the ruling it was noted that the proposed policy on shale gas did not negate the effect of other Government policy on climate change, or that this evidence should not be taken into account.

## **National Planning Practice Guidance for Climate Change**

2.28 National Planning Practice Guidance<sup>17</sup> outlines that addressing climate change is one of the core land use planning principles which the National Planning Policy Framework expects to underpin both plan-making and decision-taking. These include the requirements for local authorities to adopt proactive strategies to mitigate and adapt to climate change in line with the provisions and objectives of the Climate Change Act 2008 and co-operate to deliver strategic priorities which include climate change (Paragraph: 001). Paragraph: 002 makes specific reference to the climate change duty as 'a consideration when plans are examined'.

2.29 Paragraph 003 provides the following examples of mitigation/adaptation approaches to Local Plans:

### *Mitigation:*

- Reducing the need to travel and providing for sustainable transport
- Providing opportunities for renewable and low carbon energy technologies
- Providing opportunities for decentralised energy and heating

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<sup>16</sup> [Stephenson v Secretary of State for Housing And Communities And Local Government \(Rev 1\) \[2019\] EWHC 519 \(Admin\) \(06 March 2019\) \(bailii.org\)](#)

<sup>17</sup> [National Planning Practice Guidance on Climate change - GOV.UK \(www.gov.uk\)](#)

- Promoting low carbon design approaches to reduce energy consumption in buildings

*Adaption:*

- Considering future climate risks when allocating development sites
- Considering the impact of and promoting design responses to flood risk and coastal change for the lifetime of the development
- Considering availability of water and water infrastructure for the lifetime of the development and design responses to promote water efficiency and protect water quality
- Promoting adaption approaches in design policies

2.30 Paragraph 004 (Reference ID: 6-004-20140612) recommends that Local Plans should set an integrated approach to adaptation and mitigation where possible.

2.31 Paragraph: 007 (Reference ID: 6-007-20140306) on identifying mitigation measures in plan-making, stresses the need for 'Robust evaluation of future emissions will require consideration of different emission sources, likely trends taking into account requirements set in national legislation, and a range of development scenarios.

2.32 In relation to setting higher building standards, Paragraph 012 advises that in Development Plan Documents, Local Authorities can:

- set energy performance standards for new housing or the adaptation of buildings to provide dwellings, that are higher than the building regulations, but only up to the equivalent of Level 4 of the Code for Sustainable Homes.
- Are not restricted or limited in setting energy performance standards above the building regulations for non-housing developments.

2.33 It further notes that the 'Planning and Energy Act 2008 allows local planning authorities to set energy efficiency standards in their development plan policies that exceed the energy efficiency requirements of the building regulations. Such policies must not be inconsistent with relevant national policies for England Section 43 of the Deregulation Act 2015 would amend this provision but is not yet in force'. Provisions to allow Development Plan policies to require a proportion of energy to come from renewable sources and/or to be low carbon energy from nearby sources remain.

## **National Planning Practice Guidance for Renewable and Low Carbon Energy**

2.34 National Planning Practice Guidance<sup>18</sup> recognises that the planning system has an important role in the delivery of renewable and low carbon infrastructure. Paragraph 001 (Reference ID: 5-001-20140306) highlights that *'increasing the amount of energy from renewable and low carbon technologies will help to make sure the UK has a secure energy supply, reduce greenhouse gas emissions to slow down climate change and stimulate investment in new jobs and businesses. Planning has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environmental impact is acceptable'*.

2.35 Paragraph 009 considers how planning can help identify opportunities for decentralised energy either through the location and design of development or the generation and recovery of waste heat.

## **UK Green Building Council – Net Zero Carbon: Framework Definition**

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<sup>18</sup> [Renewable and low carbon energy - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/renewable-and-low-carbon-energy)

- 2.36 The UK Green Building Council (UKGBC) produced a framework definition<sup>19</sup> for net zero carbon buildings to provide the industry with clarity on how to achieve net zero carbon in construction and operation. The document was supported by a range of experts and various organisations across the building sector.
- 2.37 The GMCA has been working with the UK GBC to understand how some of the learning from this report can help further inform the commitment to introduce a net zero carbon standard for all new homes / buildings by 2028. The framework definition aligns with the World Green Building Council Net Zero Carbon Buildings objective<sup>20</sup> that all new buildings in direct control of Local Authorities should be net zero carbon emissions in operation by 2030 at the latest. This is based on climate change science, and modelling that demonstrates what is required – globally – to meet the commitments set out in the Paris Agreement.

## Future Homes Standard

2.38 Within the 2019 Spring Statement, government announced that by 2025 ‘we will introduce a Future Homes Standard for new build homes to be future-proofed with low carbon heating and world leading levels of energy efficiency’. The consultation<sup>21</sup> on amendments to building regulations followed and this proposed:

- Homes built to the Future Homes Standard to have 75- 80% less carbon emissions than one built to current energy efficiency requirements (Approved Document L 2013)

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<sup>19</sup> [Net Zero Carbon Buildings: A Framework Definition - UKGBC - UK Green Building Council](#)

<sup>20</sup> [The Net Zero Carbon Buildings Commitment | World Green Building Council \(worldgbc.org\)](#)

<sup>21</sup> [The Future Homes Standard \(publishing.service.gov.uk\)](#)

- Introducing in 2020 a meaningful but achievable uplift to energy efficiency standards as a stepping stone (20% or 31% uplift to Part L 2013)
- Proposals for improving compliance and performance to ensure that energy efficiency requirements are delivered on the ground.
- Wider consultation on whether to commence the changes to the Planning and Energy Act 2008 which would restrict Local Planning Authorities from setting higher energy efficiency standards
- Changes to the whole building energy performance target and future proofing new buildings for low carbon heating systems
- Improving Compliance and Building Performance particularly around the 'performance gap'

2.39 In relation to local planning authorities setting their own energy efficiency standards, it was noted '*a number of local authorities continue to set their own energy performance standards which go beyond the Building Regulations minimum. While most of these adhere to the 19% level set in the 2015 Written Ministerial Statement, some go further*'.

2.40 The Mayor of Greater Manchester was a joint signatory on an open letter<sup>22</sup> to MHCLG calling on Government to abandon proposed restrictions on their ability to cut carbon emissions from housebuilding. It noted that local authorities should retain the powers to set higher standards, in order to encourage innovation and enable them to meet their climate emergency targets.

2.41 In response<sup>23</sup> to the consultation comments, the Government confirmed that:

- To provide some certainty in the immediate term, no amendments will be made to the Planning and Energy Act 2008, which means that local planning authorities will retain powers to set local energy efficiency standards for new homes.

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<sup>22</sup> [Council leaders and Mayors call for freedom on zero carbon homes targets - UKGBC - UK Green Building Council](#)

<sup>23</sup> [Future Homes Standard, summary of responses and response from government \(publishing.service.gov.uk\)](#)

- CO2 emissions will be set at a 31% for Part L 2021 as an appropriate step to the 2025 standard
- From 2025, new homes built to the Future Homes Standard will have carbon dioxide emissions at least 75% lower than those built to current Building Regulations standards.
- A new primary energy target will be adopted taking into account efficiency of a dwellings heating systems. Achieving this standard depends on the fuel source used.
- Minimum standards for fabric (u values) and fixed services (boilers, heat pumps, cooling systems etc) will be updated.
- No technologies will be specifically banned but the use of compliance targets will effectively rule out fossil fuels.
- Any dwelling connecting to a heat network would still need to demonstrate compliance with metrics as for any other dwelling.
- To address the performance gap a range of measures to ensure accuracy of 'as built' performances will be introduced. This includes a compliance report to be completed by the developer/assessor as well as a requirement to provide photographic evidence during construction.
- Significant changes to overheating assessments are proposed which will be based on risk based analysis depending on the fabric/ventilation elements proposed and a requirement to complete a checklist for noise, pollution and security.
- A range of changes to air tightness testing and SAP methodology will be introduced.
- A consultation on the Future Homes Standard will be launched in 2023 with legislation adopted in 2024.

## **Future Buildings Standards**

2.42 The consultation on the 'Future Buildings Standards' was the second of proposed changes to Part L (Conservation of fuel and power) and Part F

(ventilation) of the Building Regulations. It builds on the Future Homes Standards consultation by setting out energy and ventilation standards for non-domestic buildings, existing homes and includes proposals to mitigate against overheating in residential buildings. The vision for Future Buildings Standards will start to apply to non-domestic buildings from 2025 onwards.

- 2.43 The Carbon and Energy Implementation Study<sup>24</sup> provided a detailed assessment which supports the draft PfE policy and considers future alignment with the Future Homes Standard carbon reduction targets. The GMSF propose specific metrics around space heat demand, hot water energy demand and minimum PV generation which do not interfere with compliance for building regulations.

## **Planning White Paper**

- 2.44 In August 2020 the Government published its White Paper ‘Planning for the Future’<sup>25</sup>. The White Paper was accompanied by a consultation document, ‘Changes to the current planning system’. Together, these documents propose radical reforms to the planning system – long and short term.
- 2.45 Within this Government committed to ‘facilitate ambitious improvements in the energy efficiency standards for buildings to help deliver our world-leading commitment to net-zero by 2050’. It also noted ‘From 2025, we expect new homes to produce 75-80 per cent lower CO2 emissions compared to current levels. These homes will be ‘zero carbon ready’, with the ability to become fully zero carbon homes over time as the electricity grid decarbonises, without the need for further costly retrofitting work’.

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<sup>24</sup> Currie and Brown/Centre for Sustainable Energy (2020), GMSF Carbon and Energy Policy Implementation Study

<sup>25</sup> [Planning for the future - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/planning-for-the-future)

## National Planning Policy Framework and National Design Code

2.46 The 'National Model Design Code'<sup>26</sup> and associated guidance. Codes R1 and R2 (Resources) consider energy efficiency and sustainable construction. Key points include:

- Local authorities can set policies for higher energy efficiency standards for their area or specific development sites.
- Development should be designed to optimise passive solar gain without risking overheating. Orientation should be optimised in as far as it does not contradict other policies in this guide.
- Local low energy networks may be encouraged by codes.
- Codes may set standards for new development to meet relating to:
  - Embodied energy
  - BREEAM Ratings
  - Modern Methods of Construction
  - Water usage (including requirements for water neutrality)

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<sup>26</sup> [National Planning Policy Framework and National Model Design Code - GOV.UK \(www.gov.uk\)](http://www.gov.uk)



# 3 Local Policy and Evidence

## Greater Manchester Carbon Commitments

### The Global Covenant of Mayors for Climate and Energy

3.1 Greater Manchester has signed the Integrated Covenant of Mayors memorandum of understanding (MOU)<sup>27</sup>. This commits each signatory to limit emissions to below 80 to 95 percent below 1990 levels, or below two metric tons per capita, by 2050 – the level of emission reduction believed necessary to limit global warming to less than 2°C by the end of this century. The current energy consumption is equivalent to 5.0 metric tonnes per capita. Although not legally binding, these commitments present clear and lasting commitment to reduce emissions in the decades to come.

### Green Summit

3.2 Following his election, Mayor Andy Burnham wanted to emphasise Greater Manchester's leadership on this agenda by setting a new ambition for clean air, access to quality green-space and an accelerated ambition for Greater Manchester to become 'carbon neutral' before 2050. To help realise this, he called for a landmark Green Summit, which was held on 21 March 2018. As part of this, the Summit set out to consider how Greater Manchester can accelerate its activities to reduce carbon emissions to tackle climate change and in doing so, to position the city region as a global leader for smart energy innovation. The event brought together environmental experts, interest groups, partner agencies, academics and local people together to accelerate Greater Manchester's green ambitions.

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<sup>27</sup> [Home - Global Covenant of Mayors](#)

3.3 A number of key announcements from the Summit were made relevant to this topic paper:

- Bringing forward the date for Greater Manchester to be carbon neutral by at least a decade.
- Greater Manchester is one of the few cities in the world that is using a science-based approach to evaluating carbon targets and trajectories<sup>28</sup>.
- Greater Manchester has been designated by Defra as the UK's urban pioneer city, which means we will be given the opportunity to find new ways to manage and invest in our natural environment.
- Exploring the creation of a Greater Manchester energy company able to invest in energy generation, storage and control technologies to generate revenue from 'grid balancing'.
- Electricity North West will lead a workstream to find out how Greater Manchester can generate more energy locally from smart, renewable sources.;
- UK Green Buildings Council will lead a workstream to assess how our current building stock can be retrofit at an affordable cost, potentially generating new jobs for the region.
- The emerging joint Development Plan will include a date by which all new homes built across Greater Manchester will need to be net zero carbon;
- Doubling the number of electric vehicle charging points.
- Moving to an emissions-free bus fleet.
- Investing up to £50m per year for three years to transform cycling and walking in the city-region.

## **Springboard to a Green City Region**

3.4 Following on from the Green Summit, the GMCA published the Springboard report<sup>29</sup> to set out an environmental vision for Greater Manchester to be 'a

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<sup>28</sup> [Microsoft Word - Tyndall Quantifying Paris for Manchester Report FINAL PUBLISHED rev1.docx](#)

<sup>29</sup> [springboard-report.pdf \(greatermanchester-ca.gov.uk\)](#)

*'carbon neutral, climate resilient city region with a thriving natural environment and circular, zero waste economy where:*

- All citizens will have access to green space in every community, more trees in urban areas, active travel networks, environmental education and to healthy and locally produced food
- Our infrastructure will be smart and fit for the future. We will have an integrated, clean and affordable public transport system, resource efficient buildings, greater local community renewable energy, cleaner air, water and greenspace for all
- Citizens and businesses will actively participate in decision-making and will be encouraged to adopt sustainable living and businesses practices, focusing on local solutions to deliver a prosperous economy.

3.5 For buildings it reaffirmed the commitment that the emerging Joint Development Plan would include a date by which all new homes and buildings will be net zero carbon and 80-100% of households and commercial buildings must be electrically heated by 2050 (mainly by heat pumps and low carbon heat networks). The report also noted that the recommendations from the Tyndall Centre for Climate Research which calculated a carbon budget for Greater Manchester to achieve carbon neutrality by 2038.

## **Greater Manchester 5 Year Environment Plan**

3.6 The GMCA produced a 5 Year Environment Plan<sup>30</sup> to set the long-term environmental vision – to be carbon neutral by 2038 – and the urgent actions needed in the next five years to help achieve this.

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<sup>30</sup> [5 Year Environment Plan - Greater Manchester Combined Authority \(greatermanchester-ca.gov.uk\)](https://greatermanchester-ca.gov.uk)

Theme	Priorities
<b>Energy Supply</b>	<p>1: Increasing local renewable electricity generation, adding at least a further 45MW by 2024. (The scale of the pathway to achieve this requires at least 50% of all households to have the equivalent of a 16m<sup>2</sup> solar photovoltaic (PV) system, with an additional 5.5km<sup>2</sup> on commercial rooftops/on ground installation, x4.5 increase in biomass capacity and 550 on shore wind turbines generating 3.4TWh/year by 2050)</p> <p>2: Decarbonising how we heat out buildings, adding at least a further 10TWh of low carbon heating by 2024.</p> <p>3: Increasing the diversity and flexibility of our supply, adding at least a further 45MW of diverse and flexible load by 2024.</p>
<b>Transport</b>	<p>1: Increasing use of public transport and active travel modes.</p> <p>2: Phasing out of fossil-fuelled private vehicles and replacing them with zero emission (tailpipe) alternatives.</p> <p>3: Tackling the most polluting vehicles on our roads.</p> <p>4: Establishing a zero emissions bus fleet.</p> <p>5: Decarbonising freight transport and shifting freight to rail and water transport.</p>
<b>Buildings</b>	<p>1: Reducing the heat demand from existing homes focusing on initiating a fundamental shift in whole house retrofit by</p>

	<p>retrofitting homes by 2024 on the scale of 61,000 properties per year (reducing heat loss by 57% up to 2040).</p> <p>2: Reducing the heat demand from existing commercial and public buildings.</p> <p>3: Reducing the heat demand in new buildings.</p>
<b>Production and Consumption of Resources</b>	<p>1: Producing goods and services more sustainably, moving to a circular economy.</p> <p>2: Becoming more responsible consumers.</p> <p>3: Managing our waste as sustainably as possible.</p> <p>4: Reducing unnecessary food waste.</p>
<b>Natural Environment</b>	<p>1: Managing our land sustainably, including planting 1m trees by 2024.</p> <p>2: Managing our water and its environment sustainably.</p> <p>3: Achieving a net gain in biodiversity for new development.</p> <p>4: Increasing investment into our natural environment.</p> <p>5: Increasing engagement with our natural environment.</p>
<b>Resilience and adaptation to climate change</b>	<p>1: Embedding climate change resilience and adaptation in all policies.</p> <p>2: Increasing the resilience of and investment in our critical infrastructure.</p>

	<p>3: Implementing a prioritised programme of nature-based climate adaptation action.</p> <p>4: Improving monitoring and reporting.</p>
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**Table 2: Greater Manchester Five Year Environment Plan Priorities**

3.7 In order to deliver the environmental vision and aims that the 5Year Environment Plan sets out and to close the gap between what is needed and where we are now, different approaches are required for the following:

- Supporting innovation in technology.
- Taking new approaches to finance and funding.
- Building on existing partnerships between the public, private and voluntary, community and social enterprise organisations.
- Showing leadership.
- Engaging and educating residents, communities and businesses.
- Upskilling our workforce.

## Climate Emergency

3.8 The Intergovernmental Panel on Climate Change 1.5 degree report<sup>31</sup> set out the full implications of allowing 2°C rather than 1.5°C of warming and underlined the need for more radical and urgent carbon reductions. It advised that to limit us to a 1.5°C global temperature increase, greenhouse gas emissions have to be reduced by 45% from 2010 levels by 2030, and we need to reach net zero carbon (reduce emissions by 100%) by 2050. Subsequently on 1st May 2019, parliament declared a formal climate and environment emergency. On Friday 26 July 2019, the Greater Manchester Combined

<sup>31</sup> [IPCC Global Warming of 1.5 °C Report— \(ipcc.ch\)](https://www.ipcc.ch)

Authority also declared a Climate Emergency<sup>32</sup> targeting carbon neutrality by 2038. Separately all 10 local authorities within Greater Manchester have now individually declared their own.

## UK100 Cities

3.9 All of the Greater Manchester districts have independently signed up to the UK100 Cities '100% Clean by 2050' commitment<sup>33</sup>. UK100 is a network of highly ambitious local government leaders, who have pledged to secure the future for their communities by shifting to 100% clean energy by 2050.

## Greater Manchester Strategy

3.10 The Greater Manchester Strategy<sup>34</sup> sets out a series of priorities around the twin themes of growth and reform. These focus on creating the conditions for growth, increasing productivity across Greater Manchester (GM) and helping our citizens to become independent and self-reliant. The city region aspires to close and then eliminate its budget deficit to become a net contributor to the national economy.

3.11 Priority 7 within the Greater Manchester Strategy (A Green City for All) specifies that one of the outcomes will be 'reduced carbon emissions and air pollution, increased resilience, more sustainable consumption and production, and an outstanding natural environment'. This includes a target of 'reducing CO2 emissions to 11mt by 2020 (down from 13.6mt in 2014)'. The strategy acknowledges that there is a need to 'radically rethink how we supply, manage and consume energy' and 'urgent innovation in our buildings, transport and energy infrastructure is required'. It also committed to working with partners to

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<sup>32</sup> [Combined Authority declares climate emergency - Greater Manchester Combined Authority \(greatermanchester-ca.gov.uk\)](https://www.greatermanchester-ca.gov.uk)

<sup>33</sup> [UK100 | Network of highly ambitious local government leaders for cleaner, more powerful communities](#)

<sup>34</sup> [Greater Manchester Strategy](#)

define a robust low carbon pathway to 2050 to accelerate the point at which Greater Manchester can become carbon neutral.

## **Greater Manchester Climate Change and Low Emissions Implementation Plan 2016 - 2020**

- 3.12 Greater Manchester's Climate Change Implementation Plan (2016)<sup>35</sup> is a whole place low carbon plan and sets out commitments to 2020. Objectives extend beyond achieving a challenging 48% carbon reduction target (by 2020), to preparing the city region to adapt to unavoidable climate change, improve environmental quality, promote carbon literacy and transitioning Greater Manchester into a low carbon and low emissions economy, with clean air and sustainable lifestyles. The report builds on the previous Greater Manchester Climate Change Strategy<sup>36</sup> and evidence within the URS study<sup>37</sup> on the '*Wedges Approach to Carbon Emissions Reductions*'.
- 3.13 In 2013 it was estimated that approximately 37% of carbon dioxide emission across Greater Manchester were from industrial and commercial sources, 35% from domestic sources such as homes and 27% from transport. Therefore, any significant reduction in emissions will require intervention across all sectors.
- 3.14 The plan recognised that the planning system is expected to make a significant contribution to tackling climate change. Vital roles include promoting energy demand reduction in buildings, greater opportunities for local renewable energy generation, linking future homes to employment with green transport and addressing the impact of increasingly volatile weather on people and systems.

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<sup>35</sup> [Climate Change and Low Emissions Strategies Whole Place Implementation Plan for Greater Manchester](#)

<sup>36</sup> Greater Manchester Combined Authority (2011), *Greater Manchester Climate Change Strategy 2011 – 2020*

<sup>37</sup> URS (2014), *Wedges Approach to Carbon Emissions Reductions*



3.15 It concluded that from a 2013 baseline, 2.9 million tonnes of savings would be delivered by 2020 if all of the existing and planned actions of the Plan are fully implemented. A further 1 mtCO<sub>2</sub> of cuts were estimated to be associated with background (largely national) activities. This leaves at least 0.5 million tonnes of savings to be identified between now and 2020 beyond the proposed programme. Specific priorities relevant to this topic paper include:

- **Sector and Skills:** Supporting GM businesses to diversify into low carbon business activities, attracting high value low carbon and environmental goods and services sector businesses to Greater Manchester Promote the existing low carbon and environmental goods and services sector and help it to grow.
- **Natural Capital:** No net loss in habitat quality or extent from a 2014 baseline, a year on year increase in the external funding , over 3 million trees planted (by 2035) and natural capital embedded into our investments.
- **Climate Resilience:** address the wider impacts of climate change on our building stock, embed actions for increased resilience into our plans and strategies
- **Energy:** accelerating the delivery of an investment pipeline of approximately £200m low carbon energy generation and efficiency projects including: heat networks, street lighting and renewable energy; deploying smart energy systems, including storage; establishing a clean energy masterplan and creating financial instruments, planning and policy frameworks to progress almost every opportunity for low carbon generation.
- **Transport:** reducing emissions from heavy goods vehicles and passenger vehicles; implementing Infrastructure improvements for sustainable transport; stimulating the Uptake of Ultra Low Emission Vehicles; reducing

emissions from buses on key local corridors; and improving Air Quality and identifying Clean Air Zones where viable.

- **Buildings:** replacement of poorly performing building stock with low carbon development; financial, regulatory and framework to support value for money retrofit activity; energy efficiency and smart heating in social/private housing, public and commercial buildings; reduced emissions from new development.

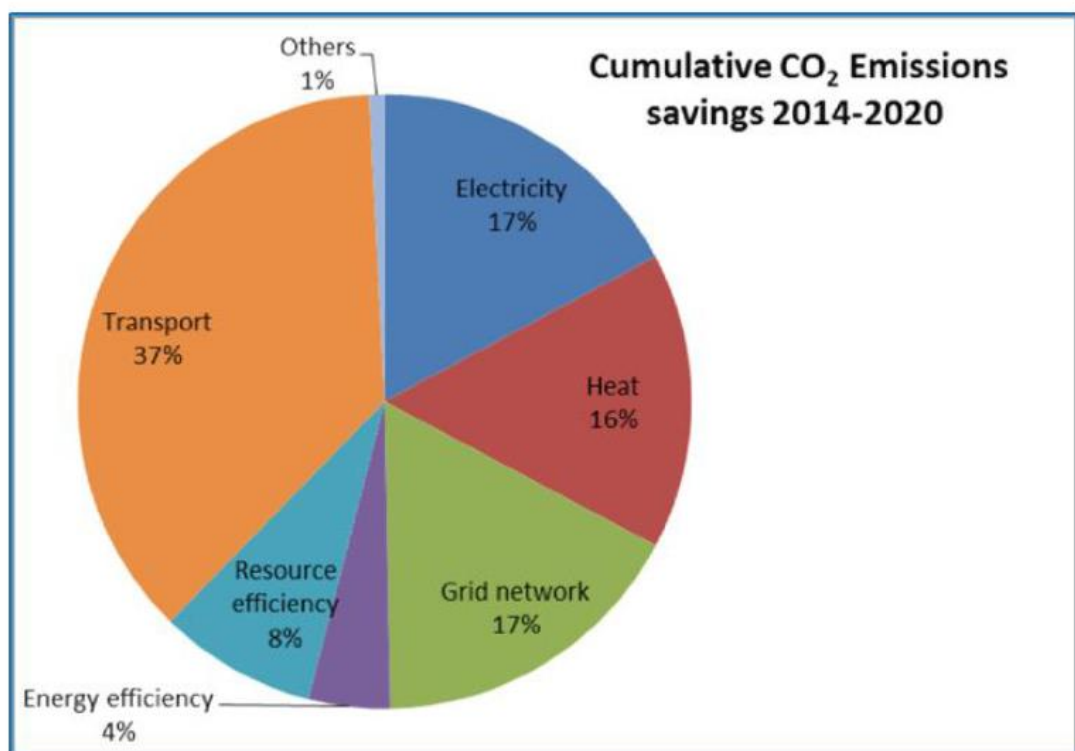


Figure 1: Estimated sector savings from Greater Manchester CCLES

## Greater Manchester Spatial Energy Plan (2016)

3.16 The Spatial Energy Plan<sup>38</sup> provides an assessment of existing GM energy demand and supply, analysis of the impact of planned future growth to 2037,

<sup>38</sup> [Energy Systems Catapult \(2016\), Greater Manchester Spatial Energy Plan](#)

and technical potential for decentralised, low carbon and renewable energy in supporting Greater Manchester’s energy and climate change goals.

3.17 Based on the previous growth figures, the plan considered that without significant intervention, under a Business As Usual scenario (BAU), the projected increase in population and economic development will (unless action is taken) lead to a 3% increase in energy demand, arising from heating and electricity use in new homes and buildings. This results in an additional 2,400 GWh/yr. energy. New development provides an opportunity to deliver high standards of energy efficiency with future proofing for transition to low carbon and renewable energy and to plan positively for low carbon energy infrastructure.

3.18 The Energy Plan also suggested that Greater Manchester could achieve an 80% CO<sub>2</sub> reduction target by 2050 with the right combination of drivers and action (near-full decarbonisation of both buildings and surface transport). If a linear trajectory was adopted, an 80% reduction by 2050 would equate to 59% (from 1990) or 66% (from 2005) by 2035.

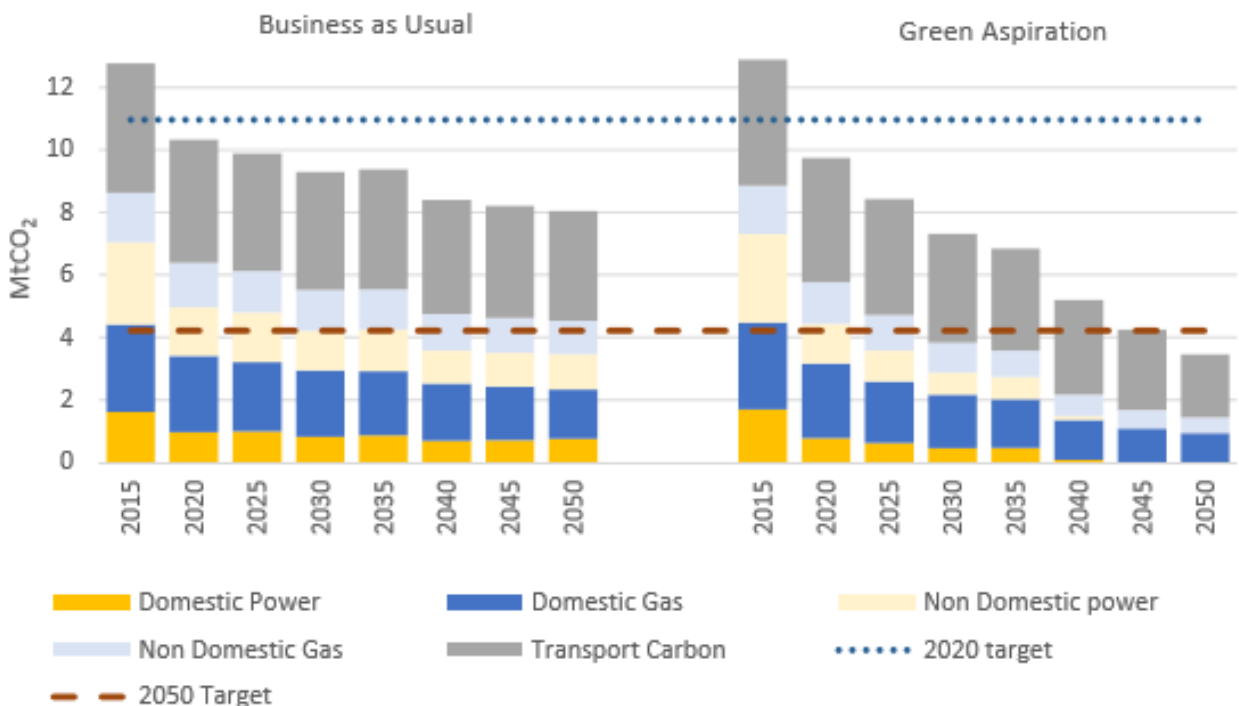


Figure 2: Future energy scenarios, *GM Spatial Energy Plan (2016)*

3.19 A summary of key conclusions from this report were:

### **Energy Demand and Consumption:**

- gas is the predominant fuel making up 42 % of total energy consumption and around 5 % of homes in GM remain off- gas, often with poor thermal efficiency and high levels of fuel poverty;
- electricity makes up 23 % of GM's total energy consumption;
- new homes and non-domestic buildings are forecast to increase energy demand by around 3 % by 2035 but this could also act as a catalyst for development of low carbon energy infrastructure;
- there are opportunities to reduce existing energy consumption and over 60 % of the domestic buildings have low levels of thermal efficiency (as much as 90 % of these buildings will still be in use in 2050);
- cost-effective retrofit measures to improve these homes thermal performance are needed as part of a low carbon transition.

### **The Challenge of Climate Change:**

- achieving decarbonisation ambitions requires significant changes to types of energy used as well as how, and when, they are used;
- future energy sources must be secure, affordable and sustainable (requiring action at both a local and a national scale and business as usual will not be sufficient);
- there will have to be a significant reduction in the use of gas; buildings will have to change almost entirely to different sources of energy for heat and hot water (likely to include use of electrically powered heat in individual buildings and heat provided from district heat networks);
- there are opportunities for growth of heat networks aligned with, and building out from, strategic development sites;
- electricity will remain a core part of the energy system and is likely to be used increasingly for both heat and transportation posing significant challenges;

- the electricity network has capacity to accommodate new demand although some areas have limited capacity and growth of decentralised renewables, electrification of heat and increased use of electric vehicles will all create increasing network pressures.

### **Low Carbon and Renewable Energy:**

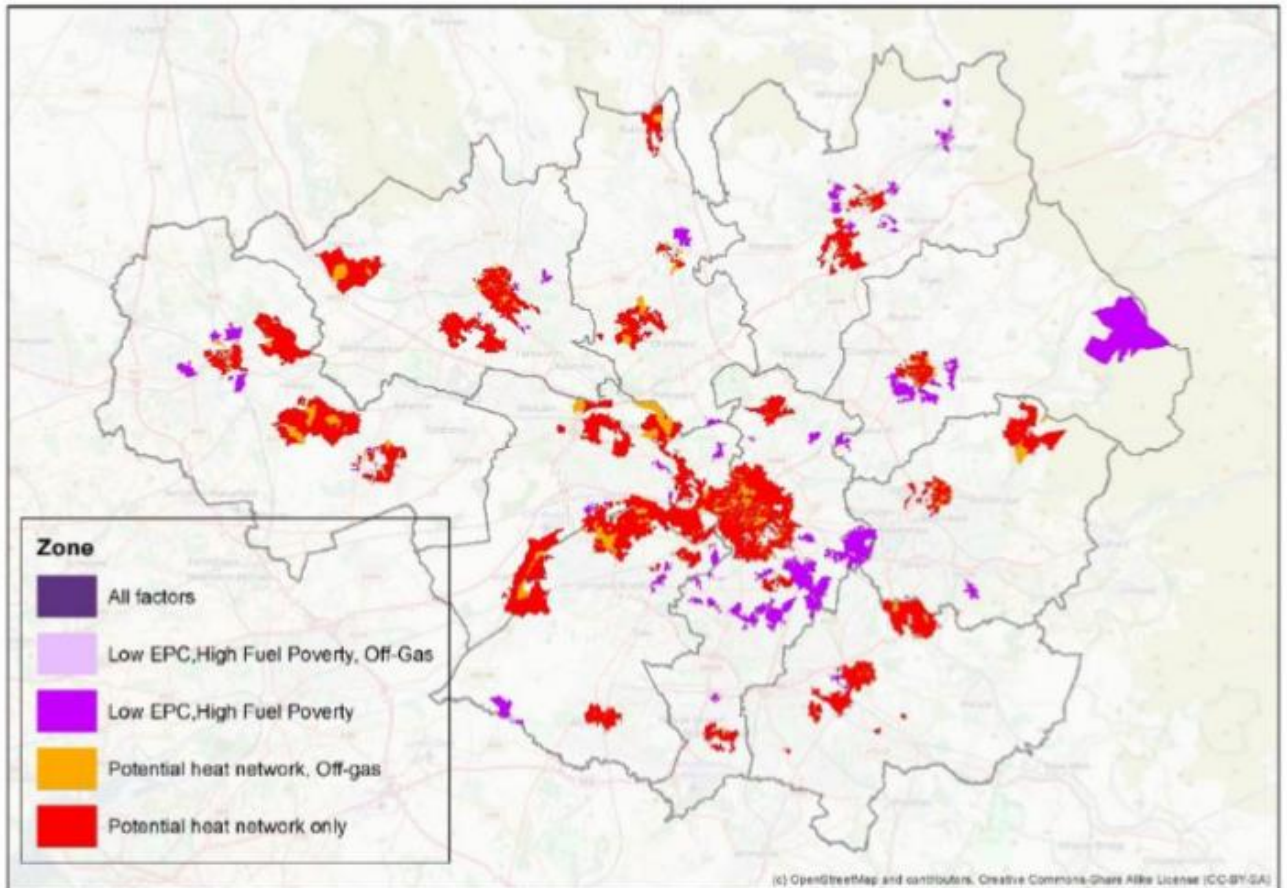
- the opportunities to generate low carbon electricity locally are constrained;
- up to 9 % of electricity could, technically, be generated locally using renewable sources (however only a small proportion of this will be economically viable and will require innovative approaches to financing models) ;
- the technologies with the highest technical potential to contribute to a new, low carbon energy system include district heating, individual electric heat pumps, bio-fuels and solar technologies;
- effective planning for new networks will be needed to support roll out of district heating and to manage the transition from the predominant gas system;
- electrification of heating is also likely to require reinforcement of electricity networks with associated cost and disruption.

### **Smart Energy Systems:**

- the shift to lower carbon and decentralised energy provides an opportunity for innovative business models, governance and funding solutions to support energy systems change;
- deployment of new low carbon energy networks and buildings technologies in combination with smart systems can enable Local Authorities and communities to be active participants in the delivery of GMs future energy system.

### **Future Policy Framework:**

- Greater Manchester needs to set an ambitious, and consistent, local carbon target for the region to support the significant reductions in emissions from buildings and transport needed;
- support development of Local Area Energy Strategies within individual districts;
- support deployment of low carbon and renewable energy within new development (including a requirements for a percentage of energy from low carbon or renewable sources and encouragement of smart systems);
- standardised requirements and related guidance for submission of energy or carbon budget statements with planning applications;
- a positive retrofitting policy supporting the decarbonisation of existing homes and buildings, (existing domestic buildings contribute 33% of current carbon dioxide emissions (4.45 MtCO<sub>2</sub>) along with other non-domestic buildings contributing 35% (4.45 MtCO<sub>2</sub>). The vast majority of existing homes likely to still be in existence by 2050, therefore retrofitting the existing building stock presents a significant opportunity to help meet the strategic carbon dioxide reduction target).
- retrofitting programmes could be focussed on the opportunity areas identified; establish a positive district heating policy for both new development (including a presumption in favour of connection); a centralised carbon offsetting fund for all ten districts as an alternative to the delivery of renewable energy by new development; support higher standards of energy efficiency and setting of local standards by districts.



**Figure 3: Low Carbon Opportunity Zones, GM Spatial Energy Plan (2016)**

## **GMCA Deep Dive Report 6: Low Carbon and Environmental Goods and Services**

3.20 Greater Manchester Combined Authority commissioned a series of sector ‘Deep Dive’ reports as part of Greater Manchester’s economic evidence base. The ‘Low Carbon and Environmental Goods and Services<sup>39</sup>’ report is part of a wide ranging analysis of the economic issues and opportunities within the low carbon/environmental service sector which was estimated to have generated a total of £5.4bn in sales at the time the report was written. Key strengths referenced for Greater Manchester include:

<sup>39</sup> [Greater Manchester Combined Authority \(2016\), Deep Dive Report 6: Low Carbon and Environmental Goods and Services](#)

- Low carbon building technologies (prototyping and design of technologies)
- Manufacture, supply, installation of insulation and energy management systems and low carbon lighting;
- Renewable energy (including wind, geothermal solar-photovoltaics, biomass); recovery and recycling (water supply, waste water treatment, waste management)

3.21 The report also noted that other long term growth opportunities within this sector would come from:

- Greater Manchester Climate Change and Low Emission Strategies Joint Implementation Plan (2016 to 2020)
- The implementation of national and local environmental policy in response to the global carbon reduction commitments set out in the Paris Agreement
- Increasing the deployment of low carbon and decentralised energy and supporting increases in energy efficiency in firms and homes, including the use of smart energy management systems. The technologies noted as having the highest technical potential include district heating, individual electric heat pumps, bio-fuels, and solar technologies for both hot water and electricity.

## **Qualifying the Implications of the Paris Agreement for Greater Manchester**

3.22 The Tyndall Centre for Climate Research undertook research as part of the Business, Energy and Industrial Strategy (BEIS) funded Setting City area Target and Trajectories for Emissions Reduction (SCATTER)<sup>40</sup> project to quantify the implications of the Paris Agreement for Greater Manchester.

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<sup>40</sup> [Microsoft Word - Tyndall Quantifying Paris for Manchester Report FINAL PUBLISHED rev1.docx](#)

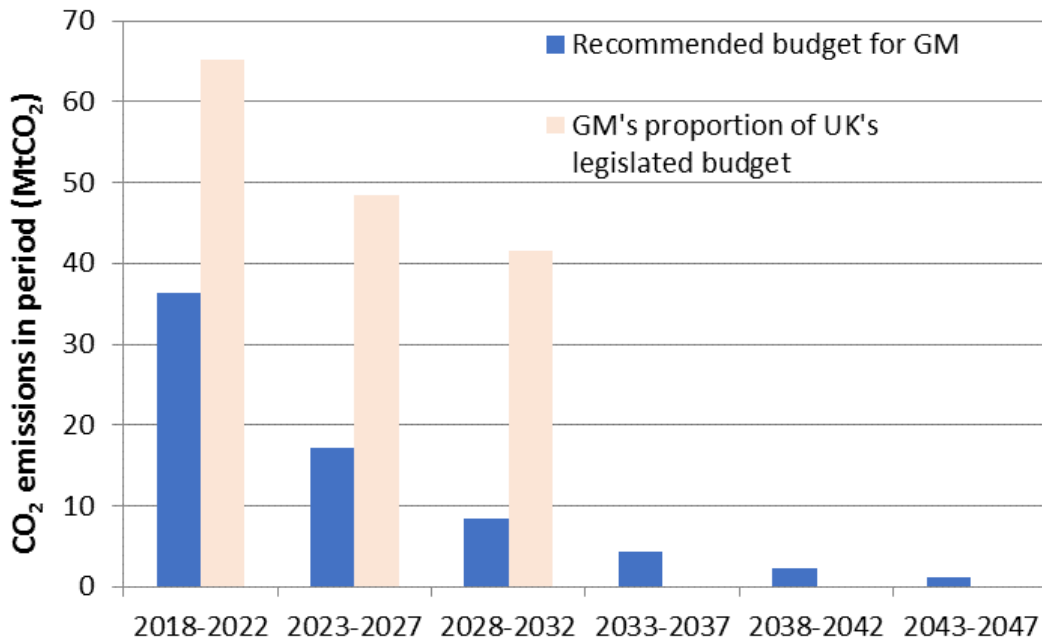


Additional quantitative outputs were provided by Anthesis from the SCATTER model.

3.23 The research noted that emission budgets for aviation, shipping and military transport for the UK are estimated separately and deducted from the national budgets when deriving the final UK carbon budgets. The UK budgets are subsequently apportioned to Greater Manchester. However, Manchester Airport emissions that relate to ground transport and buildings were reflected elsewhere in the GM inventory (i.e. road transport and stationary energy). Whilst aviation and shipping emissions have been removed from the UK carbon budget before an allocation has been made to GM, the recommendations from the report outlined that it is important that emissions from flights taken by GM citizens are monitored as emissions from airport related activities are not a responsibility of the airport alone (i.e. people travel from all over to get to the airport).

3.24 The research concluded that for Greater Manchester to make its 'fair' contribution towards the 2°C commitment enshrined in the Paris Agreement as part of its own carbon budget, it would need to:

- Take prompt action to put GM on a path to 'carbon neutrality' by 2038
- Hold cumulative carbon dioxide emissions at under 71 million tonnes (range of 45-104 MtCO<sub>2</sub>)
- Initiate an immediate programme of mitigation delivering an annual average of 15% cuts in emissions (range of 10-20%) as outlined in the scenario analysis.
- Have greater engagement with other global carbon target setting cities to share knowledge.



**Figure 4: Recommended carbon budgets for Greater Manchester from 2018 to 2047 (Tyndall 2018)**

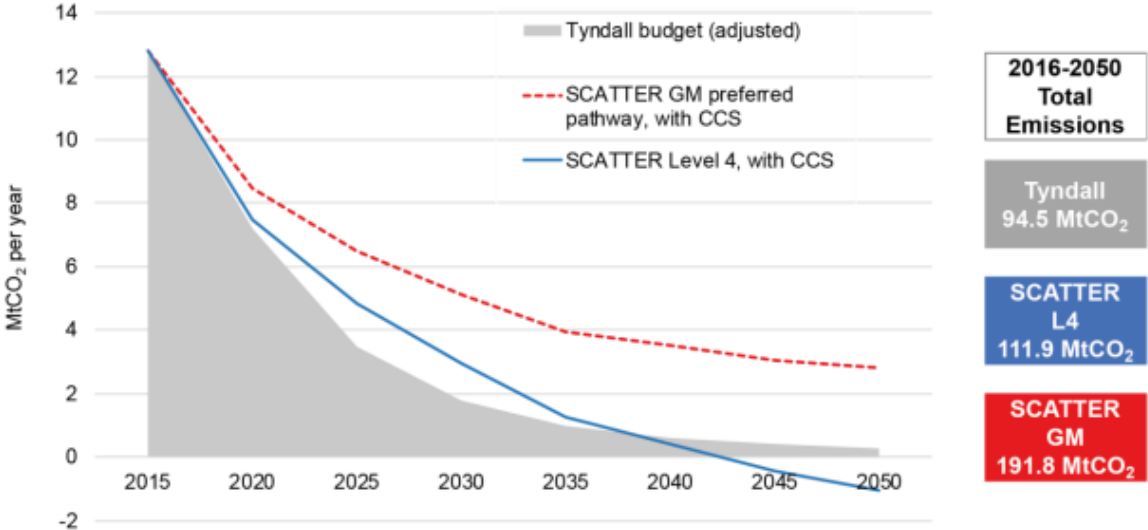
## Setting City and Area Targets and Trajectories for Emission Reduction (SCATTER) (2018)

3.25 In addition to the Tyndall work, GMCA commissioned research, Setting City Area Targets and Trajectories for Emissions Reductions (SCATTER)<sup>41</sup> to understand potential carbon reduction pathways. SCATTER is a model – it provides different emission reduction pathways dependent on local decisions taken across 40 different interventions, which can be implemented to 4 different extents. This allows the tool to be adapted to local circumstances and provide a modeled pathway based on those decisions. It also takes into account the growth ambitions for the city-region and impact of national policy.

<sup>41</sup> [Anthesis Group Website](#)

3.26 The graph below sets out the potential carbon reduction pathways for Greater Manchester, against the budget recommended by the Tyndall Centre’s research. This shows that:

- Under “SCATTER Level 4” pathway (each of the 40+ interventions at maximum extent), carbon neutrality is possible to achieve but even under this scenario emissions of nearly 20% above the Tyndall Centre’s recommended budget are produced in GM by 2050
- Under “SCATTER GM” pathway (an estimate of what is currently planned and what might be achievable in the future in GM) emissions of over double the Tyndall Centre’s recommended budget are produced by 2050



**Figure 5: Potential Carbon Reduction Pathways for Greater Manchester (Anthesis)**

3.27 The top carbon reduction performers under GM influence (at Scenario 4 levels) are:

**Decarbonise Electricity:**

- **Increase solar PV installation** - such that 11% of GM energy demand is met with solar PV by 2050. This equates to PV coverage of 16m<sup>2</sup> per household on 50% of all households in GM. A residual 16.8km<sup>2</sup> is also required on commercial rooftops or on ground mounted installations. Solar PV would represent 6.0TWh/year (12%) of GM energy demand.
- **Increased bioenergy use** - such that 17% of GM energy demand is met with bioenergy by 2050. In other words 1.1 GW of installed capacity to provide 8.8 TWh/year. This links to heat network development below. There is approximately 165MW of total installed capacity from bioenergy at present.

### **Enable Next Generation Mobility:**

- **Shift transport to zero emissions** – such that 100% of buses are zero emissions by 2035 and 66% of cars are zero emission by 2030 (100% by 2050).
- **Domestic transport** – a 25% reduction in passenger distance travelled (km) by 2035.

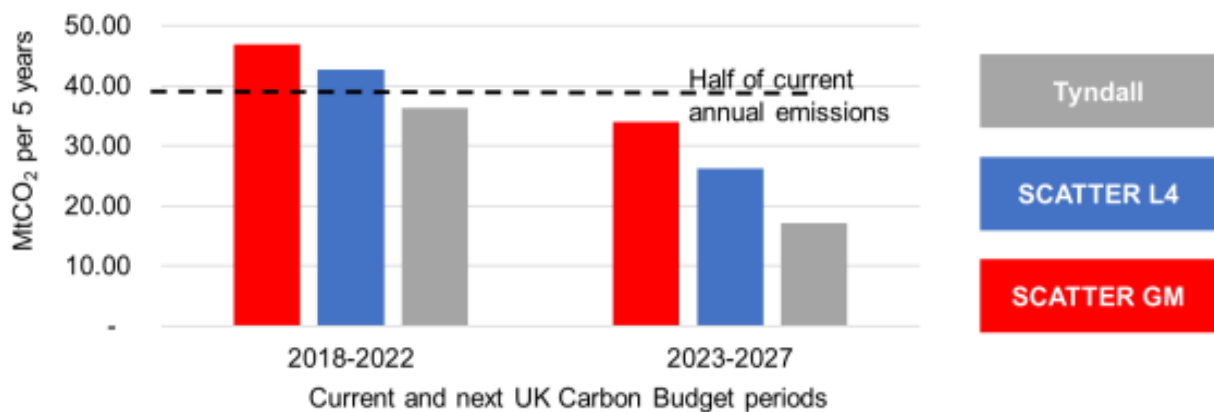
### **Optimise Energy in Buildings (Domestic & Commercial Heating):**

- **Reduce heat demand for domestic properties** - Approximately 60% of all GM households (688,530) subject to enhanced insulation measures by 2050, reducing the average thermal leakiness by 75%. The costs will vary depending on the house type and the current energy efficiency of the house. LA owned homes will already be relatively well insulated.
- **Increase low carbon heat sources (electrification / heat networks)** - 80%-100% of households and commercial buildings are electrically heated by 2050. Technologies include ground source/air source heat pumps, with the remaining energy provided by low carbon heat networks (these can often be designed for cooling provision as well as heat which will become more critical with higher temperatures and improved building insulation).

- **Reduce heat demand for public & commercial buildings** - By 2050, space heating demand has dropped by 40%, hot water demand by 30% and cooling demand by 60%.

3.28 The scale of reductions needed over the next 8 years alone would mean:

- A reduction of annual emissions by more than a half to put GM on the “SCATTER Level 4 Pathway
- A reduction of annual emissions by more than two thirds to meet the Tyndall Centre’s recommended budget



**Figure 6: Potential Carbon Reduction Pathways for Greater Manchester (Anthesis)**

## Greater Manchester Local Industrial Strategy

3.29 In 2019 the Greater Manchester Combined Authority (GMCA), the GM Local Enterprise Partnership and the UK Government agreed and jointly published one of the country's first modern local industrial strategies. The Greater Manchester Local Industrial Strategy<sup>42</sup> (GMLIS) outlines a set of long-term policy priorities to help guide industrial development and provides a plan for good jobs and growth in Greater Manchester. The Strategy builds on both the

<sup>42</sup> [gm-local-industrial-strategy-web.pdf \(greatermanchester-ca.gov.uk\)](https://www.greatermanchester-ca.gov.uk/gm-local-industrial-strategy-web.pdf)

national Industrial Strategy and the Greater Manchester Strategy. Specifically, in relation to the carbon and energy agenda:

- It aims to capitalise on the local ambition to be carbon neutral by 2038, to drive improvements to environmental quality while also stimulating innovation and new industries.
- The Prosperity Review highlighted the opportunity to use the local ambition around carbon neutrality and environmental improvements to drive mission-based innovation and achieve the coordinated approach required. To maximise the local contribution to the national Clean Growth Grand Challenge, Greater Manchester will launch a city-region Mission to achieve carbon neutral living within the Greater Manchester economy by 2038. This will be delivered through a series of Greater Manchester-led mission-orientated projects, supporting delivery of the government's Clean Growth Grand Challenge aiming to:
  - deliver environmental improvements that directly enhance well-being, health, resilience, biodiversity and quality of life, including by enhancing the natural capital of the city-region;
  - design and trial innovative technology and financial mechanisms to support delivery of energy efficient homes, buildings and low carbon transport, helping to reach the point at which all new homes and commercial/industrial buildings are net zero carbon;
  - tackle poor air quality - the largest environmental risk to the public's health through a co-ordinated Clean Air Plan developed by Greater Manchester's local authorities;
  - accelerate new models of local renewable energy generation, storage and efficiency within the city-region, adopting a 'whole system approach', and testing the creation of a local energy market; and
  - support Greater Manchester enterprises to accelerate the implementation of energy and material efficiency measures in the design and production of products and services through the Growth Hub and local partners' activity.

- The strategy notes that Greater Manchester’s carbon ambition provides a significant opportunity to deliver substantial carbon reductions, environmental and health benefits to residents, whilst also creating new green industries and jobs capitalising on Greater Manchester’s research assets and large low carbon goods and services sector.

## **Carbon and Energy Policy Implementation Study - Currie and Brown / Centre for Sustainable Energy**

3.30 The Carbon and Energy Policy within GMSF 2019 noted that all new development will need to be Net Zero Carbon by 2028. In doing so the policy also stipulated that:

- Development should follow the energy hierarchy
- There should be an interim requirement that all new dwellings seek a 19% carbon reduction against Part L of the 2013 Building Regulations
- A minimum 20% reduction in carbon emissions (based on the dwelling emission or building emissions rates) through the use of on site or nearby renewable and / or low carbon technologies;

3.31 To provide certainty about the progression to net zero from this baseline, the viability of the approach and to inform future PfE policy, Currie and Brown and the Centre for Sustainable Energy provided further research<sup>43</sup>. This was aligned with the ‘UK GBC Framework Definition for Net Zero Carbon’. The main findings from the report are highlighted in the following sections.

### **Part 1 - Policy Approach**

3.32 The policy landscape in relation to Local Planning Authorities (LPAs) being able to set standards above national building regulations is currently confusing for a range of reasons:

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<sup>43</sup> Currie and Brown/Centre for Sustainable Energy (2020), Carbon and Energy Policy Implementation Study

- The Primary Legislations under the Planning and Energy Act 2008 which allows LPAs to set higher energy efficiency standards still remains even though Government has previously proposed this was to be removed (via Deregulation Act).
- Government consulted on the Future Homes Standard in 2020 which proposed a 'ramping' up of carbon reduction measures from 2020 (31%) and 2025 (80%).
- The supporting National Planning Practice Guidance stipulates that LPAs cannot require any higher than the Code for Sustainable Homes Level 4 (equivalent to 19% reduction on Part L 2013).
- There is evidence from other Local Plans that policies are getting through examination which already exceed national building regulations (E.g. London, Reading)

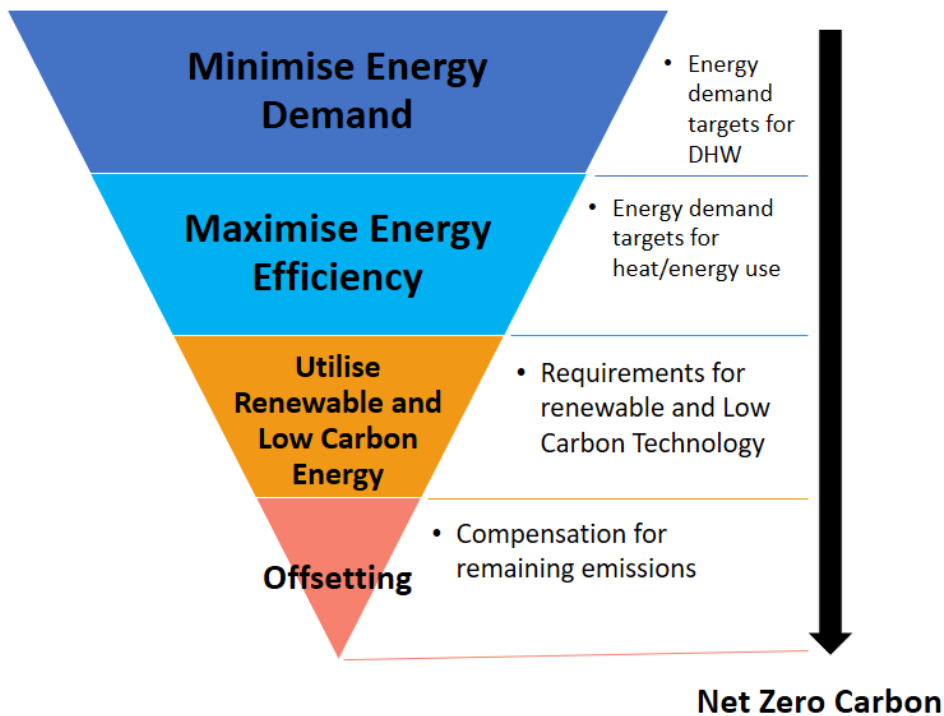
3.33 To ensure the policy approach within PfE is 'future proofed' it was recommended that this should be in alignment with the Future Homes standard when setting minimum carbon reduction targets.

3.34 The definition of Net Zero Carbon can be applied to 'in construction' and 'operational' as guided by the UK Green Building Council Framework document. In both cases net zero is when the amount of carbon emissions associated with that activity are zero or negative. This is achieved by following the energy hierarchy, the utilization of renewables and with any remaining emissions offset. Operational emissions can be further broken down into 'regulated' (those covered by building regulations) and 'unregulated' (energy utilized by occupants). The scope of the work focused on operational net zero carbon up until 2028.

3.35 To achieve a truly sustainable energy system, the energy hierarchy should be followed so that a fabric first approach is maintained. Without this future development would ultimately be over reliant on increased energy use and generation which in turn would produce a home which is expensive to operate.



Within this offsetting has to be the last resort otherwise homes would require more expensive retrofit at a later date. This would further add to the challenges set out within the 5 Year Environment Plan which has a target to retrofit 61,000 homes every year.



**Figure 7: The Energy Hierarchy**

3.36 It is important that energy demand and carbon emissions are treated together. Setting only a carbon target, against Part L can lead to several undesirable knock on effects:

- It is not very clear as to where the carbon emission savings come from (fabric, installed services and/or energy generation).
- Carbon emissions are calculated based on the carbon intensity of the energy type required (gas, electricity or other). The carbon intensity of electricity is ever changing as the electricity grid decarbonises and therefore such targets become a moving target

- The comparison is conducted with a specific version of Part L1 A where minimum requirements also change every 5 years

3.37 The use of minimum standards for space heating demand, domestic hot water and renewable energy generation were advised as follows:

Date	Space Heat Demand	Hot Water Energy Demand	Renewable Energy Generation Targets
2021 - 2025	Houses (30kWh/m <sup>2</sup> )  Flats (25kWh/m <sup>2</sup> )	20% energy demand reduction (compared to Part L 2013)	*Photovoltaic installation: 20% ground floorspace
2025 onwards	Houses (20kWh/m <sup>2</sup> )  Flats (15kWh/m <sup>2</sup> )	^20% energy demand reduction (compared to Part L 2020)	*Photovoltaic installation: 40% ground floorspace

*\*or equivalent through other technology approaches*

^Will need to be reviewed with Future Homes Standard to determine if savings already embedded

**Table 3: Targets for Reducing Energy Demand and Onsite Renewable Energy Generation**

3.38 Whilst the report noted that priority should be given to PV installation where technically feasible, alternative technologies will be appropriate where the equivalent generation is evidenced.

3.39 Due to the variability in non-domestic buildings type, size and use, introducing exact thresholds for heating, hot water generation and fixed services was not possible as part of the study. In terms of energy and carbon performances of new non-domestic building energy efficiency performance improvement over standard construction (%) is a common metric of describing improvement so

the scope of the study considered the use of BREEAM ratings as a way to set this standard. The outcome being that for all carbon and energy credits, PfE should be seeking 'Excellent' ratings for those which relate to energy performance and emissions.

3.40 Building stock can suffer from a performance gap where the modelled energy performance of a building is lower than the operation of a building in use. This has created a gap in the market where building owners are unaware of this difference. Measures to address this include requirements for developers to produce sustainability assessments to outline how they intend to minimise the potential for this to happen as well as requirements for post occupancy evaluation.

3.41 There should be a clear distinction for the requirement to generate renewable energy rather than to require a % of the carbon emissions/demand to be from renewable energy technology. This is due to:

- The carbon intensity of the electrical grid will reduce over time so the policy approach becomes redundant when making it a proportion of the overall carbon reduction.
- Without specific reference to energy generation, there is a risk that developments would defer to the use of heat pumps to satisfy this requirement. This would increase occupier costs, lead potential network issues and minimise any potential contribution for on-site energy generation.

3.42 The study recommended that when all electric solutions are considered, as in the case of heat pumps, special consideration is given to potential impact on running costs and affordability for occupiers. Electricity in comparison to gas currently costs more per unit. As the grid becomes more decarbonised and demand increases for electric it is hoped this will start to balance out. The Spatial Energy Plan (Energy Systems Catapult 2017) shows that without any intervention, future growth across GM could lead to an increase in 3% energy

demand. According to DECC (2012), over 12% of GM householders are in fuel poverty which equates to over 130,000 households. Higher standards of energy efficiency for domestic building have the potential to significantly reduce running costs but carbon reduction requirements alone would not achieve this.

- 3.43 In the modelling of costs, air source heat pumps alone led to higher annual energy bills if no additional solutions were implemented. This was roughly £150-200 per year in houses for regulated energy use and £50-150 in the case of flats. If you then start to look at including the highest fabric standards, loss of gas standing charges, waste heat recovery technology and renewable energy generation, this could potentially lead to a saving of around £150 per year. It was suggested that for regulated energy use, annual running costs estimated in new designs are no higher than that of the same home built to the Part L 2013 standard using gas. The Future Homes Standard is also considering an affordability metric so such a requirement may be superseded or become redundant if appropriate provisions within the new Part L are identified.
- 3.44 To understand potential costs of following the pathway to net zero carbon for new development, a range of domestic archetypes were identified and then modelling of various approaches were considered. This included natural and mechanical heat ventilation (MVHR), wastewater heat recycling, air source heat pumps and Photovoltaics (PV) leading all the way up to the 'very high' standard (Passivhaus equivalent). In all models when meeting the highest fabric standard and including all modelled technology, construction costs do not increase by any more than 6%. The most expensive uplift was in the detached house model which showed construction costs around £9k (excluding PV installation).
- 3.45 The most significant costs associated with achieving higher BREEAM ratings are often associated with meeting minimum energy requirements. The research undertaken suggests most existing non-domestic buildings can

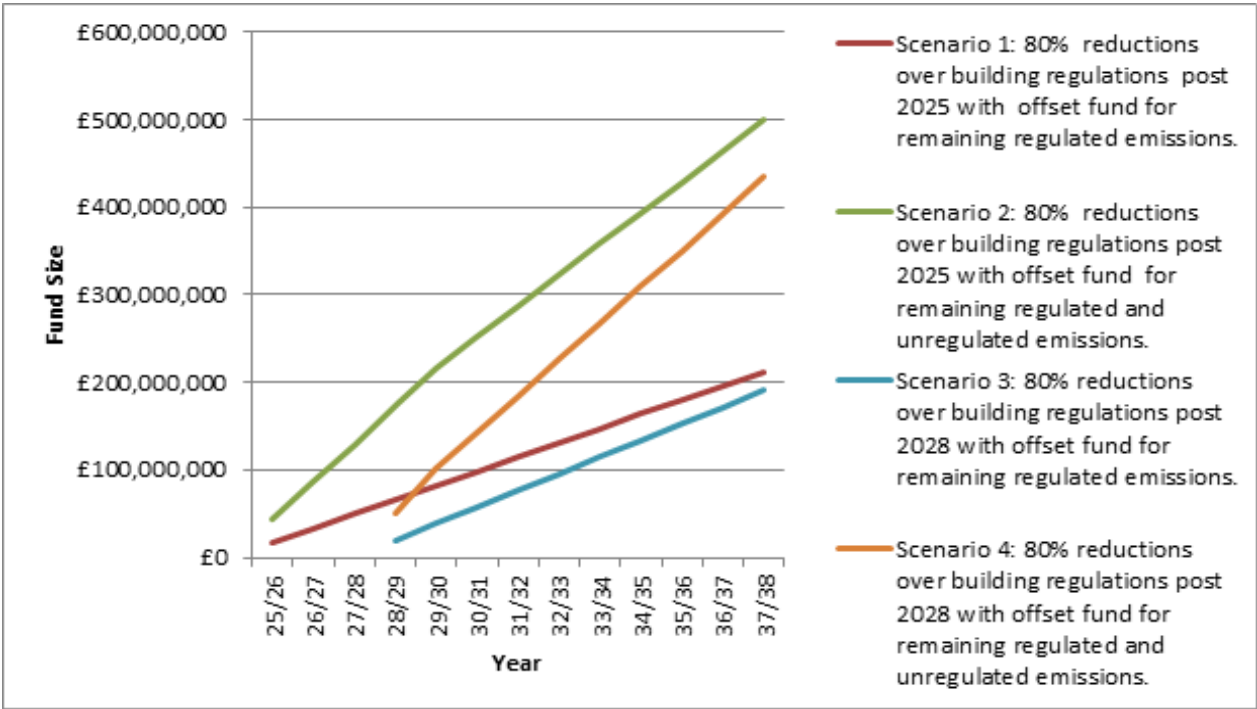
achieve 10-15% energy efficiency improvements on current regulations, but there are some buildings that might find this standard more difficult due to the energy associated with their type and operational demand, for example hotels. As technology improves and the market becomes more confident, it is estimated that energy efficient standards may fall by around 20-30% between 2020 and 2030. In addition, it is likely that there will be further reductions in the costs of PV with costs falling by a further 35% on 2020 levels by 2030.

## **Part 2 – Carbon Offsetting**

- 3.46 The second part of the research, completed by the Centre for Sustainable Energy (CSE), considered the role of carbon offsetting within the emerging policy approach and a potential carbon price for Greater Manchester. As noted earlier in the report, carbon offsetting is the last resort as part of the net zero policy approach to avoid sub optimal building standard. Therefore, it is important that policies are designed in such a manner as to ensure that all viable on site methods of reducing carbon emissions are exhausted first.
- 3.47 Carbon offset payments will fund carbon saving projects elsewhere, to make up for the savings not achieved within a particular development. Carbon offsets are collected through “Section 106” legal agreements attached to planning consents, and off-site carbon abatement is assumed to take place over a 30 year period. Projects which could be funded include domestic and community energy projects, energy efficiency retrofit for domestic and community buildings and also carbon sequestration.
- 3.48 The study considered the carbon price for Greater Manchester offsetting in accordance with the supplementary documentation to the HM Treasury’s Green Book, a nationally recognised carbon pricing mechanism. This reflected the approach taken for the London Plan and outlined a price of £113 or £118 per tonne (dependant on whether the scheme came into force in 2025 or 2028). However, CSE does not consider this approach consistent with Greater Manchester’s Climate Emergency Declaration.

- 3.49 The climate emergency, the UK wide 2050 zero carbon target and the Greater Manchester 2038 net zero carbon target fundamentally challenge the conventionally accepted approach to additionality and carbon offsetting, in that within these timescales, effectively all carbon emissions will need to be avoided or sequestered in carbon sinks. Therefore, the rate at which emission reductions are achieved is critical, in that if Greater Manchester were to meet its commitment to become carbon neutral by 2038, the residual emissions from new development would also need to be offset by the 2038 deadline rather than over the lifespan of the measure funded – which has typically been used in the past. This logic would support higher charges being levied on developers to achieve the carbon savings within the 2038 timeframe, increasing further as the length of time to the deadline (2038) within which carbon savings can be accrued reduces.
- 3.50 A justifiable approach to operationalise this would be to base the carbon price for Greater Manchester on the Treasury figures but adjust the figures to reflect that Manchester’s aim to be achieved 12 years earlier, resulting in a carbon price of £234 in the case of a 2028 start date. Given that Policy GM-S2’s stated intent is to already be delivering net zero carbon development by 2028, CSE strongly recommend that GMCA begin collecting carbon offset payments prior to 2028. A logical point to bring in this measure would be 2025 – to align with expected changes in the 2019 Future Homes Standard Consultation. With this in mind, the study also considered scenarios where the carbon offset regime is brought into force in 2025 at a lower carbon price of £200.
- 3.51 The policy recommendations from Part 1 of the study were applied to the baseline growth estimates for Greater Manchester to determine (in theory) the amount of offsetting income that could be expected. The graph here shows the potential revenue from carbon offsetting dependant on whether the approach is implemented from 2025 or 2028 and if the fund is to cover regulated emissions only or unregulated and regulated. The optimum recommendation

from the research was to consider offsetting from 2025 and apply this to both regulated and unregulated emissions. In this scenario which is scenario 2, you can see the conceptual size of the fund is around £500million.



**Figure 8: Potential Carbon Offset Fund for Greater Manchester (Source: Centre for Sustainable Energy)**

3.52 Contributions from any offset will need to be directed into a ring-fenced carbon offset fund to provide maximum flexibility and minimise administrative costs, rather than having to specify actual projects funded within individual legal agreements.

3.53 In parallel to this piece of work the GMCA have commissioned Environment Finance to explore the scope of work for setting up a Greater Manchester Environment Fund (GMEF) (as announced by the Mayor of Greater Manchester in the Green Summit 2018). The aim of the GMEF is to improve the quality of the environment within Greater Manchester by providing grant funding to non-statutory initiatives that are currently underfunded through

existing mechanisms. Initially this is to include habitat banking and carbon trading. Within this there is an opportunity to align with any carbon offsetting from the development planning system. However, this does not preclude districts exploring alternative options.

## **Carbon and Fracking – Tyndall Centre Research**

3.54 The GMCA commissioned further research from the Tyndall Centre<sup>44</sup> to understand impacts from hydraulic fracturing (shale gas) within Greater Manchester on carbon emissions and subsequently the ability of Greater Manchester to meet its Paris-aligned carbon target. A summary of the key findings shows:

- All but the lowest shale gas production scenarios presented exceed both the natural gas requirement in a high decarbonisation demand scenario and the carbon constraint of a 15% p.a. Paris-aligned emissions reduction pathway.
- These emissions would persist even if Carbon Capture and Storage (CCS) technology were deployed for power generation or hydrogen production.
- Shale gas production would require additional emissions reductions elsewhere in the economy and the Climate Change Committee has repeatedly argued that outside of the power sector UK policy is not on track to achieve either the original 80% reduction by 2050 or the recently adopted net zero target, both of which have slower rates of reduction than the GM Paris-aligned pathway.

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<sup>44</sup> Tyndall Centre for Climate Change Research (2019), Carbon and Fracking Evidence: Report to inform Greater Manchester Spatial Framework – Carbon and Energy Policy



- Assuming that economically recoverable resources of shale gas are available, it will take time to proceed through the planning, construction, and commissioning phases of multiple well pads. This reduces the time period over which shale gas can play a viable role as a bridging or transitional fuel, estimated as 2023 to 2028, before the total carbon dioxide emissions from combustion would exceed the GMCA emission pathway or methane emissions become unmanageable.
- Shale gas has only a small window of opportunity in providing a lower emission substitution, and that only for LNG. If Manchester collectively supports the achievement of the Paris Agreement, its future energy requirements will need to change rapidly, and a largely decarbonised electricity system will need to materialise. With much reduced natural gas demand, production from the UK Continental Shelf (including the North Sea) may provide a much greater proportion of demand limiting the necessity of imports. Imports are currently largely met by Norwegian production which is expected to have lower upstream emissions than shale gas, so the potential for reduction by substitution is limited.
- An overview of the background legislative and policy context demonstrates that the policy position to ‘keep fossil fuels in the ground’ is a justifiable option. The most recent case concerning national planning policy on shale gas, indicates that greenhouse gas emissions considerations are without doubt material. Climate change duties attendant on plan-making also provide a general context for this policy option, as an area where the GMCA can secure an emissions reduction contribution in relation to other policies that need ‘emissions space’.

## **Local Area Energy Planning**

3.55 Local Area Energy Planning is a valuable activity that can assist in meeting the ambitious decarbonisation and housing energy performance commitments

set out in the Clean Growth Strategy. The approach was pioneered by Energy Systems Catapult to help inform and support local authorities, distribution network operators, business and communities to plan for a cost-effective low carbon transition to achieve Net Zero. A pilot<sup>45</sup> programme was funded by BEIS under the the Smart Systems and Heat Phase 1 Programme. This was established for three Local Authorities, including one in Greater Manchester (Bury Metropolitan Borough Council) which was focused on the decarbonisation of heat.

3.56 The study applied a ‘whole systems’ approach to help decide on the best mix of building improvements, low carbon heating technologies, power, gas and heating networks to deliver low carbon and affordable energy. This requires a deeper understanding of conditions at a local level as it is concerned with building stock, energy network capacity, spatial features and other local characteristics; assessed in parallel with the decarbonisation of other sectors such as transportation. Insights from Whole Systems analysis can then be considered alongside consumer, commercial and policy factors, in order to determine options for a future energy system.

Key findings:

- One of the toughest challenges for UK climate and energy policy is the decarbonisation of heat. This will require a major overhaul of the energy system, extending into people’s homes, including the building fabric and domestic heating system. Almost all heating systems in homes will need to be replaced with advanced low carbon technologies.
- Throughout the UK 2.5 million households are classified as being in fuel poverty. Upgrading home energy performance and improving heating is one of the most important and effective responses, however, careful targeting and design is needed to maximise the cost-effectiveness of investment.

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<sup>45</sup> [Local Area Energy Planning: Clean Growth - Energy Systems \(catapult.org.uk\)](https://catapult.org.uk/local-area-energy-planning-clean-growth-energy-systems)

- In addition, the energy performance of the general UK housing stock is still poor. 16.7 million homes in England, 70% of the total, have energy performance at EPC Band D or worse. In the Clean Growth Strategy, the government set out an aspiration to improve as many homes in England as possible to Band C or better by 2035 where this is cost effective, practical and affordable. This is a potentially vast infrastructure programme, involving the assessment and possible upgrade of up to one million homes per year to 2035.
- Local Area Energy Planning is a means of exploring a range of different future local energy scenarios to achieve deep decarbonisation.
- Under a balanced and well-planned transition reflecting local priorities and constraints (working to carbon reduction targets that achieve a circa 95% reduction from 1990 levels), decarbonising local energy systems to also decarbonise heat could be achieved for a further 12% - 15% increase in cost to 2050, where the forecasted future total system cost of providing decarbonised energy services to homes, businesses, public buildings and industry is £27.4 billion over the period 2015-2050. If not well planned, costs could be significantly higher.
- Local Area Energy Planning could become a key tool for the Clean Growth Strategy by helping to meet the challenge of decarbonising heat, in setting out possible and cost-effective options whilst highlighting where investment is needed. For example, a heat network may offer the best solution in some areas, but such networks are unlikely to emerge through market forces alone. They require a co-ordinated approach to determine the commercial proposition, engage householders, lay new heat networks, replace boilers with heat interface units and so on. Likewise, a major uptake of electric heat pumps would only work if there is sufficient electricity network capacity, planned with due consideration to other

parallel changes such as increasing consumer uptake of electric vehicles.

- 3.57 In January 2019, GM (GMCA, Electricity Northwest Ltd and partners) successfully applied to Innovate UK's 'Prospering from the Energy Revolution' funding stream for Phase 1 Concept Design of a Local Energy Market. GM will be the first region in the UK to undertake such an ambitious and innovative project at this scale, combining informed forward planning with new services, which are optimized and validated. This will support all 10 districts, domestic (Registered Social Landlords), commercial and public estates to better predict future energy supply and demand at very local level, define innovative energy services and models to support the low carbon transition and scope a local platform which may enable these new services to be viably delivered. A specific deliverable from this will be to increase the Local Area Energy Planning from one pilot area to the whole of the city region area.

## **Whole System Smart Energy Plan**

- 3.58 Greater Manchester's (GM) vision is for a carbon neutral city region, with an energy system, which is smart, fit for the future, low carbon, and economically environmentally and socially sustainable.
- 3.59 This Plan<sup>46</sup> was produced by the Energy Systems Catapult as a deliverable of the Smart Systems and Heat Phase 2 Programme. The purpose of the Smart Energy Plan is to describe a roadmap of projects and activities that will enable Greater Manchester to respond to the challenge of decarbonising heat within the wider energy system. (building on the strategic activities identified in the Local Area Energy Strategy). This whole system Smart Energy Plan developed for GM provides a targeted focus for the GMCA and local partners, through defining a roadmap and several initial projects and activities over a 5-year timeframe. The following ambitions and focused goals for 2024 were set out utilising current ESME modelling in the first instance as a minimum goal:

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<sup>46</sup> [Smart Energy Plan: Greater Manchester Combined Authority - Energy Systems Catapult](#)

- Generation and storage – 45 MW of additional generation by 2024;
- Decarbonisation of heat – 10.2 TWh of low carbon heat by 2024;
- Low carbon transport – Up to 200,000 low carbon vehicles by 2024; and
- Diversity and flexibility – 45 MW of diverse / flexible energy load by 20246 .

## **Decarbonising Greater Manchester’s Buildings Report**

3.60 This report<sup>47</sup> produced by the GMCA with support of an expert working group, provided a number recommendations for decarbonising Greater Manchester’s existing building stock (retrofit) with the aim of providing further detail for the actions from the 5 Year Environment Plan.

3.61 Investing in reducing the energy used in Greater Manchester’s buildings offers a significant opportunity that would bring with it multiple benefits, not just for the city region’s environmental ambitions. For Greater Manchester’s residents, homes that are warmer, more comfortable and have good ventilation are healthier homes, improving people’s physical and mental health. They are also cheaper to heat, meaning Greater Manchester residents and businesses would spend less on their fuel bills and be more resilient to future energy price rises. For Greater Manchester’s economy, a healthier population means increased productivity and less public spending on healthcare. Businesses that use their energy more efficiently are more resilient to energy price volatility. Investing in Greater Manchester’s building stock also presents an opportunity for growth in jobs and skills in the construction and associated sectors in the city-region.

3.62 GM needs to scale up deeper retrofit of homes across Greater Manchester. This presents significant opportunities to realise the benefits set out above – for improving people’s health and increasing wealth. Modelling informing

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<sup>47</sup> [ITEM 8B Annex02 Report.pdf \(greatermanchester-ca.gov.uk\)](#)

Greater Manchester's 5 Year Environment Plan is based on 61,000 retrofits a year which, on average, reduce heat loss per house by 57%. At present, deeper retrofit projects achieving this scale of reduction are pilots of 10s or at most 100-200 homes or are not retrofitting to the depth needed. To realise the scale of reduction in CO2 emissions GM needs from reducing buildings' demand for energy, GM needs tens of thousands of deeper retrofits every year. At present, deeper retrofit projects are of the scale of pilots of 10s or at most 100-200 homes or are not retrofitting to the depth needed.

3.63 The report provides 10 key recommendations to accelerate delivery:

- Partners across Greater Manchester should develop proposals for and push for changes to current the current ECO framework when it ends in 2022 to better align it with the city region's ambitions.
- Further research should be carried out to identify appropriate space heating demand targets for Greater Manchester property types, informed by the emissions reductions in the SCATTER model. This work would provide a set of indicative targets required from the retrofit of homes to meet Greater Manchester's ambitions and that can be feasibly delivered at Greater Manchester's property types.
- The GMCA, key partners and investors should work together to develop commercially attractive business models for investment in retrofit of social and private housing. At the same time, GMCA, working with key partners and government (to consider this as part of national policy and green finance initiatives), should develop options for the potential use of council tax as a "nudge" to increase energy efficiency.
- The GMCA, learning and skills support agencies, providers, innovation hubs and existing trade bodies should come together to understand the future needs and opportunities presented by whole-house deep retrofit and develop packages of work to tackle the issues this identifies.
- Partners in Greater Manchester should collaborate to develop a delivery model to build up local markets for whole-house deeper retrofit. This should

build on the findings of recent work in this area, including government funded pilots like People Powered Retrofit and RetrofitWorks.

- GMCA and local authorities should explore the potential for introducing requirements for new developments to report on operational energy performance, and as part of that, on space heating demand.
- Working with key partners, GMCA should develop and implement a pathway to lead to an increase in the measurement, reporting and improvement of energy efficiency in commercial buildings, and as part of that, on space heating demand.
- GMCA, local authorities and the public sector across Greater Manchester should ensure standardised measurement and annual reporting (as part of reporting against the 5 Year Environment Plan) on the energy efficiency of their buildings, including their Display Energy Certificate ratings and a measure of space heating demand.
- GMCA and local authorities should work to deliver agreed targets for the energy efficiency of their buildings, including their Display Energy Certificate ratings and developing a measure and targets for space heating demand, and encourage other public sector organisations to do likewise.
- Put in place Greater Low Carbon Buildings Challenge Group, which, through establishing specific task and finish groups, would provide cross-sector approach to tackling the systemic challenges associated with retrofit across all building types.

# 4 Summary of Consultation

- 4.1 During the 2019 GMSF consultation, 3,807 comments were received on the Sustainable and Resilient Chapter of the Plan. There was support for the policies in general however several respondents challenged the policies around carbon and energy (hydraulic fracturing) as being contrary to national policy, whilst some felt the policy did not go far enough and should be extended to all shale gas resources.
- 4.2 Whilst policies around zero net carbon development/heat networks were generally supported in principle, some respondents requested greater clarity on what this would mean in practice and raised concerns around the impact on viability.
- 4.3 More detailed comments in relation to specific elements of the policies are set out below.

<b>Table 4: Carbon and Energy</b>
<ul style="list-style-type: none"><li>• The presumption against hydraulic fracturing is unjustified and unreasonable.</li><li>• It was felt by many respondents that it is too early to know if fracking is safe or not so the Greater Manchester stance against fracking is welcomed.</li><li>• In order to achieve our green agenda as set out in the plan it was agreed that fracking would seriously undermine this and only perpetuate our reliance on fossil fuels.</li><li>• There was support especially for “keeping fossil fuels in the ground”, and the presumption against hydraulic fracturing that results, as it was argued that shale gas is not the answer to our energy needs. A Joint Minerals Plan Review needs to be instigated and attention was drawn to the recent ‘Talk Fracking’ High Court Judgement which allows plan-making and decision-making authorities to reconsider the impacts of fracking on climate change;</li></ul>



rather than just rely on the current wording of the National Planning Policy Framework

- There was some support for fracking in that we need to have an independent energy resource as the UK is too dependent on imported gas at the moment.
- In the short term it was argued that to accommodate the predicted growth outlined in the plan we need to embrace coal bed methane extraction and fracking. The Plan should highlight the importance of gas in Manchester's Energy mix, the importance of maintaining energy security, and also of utilising the UK's own indigenous sources of gas, rather than imports.
- It was also felt by some that the presumption against hydraulic fracturing is unjustified and unreasonable noting it is entirely contrary to the Government policy position contained within the National Planning Policy Framework, Planning Policy Guidance and the Written Ministerial Statement.
- Any Plan that impedes or prevents development for hydrocarbons in areas where they have been found and licensed by Government is unsound without strong evidential justification (which is absent from the supporting evidence).
- The Plan fails to recognise that minerals can only be worked where they occur; the contribution hydrocarbons make and will continue to make to ensuring a secure and diverse sustainable energy supply; and that the use of hydrocarbons will contribute towards a carbon neutral economy, reduce the impact of climate change, and contribute to achieving the Plan objectives.
- Ending fossil fuels could have consequences for householders off the gas grid who may use oil for their central heating, and who may therefore be required to purchase electric heating, with huge up-front costs.
- The Plan should specify the consequences of its policy objectives so that developers and businesses are able to plan accordingly.
- There are several terms within the Plan that are insufficiently explained or defined as regards their meaning within a Greater Manchester context, i.e.

'carbon neutral', 'decentralised networks', 'zero carbon', 'heat demand reduction' and 'fossil fuels'.

- Achieving zero net carbon emissions by 2038 is overly optimistic when compared to the UK wide target of 2050.
- The plan should not set policies which require compliance with energy performance standards that exceed the energy requirements of current Building Regulations.
- The plan is inconsistent with regard to its required reductions in carbon emissions.
- Alternative routes to heat decarbonisation may be cheaper and more convenient than retro-fitting, such as a conversion to hydrogen, or injection of bio gas into the grid. Hydrogen produced by natural gas can still be carbon neutral

#### **Table 5: Heat and Energy Networks**

- It was felt that all opportunities to reduce carbon emissions are welcomed even though some respondents were unclear as to what a heat network actually is.
- There was a suggestion that households and businesses should be offered grants to enable assessment of heating systems and heat loss.
- The requirement for all development over 10 dwellings to evaluate the viability of connecting to a heat/energy network is inconsistent with national policy.
- The policy would introduce uncertainty for development and the potential for an unnecessarily protracted planning application process.
- It is up to GMCA to demonstrate whether such a requirement to connect would be viable, and to assess this at the plan-making stage. It is not clear what is meant by a 'presumption in favour of network connection'.
- Heat networks should be delivered where/when they are the best solution for consumers, not as a uniform policy for all new developments of over 10 dwellings.

**Table 6: Response to Consultation Comments**

- Justification text further strengthened with reference to the role of the policy in contributing to sustainable development and the 2038 carbon neutrality target.
- JPS-1 Sustainable Development updated to include reference to sustainable design and construction techniques.
- Additional evidence has been completed by the Tyndall Centre which considers the role of hydraulic fracturing and the impacts this may have on the carbon neutrality target for 2038. This also include consideration of the current and future energy mix for GM. Policy JP-S 2 updated to make additional reference to this and provide additional justification for the policy position.
- Additional evidence has been completed by Currie and Brown/Centre for Sustainable Energy in relation to net zero carbon development (pathway approach, compliance with building regulations, costs, metrics and implementation). Policy JP-S 2 updated to make additional reference to this.
- The definition of Carbon Neutrality for Greater Manchester was established by the Tyndall Centre Research '*Quantifying the Implications of the Paris Agreement for Greater Manchester*', this has been referenced. Additional amendments have been made to Policy JPS-2 to explain what is meant by Net Zero Carbon for new development.
- Policy JPS-3 makes reference to low carbon heat and energy systems.
- Policy JPS-3 has been updated with further clarification provided on the '*presumption in favour*'.
- NPPF Paragraph 57 advises that it is up to the applicant to demonstrate whether particular circumstances justify the need for a viability assessment at the application stage. This is also embedded within the approach for Policy JPS-3.
- The policy wording within JPS-3 is considered flexible enough to allow a varied approach to low carbon heat and energy master planning, including consideration of technical and economic viability.
- Policy JPS-7 has been amended to encourage sustainable design and construction methods in new development and reducing the potential impacts

of new development on air quality are addressed in Policy GMS-6 through a variety of measures.

- Outside of the PfE Plan, Transport for Greater Manchester have developed a 2040 Transport Strategy which focuses on the critical long-term challenges such as a rapidly growing and ageing population and climate change. It sets out long-term proposals to create a cleaner, greener, more prosperous city region through better connections and simpler travel.

# 5 Summary of the Integrated Assessment

- 5.1 An Integrated Assessment (IA) was commissioned to support the PfE Plan. The Integrated Assessment is a key component of the evidence base, ensuring that sustainability, environmental, equality and health issues are addressed during its preparation. The Integrated Assessment combines the requirements and processes of the Sustainability Appraisal, Strategic Environmental Assessment, Equality Impact Assessment and the Health Impact Assessment into one document (the Habitat Regulation Assessment of the Plan was completed separately by GMEU). The Integrated Assessment carries out an assessment of draft policies by testing the potential impacts, and consideration of alternatives are against the plan's objectives and policies. This ensures that the potential impacts from the plan on the aim of achieving sustainable development are considered, in terms of the impacts, and that adequate mitigation and monitoring mechanisms are implemented.
- 5.2 The Integrated Assessment framework is made up of a series of IA objectives and assessment criteria which have been developed specifically for the PfE Plan. The IA Framework is used to identify the likely social, economic and environmental effects and guide mitigation and policy development. Using assessment criteria to appraise policies and sites helps the assessor to arrive at a conclusion about potential impacts in a methodical and consistent manner and helps stakeholders to understand the reasoning behind the assessment.
- 5.3 The two main policies which relate to carbon and energy are JP-S 2 (Carbon and Energy) and JP-S 3 Heat and (Energy Networks). The summaries below, copied from the Integrated Assessment, identify how the policies have been amended or not as a result of the Integrated Assessment appraisals.

## **JP-S 2 – Carbon and Energy (Formerly GMS-2)**

- 5.4 The policy aims to support the delivery of a carbon neutral Greater Manchester no later than 2038 through a range of measures which contribute to reducing greenhouse gas emissions.

### **2019 IA – recommended enhancement and mitigation**

- 5.5 There was limited mitigation and enhancement required for this policy. However more explicit reference to deprivation and disparity within the policy could support objective 4. The multifunctional and multibeneficial nature of carbon sequestration sites could also be explained. For objective 18 specifically, a reference could be made to the sustainable use of physical resources, movement up the waste hierarchy and reduced waste generation.

### **2020 updated position**

- 5.6 In response, GMCA considered no amendments were necessary as these issues were covered elsewhere (namely JP-P 1 Sustainable Places, JP-G 2 Green Infrastructure and JP-S 7 Resource Efficiency).
- 5.7 There are a number of positive synergies with the IA objectives including objective 1 as it aims to adopt a sustainable pattern of development that will reduce commuting distances ensuring housing and employment land is well connected. Similarly, the policy also supports objectives 2 and 3 as adopting a sustainable pattern of development will make efficient use of land in accessible locations and enhance transport and utilities to support development. This directive further ensures equality of opportunity and access to facilities and infrastructure therefore aligning with objective 4. IA objective 9 is also well supported by the policy as it promotes sustainable modes of transport by maximising the ability to travel by walking, cycling and low-emission public transport. Linking to this objective, the policy also aligns with

objective 10 as sustainable travel should help to improve air quality whilst also maximising the environmental benefits of development.

5.8 The policy also supports IA objective 11 as it will conserve and enhance biodiversity and geodiversity assets by restoring peat-based habitats, managing woodland and planting trees. There is significant crossover with objective 15 as the policy aims to deliver a range of measures to increase energy efficiency and reduce greenhouse gas emissions by taking a positive approach to renewable and low carbon energy schemes. Similarly, the policy also supports objective 18 which refers to energy consumption as it aims to follow an energy hierarchy to further reduce emissions and wasted energy. Reducing the amount of carbon emitted across Great Manchester will therefore enhance the climate resilience of communities and developments and therefore also supports objective 12. The policy also has strong synergy with objective 17 criteria as it ensures land resources are used in an efficient manner through promoting the retrofitting of existing buildings to improve energy efficiency.

### **JP-S 3 – Heat and Energy Networks (Formerly GM-S3)**

5.9 The policy aims to encourage the provision of decentralised energy infrastructure to enable low carbon growth, carbon reductions and an increase in local energy generation across Greater Manchester.

#### **2019 – recommended enhancement and mitigation**

5.10 The policy could be strengthened by further links to objective 2 and 8 through ensuring that there is education and training available in the field of heat and energy networks so there are skilled workers to take on this work.

## 2020 updated position

- 5.11 No amendments were considered necessary as GMCA note that this mitigation was covered elsewhere, namely JP-P4 Skills and Knowledge.
- 5.12 The policy has synergies with objective 1 as it has a direct link with supporting improvements in the energy efficiency and resilience of the housing stock by setting out energy requirements for new dwellings. The policy also links to objective 2 as it sets out distances to ensure that future employment land is well connected to heat networks and required infrastructure.
- 5.13 In relation to objective 3 which ensures sufficient coverage and capacity of infrastructure, the policy is focused on the provision of energy infrastructure to support future development. The IA It anticipates that the policy will have an impact on air quality as set out in objective 10 as the policy states that all decentralised heat and energy networks must be accompanied by information on the impacts of the proposals on local air quality. However, it notes that it is not clear if this will have a positive or negative influence.
- 5.14 The policy also has synergies with objective 12 which encourages resilience against climate change, as increasing the use of heat networks would support aims towards carbon reductions and indirectly support climate change targets. Finally, the policy has direct links to objective 15 which supports increased energy efficiency, low carbon generation and reduced greenhouse gas emissions. This is engrained throughout the policy and as such has strong links to this objective.



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