

# Setting a Pathway for ‘Net Zero Carbon’ in New Development by 2028

The Greater Manchester Spatial Framework Evidence Base

Green City Region Partnership Board  
24<sup>th</sup> July 2020

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# Policy and Legal Context

## National:

- Climate Change Act 2008 (Amended 2019: Net Zero GH Gas reduction by 2050)
- Planning and Energy Act 2008 (*provision to set higher standards remains!*)
- Written Ministerial Statement (2015) (update on building regs)
- Paris Agreement 2015
- Industrial Strategy (2017)
- NPPF 2019 (Para 148)
- Climate Emergency (2019)

## Local:

- First Green Summit 2018, commitment to be carbon neutral by 2038 and all new development net zero by 2028
- Draft GMSF Policy (Jan 2019)
- 5 Year Environment Plan Launched at second Green Summit (2019)
- All 10 districts and the GMCA have declared a Climate Emergency (2020)

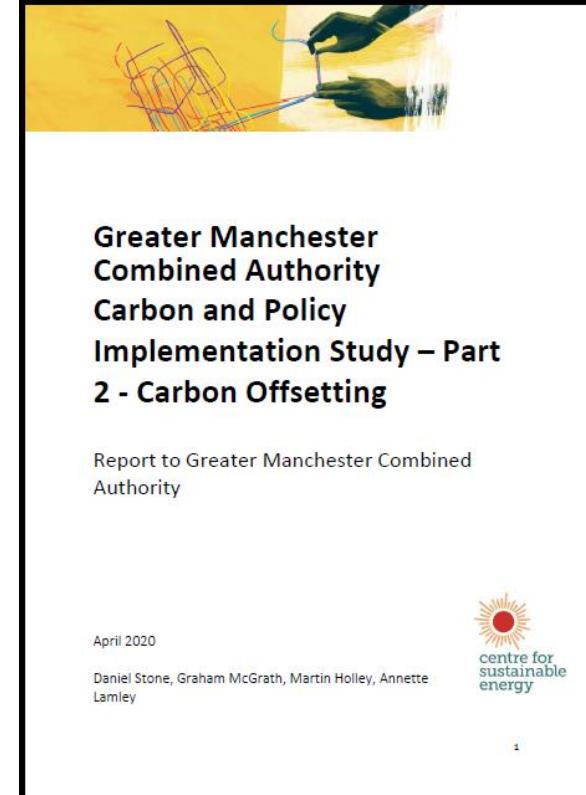
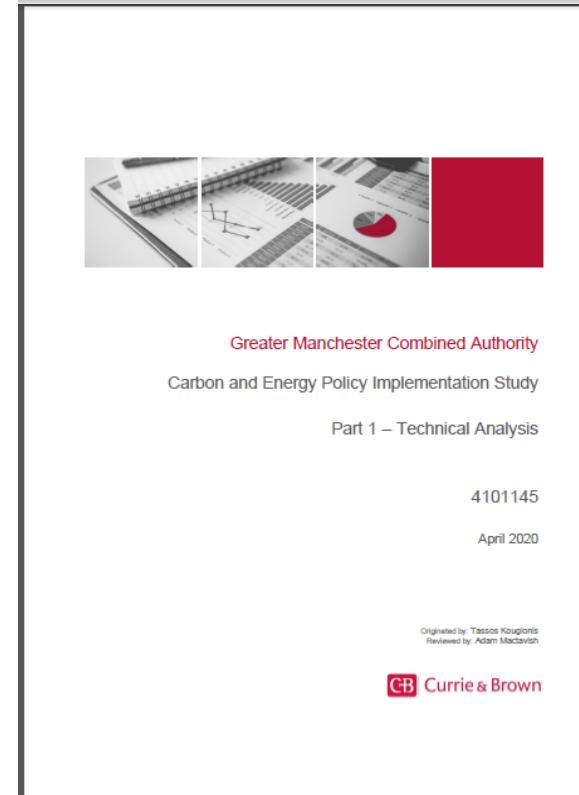
<https://www.ukgbc.org/ukgbc-work/sustainability-standards-new-homes/>



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# Achieving Net Zero by 2028 – Guiding Principles

- *What do we mean by Net Zero?*
- *What does the pathway to Net Zero look like in policy terms? (GMSF baseline of 19% Part L)*
- *How do we ensure a fabric first approach?*
- *What role will renewable and low carbon technologies play?*
- *How will it relate to recent proposed changes in Building Regulations?*
- *What are the costs to achieving higher standards?*
- *Will carbon offsetting be required?*



# What is Net Zero Carbon?

## Current Implementation Study

Currie & Brown, 2019

### Operational Energy Use – Definitions

#### Regulated energy demand:

As calculated for compliance with the building regulations.  
Includes energy used for heating, hot water, installed services and lighting

#### Unregulated energy demand (report context):

In the case of residential buildings this includes the energy used by the occupant during the operation of the house for everyday needs such as computer/phone charging, refrigerators, washing machines etc.

In the case of commercial buildings this refers to small power (includes computers, server, and on-board specialist medical equipment and other)

#### Net zero carbon – construction (1.1):

*"When the amount of carbon emissions associated with a building's product and construction stages up to practical completion is zero or negative, through the use of offsets or the net export of on-site renewable energy."*

#### Net zero carbon – operational energy (1.2):

*"When the amount of carbon emissions associated with the building's operational energy on an annual basis is zero or negative. A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources, with any remaining carbon balance offset."*

## UK-GBC

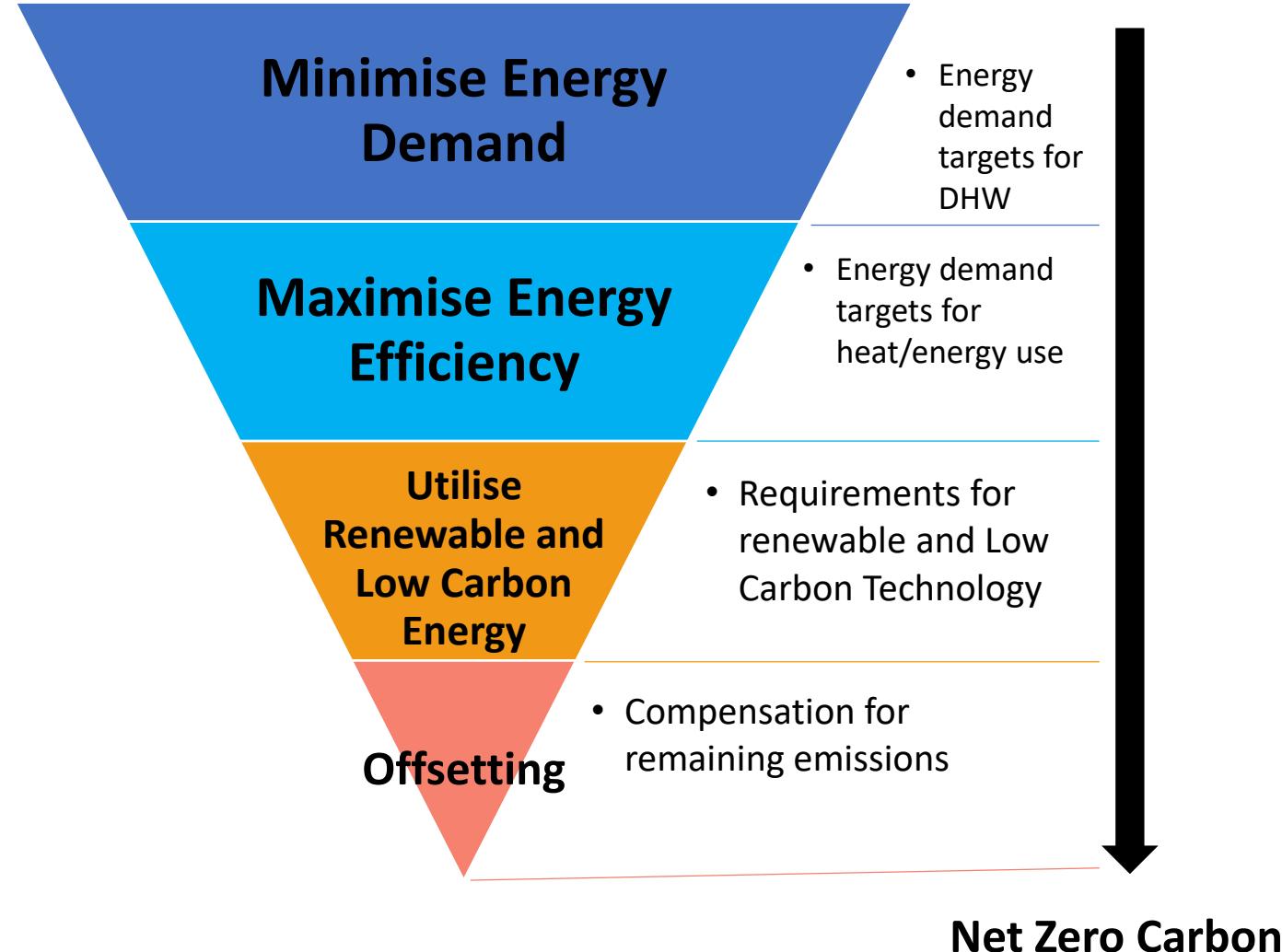
*Net Zero Carbon Buildings:  
A Framework Definition, 2019*

#### Net zero carbon – operational energy is defined as:

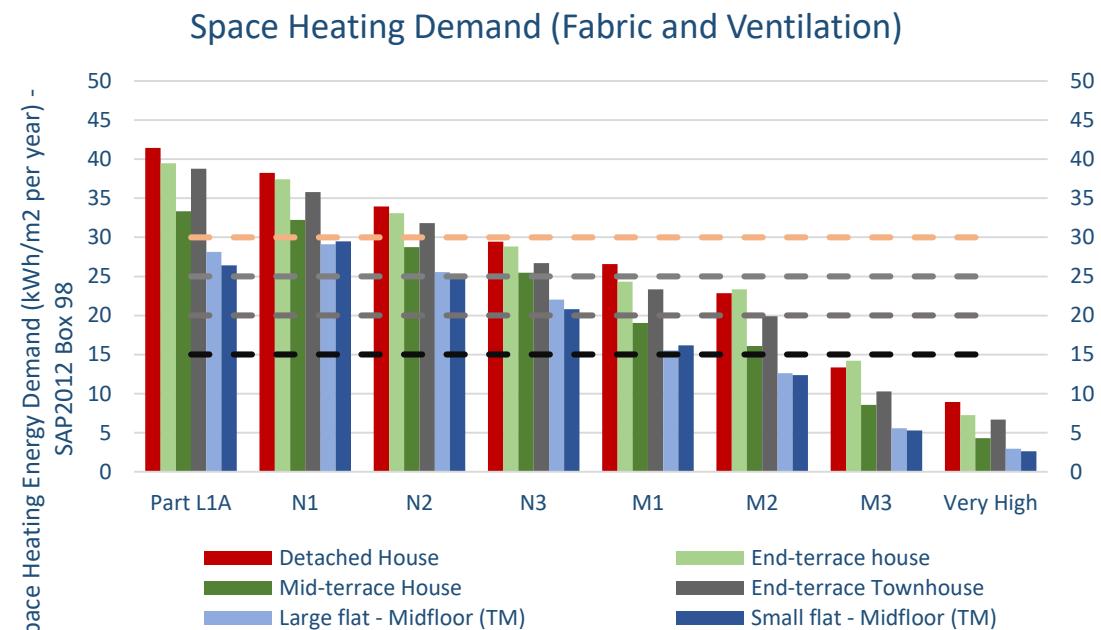
*"When the amount of carbon emissions associated with the building's operational energy on an annual basis is zero or negative. A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources, with any remaining carbon balance offset."*

# Policy Principles for Net Zero Carbon

- *Adopt a fabric first approach (energy hierarchy)*
- *Energy demand and carbon emissions should be treated together. It shouldn't just be about CO<sub>2</sub> reductions!*
- *Alignment with building regulations*
- *Post occupancy evaluation and the performance gap*
- *RE targets should focus on generation not energy demand associated with carbon (e.g. PV as % of floor space)*
- *Affordability*
- *Non domestic and use of BREEAM*



# Costs of achieving Net Zero Carbon



## Domestic Archetype costs (Fabric Only)

Model	Stage 1 <30kWh/m <sup>2</sup> Houses <25kWh/m <sup>2</sup> Flats		Stage 2 <20kWh/m <sup>2</sup> Houses <15kWh/m <sup>2</sup> Flats	
	Nat. Vent	MVHR	Nat. Vent	MVHR
Detached	£4,900	£2,600	-	£6,200*
End-terrace	£3,300	£1,900	-	£4,400*
Mid-Terrace	£1,700	£2,100*	-	£2,100
Townhouse	£3,000	£1,500*	-	£2,900
1B Flat	£800	£1,000*	-	£1,000
2B Flat	£1,250	£1,100*	-	£1,150*

\* Meets lower heating energy demand targets – see graph

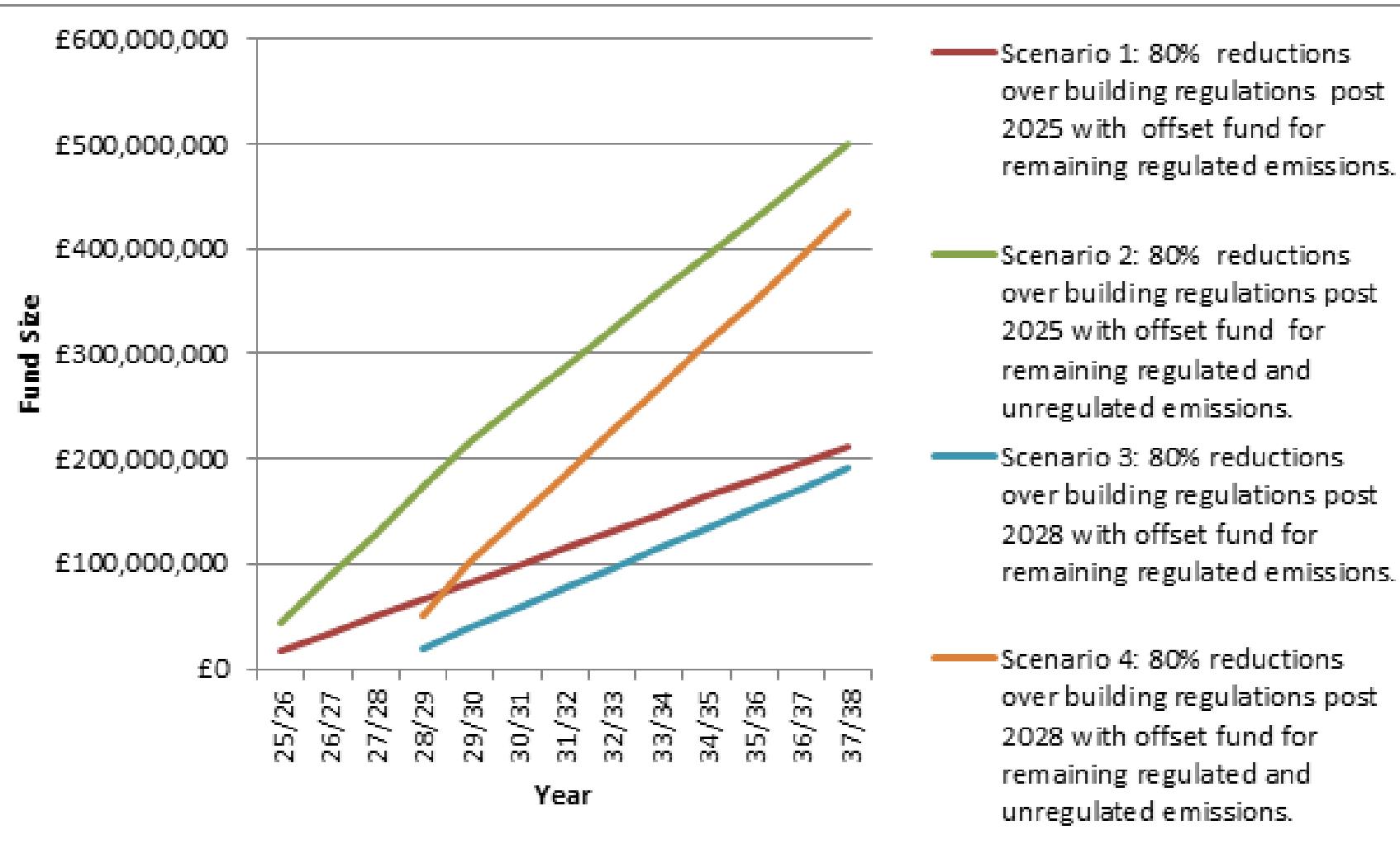
- Meeting the highest modelled fabric standard and including 1.25 kWp of PV and both Wastewater Heat Recycling/Air Source Heat Pump technology does not increase the construction costs in any of the models by more than 6%.
- In absolute terms, meeting the 'Very High' standard at the detached archetype new domestic model was the most expensive uplift, with additional construction costs of around £9000 predicted (excluding installation of PV)

## Non-Domestic costs

Standards	Achieves	Cost
Energy Efficiency	Minimum carbon reduction of 15%	<2%
BREEAM	BREEAM Excellent rating	1-2%
Total	<2-4%	

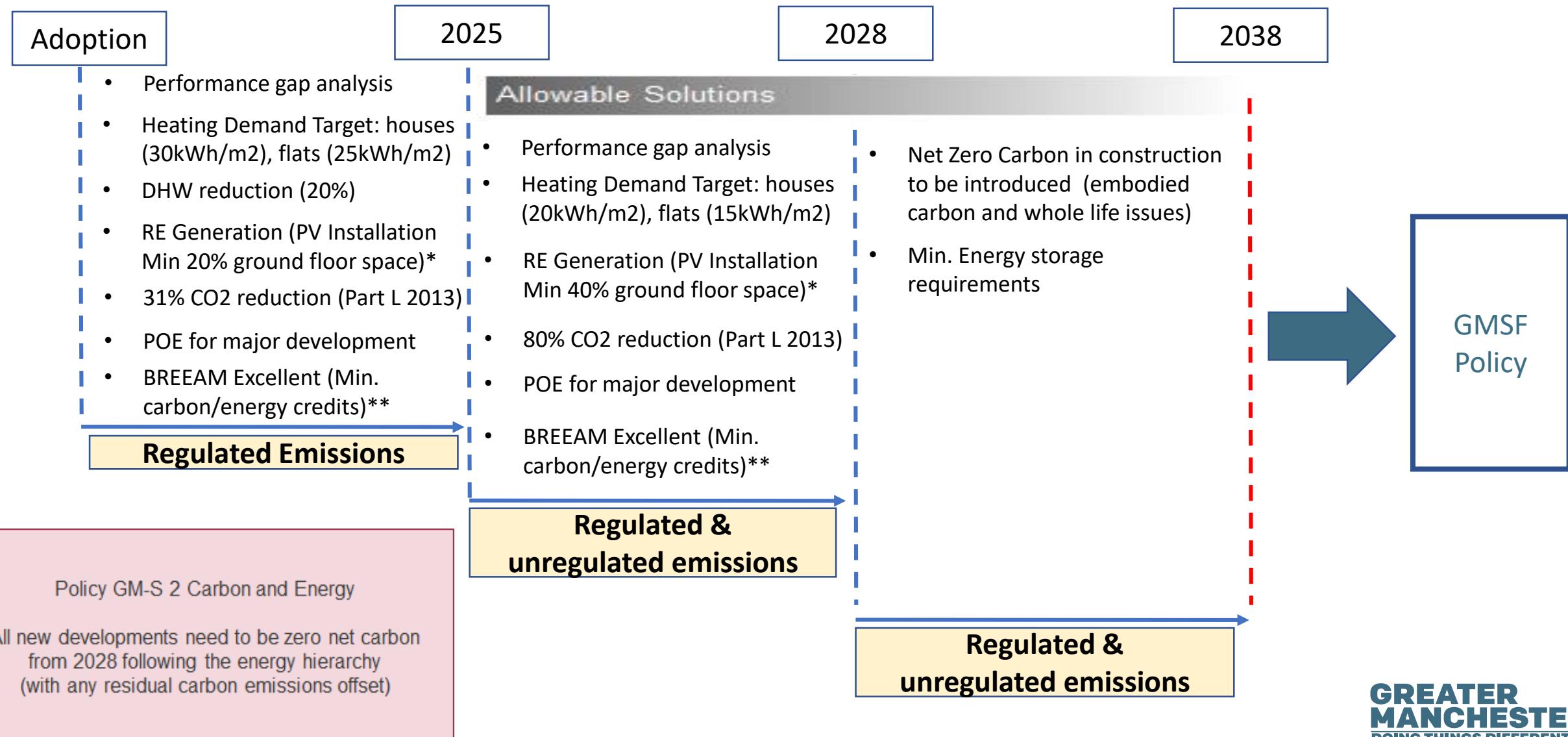
The additional cost of BREEAM Excellent certification may be a 1-2% for measures not associated with delivering energy requirements. In many buildings this additional cost could be under 1% subject to its location, the base design and experience of the design and construction team.

# Carbon Offsetting



- *The approach provides a way to offset reductions not achieved in development*
- ***It is the last resort!***
- *GM Carbon Price should be greater than HMT Green Book to meet 2038 commitment (2025: £200, 2028: £234)*
- *Verification and monitoring is critical.*
- *Alignment with the GM Environment Fund*

# The Net Zero Carbon Pathway



# Key considerations

- *Legal challenges and future proofing*
- *How do we cover the more technical detail of the policy requirements? District guidance vs GM wide?*
- *Post occupancy monitoring: should we follow the London approach for central reporting?*
- *Further work needed for carbon offsetting and linking up to the Environment Fund (Carbon price, assessment criteria, monitoring and evaluation)*
- *Skills and resources to check sustainability statements, s106 agreements? District or central resource?*