



Why do we need net zero carbon local plan policy, and how can it be done?

1. Introductions

Agenda

1. Introduction to presenters
2. Why do we need local plan policies for net zero carbon development?
3. How can a local plan act on net zero carbon buildings?

About Bioregional

25+ years working with partners to create solutions to sustainability



Background

Bioregional (sustainability non-profit)

- Lewis Knight BSc MSc PIEMA
 - Head of Sustainable Places Team
- Marina Goodyear BA MSc
 - Project Manager, Sustainable Places Team

Collaborators on our net zero carbon planning policy work

- Etude – engineering consultancy with specialist Passivhaus expertise; works with LETI & others
- Currie & Brown – quantity surveying with experience in costing net zero carbon builds
- Mode – transport consultants
- Edgars – planning consultancy

Thanks & acknowledgement to

- RTPi
- TCPA
- ClientEarth
- LETI
- UKGBC

Our recent work in net zero carbon local plan policy

On what recent experience do we draw?

West Berkshire, and Cherwell 2022

- Local Plan updates
 - Net zero carbon policy support
 - Duties & needs for net zero carbon policy
 - Powers to address net zero
 - Precedents
 - Range of potential policy components

Greater Cambridge 2020 – present

- Full local plan from earliest stages (Reg 18 consultation later in 2022)
- Full evidence base for net zero carbon:
 - Definition & planning powers
 - Analysis of spatial growth options (buildings + transport)
 - Carbon reduction targets linked to climate science & law
 - Draft policy wording
 - Feasibility + costs of NZC builds
 - Offsetting advice
 - Stakeholder engagement
 - Worked with engineers Etude.

Central Lincolnshire 2020 - present

- Local Plan Review (incl. spatial)
- As per Greater Cambridge but with additional elements:
 - Carbon sequestration value of green infrastructure (peat)
 - Infrastructure requirements (electricity + transport)
 - Decentralised energy
 - Monitoring framework for policies (ongoing)

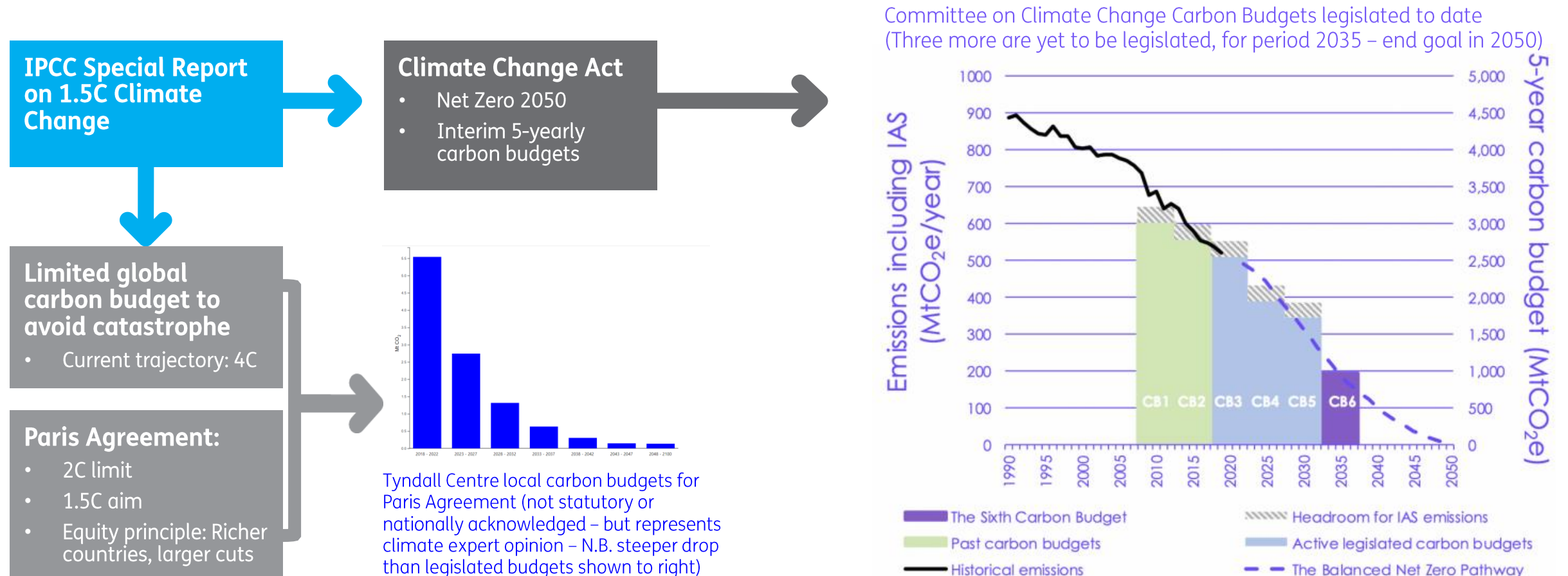
Warwick 2021 - present

- Net Zero Carbon Buildings DPD (development plan document)
- Reg 18 + 19 consultation responses
- Redrafted policy in response to consultation
- Collated further evidence (effective policy; viability)
- Working with Edgars planning consultancy
- Now at Reg 19 consultation.

2. Why do we need plan policy for net zero carbon development?

Why we need net zero carbon local plan policy

Not just net zero 2050 – but also reductions in the meantime



Why we need net zero carbon local plan policy

Duties and mandates

Global science & agreements

IPCC Special Report on 1.5C Climate Change

Limited global carbon budget to avoid catastrophe

- Current trajectory: 4C
- Already happened: 1C

Paris Agreement:

- 2C limit
- 1.5C aim
- Equity principle: Richer countries, larger cuts

UK climate legislation

Climate Change Act 2008 (& 2019)

- Net Zero 2050
- Interim 5-yearly carbon budgets

Committee on Climate Change pathways to net zero

- Low carbon heat 2025
- Space heat demand 15-20kWh/m²/yr
- Upscale renewables
- Transport – less car use; electrification
- Agriculture & aviation will need offsets

UK planning law & guidance

Planning & Compulsory Purchase Act 2004

“must ... contribute to mitigation of ... climate change”

National Planning Policy Framework

“support the transition to a low carbon future”

“contribute to radical reductions in GHGs”

“proactive approach in line with Climate Change Act”

“increase use & supply of renewable and low-carbon energy”

Gaps in national regulation

Building regulations does not deliver net zero carbon buildings or low-enough space heat demand (not even the Future Homes Standard)

Transport emissions remain stubbornly stable; insufficient regulatory or market incentives

No national offsetting mechanism

Why we need net zero carbon local plan policy

Sectoral changes needed for carbon budgets (Committee on Climate Change)

New homes

- **Not connected to gas grid** from 2025 at the latest
- **Use low-carbon heat** (heat pumps or gas-free networks)
- **Space heat demand 15-20kWh/m²/year**
 - (60-70% less than Part L 2013)
- Ideally zero carbon

Existing buildings & energy system

- Accelerate / scale-up rollout of low carbon heat:
 - **3.3. million heat pumps into existing homes** by 2030
 - Expansion of low carbon heat networks in 2020s
 - **Limited role for grid hydrogen in some locations** after 2030
- Accelerate fabric retrofit
- **No installation of fossil fuel boilers from 2033**
- **Fully decarbonise electricity grid by 2035** (2050: 80% renewables / 20% nuclear)

Transport

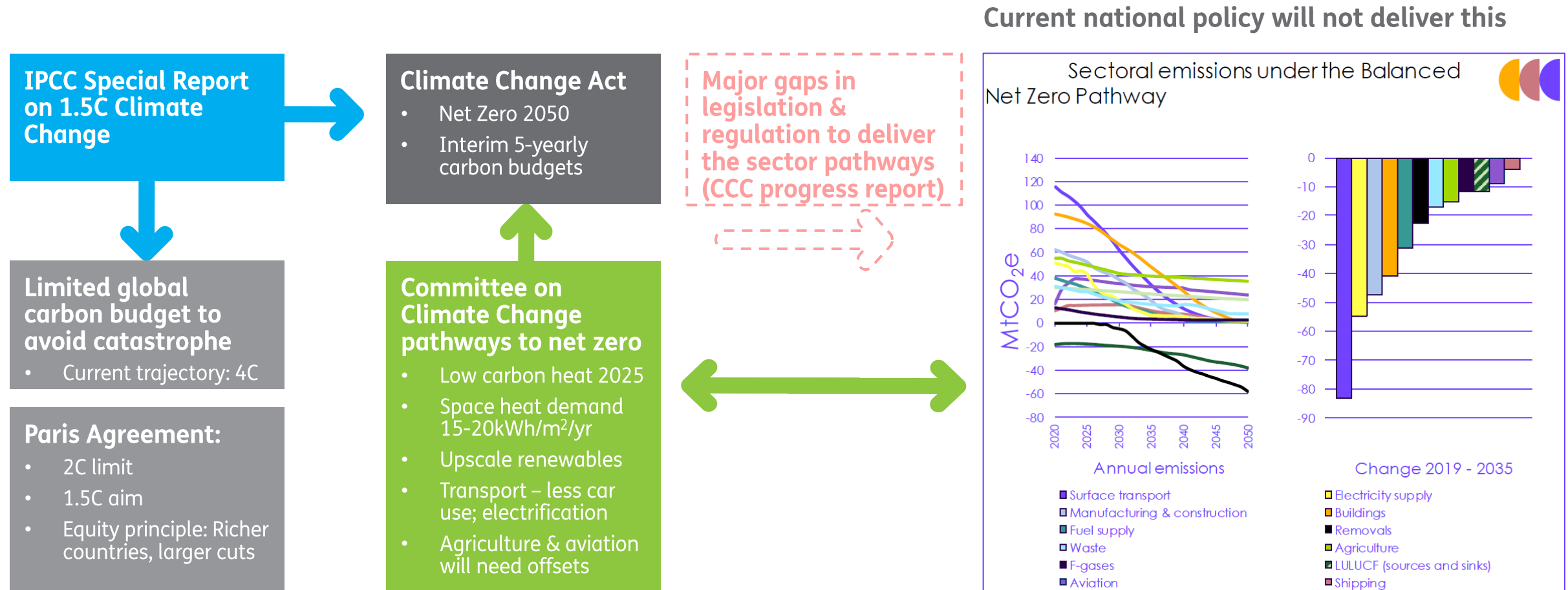
- **Reduce mileage by cars**
- New cars/vans all EV from 2032
- **Not invest in road capacity** unless proven how the road will support the UK's pathway to net zero

Land use

- Increase woodland cover to 18% (today: 13%)
- Restore peatlands.

Why we need net zero carbon local plan policy

What carbon reductions do we need in each sector to meet the carbon budgets?



Targets set by Part L of Building Regulations

Requirements

TFEE: Target Fabric Energy Efficiency

- kWh/m²/year
- Space heat demand (albeit inaccurate)

TPER: Target Primary Energy Rate (new, 2021)

- kWh/m²/year
- Depends on type of fuel
- Fixed energy use only; ignores plug-in devices

TER: Target Emissions Rate

- kilogrammes CO₂/m²/year
- Fuel + efficiency + renewables
- Fixed energy use only; ignores plug-in devices

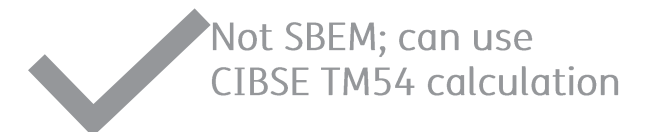
“Energy forecasting” (new, L 2021)

- All metered energy uses, not just fixed ones
- For buildings over 1,000m² GIA

Residential

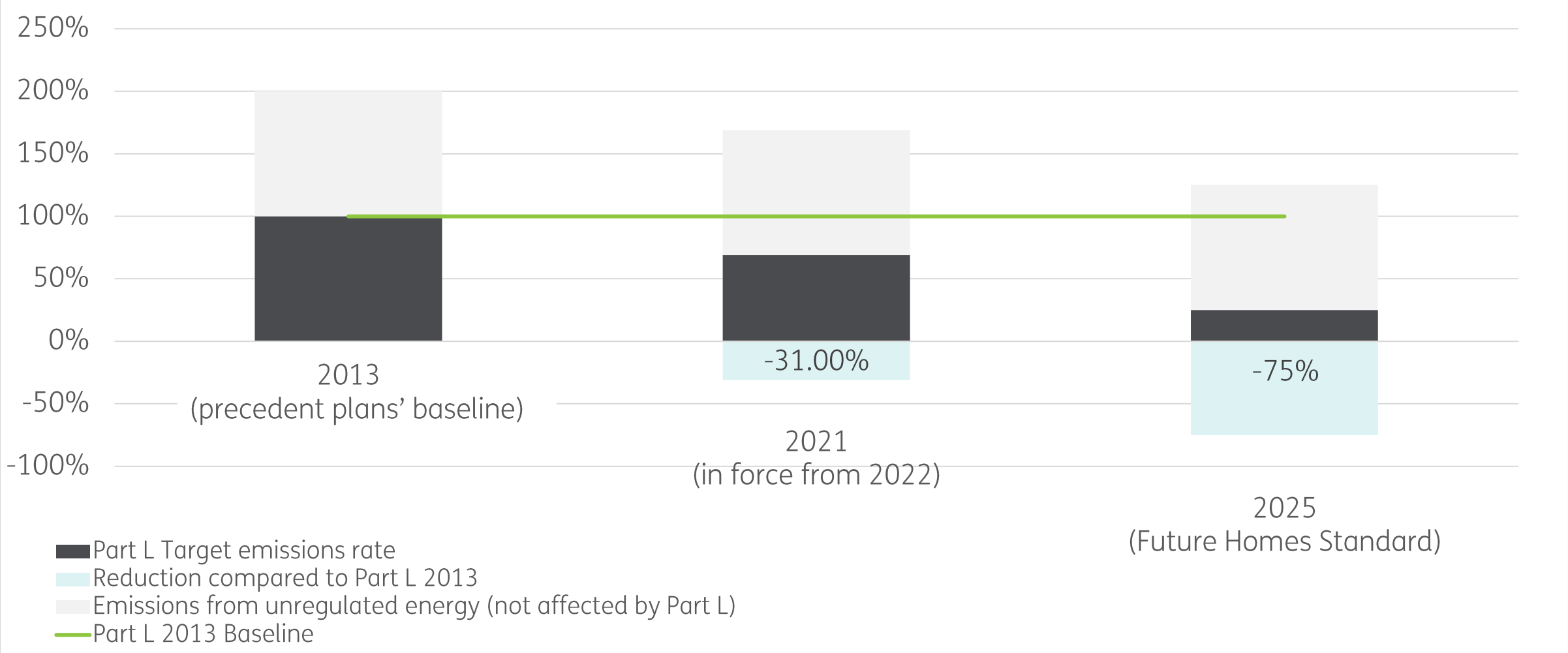


Non-residential



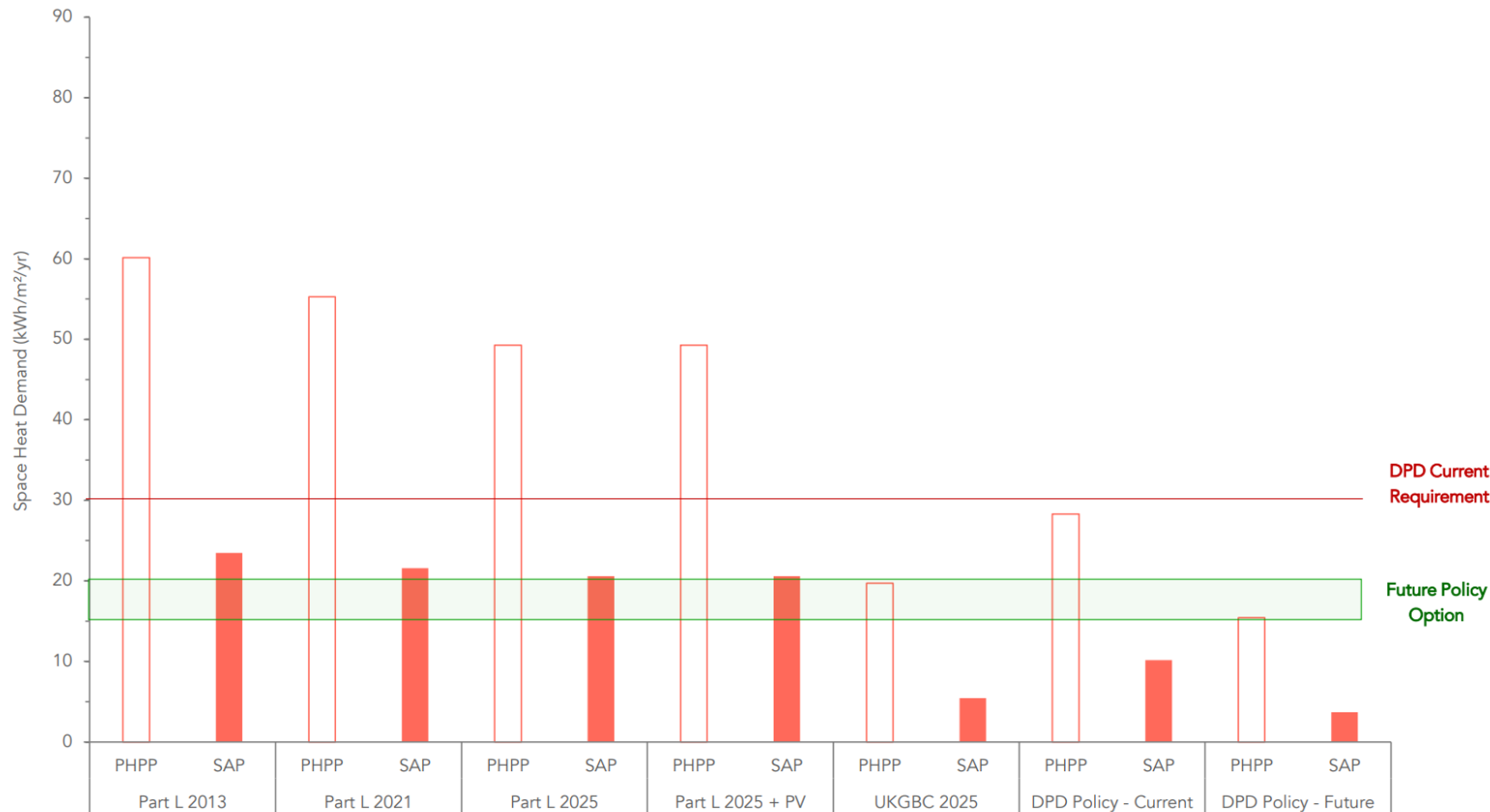
Building Regulations Part L Target Emissions Rate

Note: This is TER for residential, before considering the energy performance gap



Defining net zero carbon

Why should buildings and policies need other calculations than Part L?



Even for space heat demand – a regulated use of energy – SAP dramatically underestimates the building’s actual performance

- Graph credit: Etude, 2021. ([Link](#))
- Produced to help Cornwall Council decide between policy options for detailed building performance targets
- Graph is for a semi-detached house
- PHPP modelling (which has been proven accurate) is shown alongside SAP calculation

3. How can a local plan act on net zero carbon buildings?

How can a local plan act on net zero buildings?

Powers

Planning & Energy Act 2008

Can set “reasonable” local requirements for:

- “Energy efficiency standards” that exceed those of building regs
- “a proportion of energy used ... to be from low-carbon or renewable sources in the locality of the development”

Town & Country Planning Act 1990

S106 Planning Obligations

- Used in several precedents to deliver carbon offsetting.

Local Development Orders

- Can bring forward renewables, low carbon energy networks, existing building energy efficiency retrofit

National Planning Policy Framework (2021)

Location, orientation & design of new development

Positive strategy for renewable energy (do not require demonstration of need for this energy)

Positive strategy for conservation of historic environment, including “viable uses consistent with conservation”

Planning Practice Guidance

Reduce need to travel; sust transport

Create opportunities for renewables ≤50MW

Promote low-carbon energy efficient design in new buildings

(unrestricted in non-residential)

Identify measures via local data; future trends; spatial tests; sectoral differences

How can a local plan act on net zero buildings?

Potential Constraints

Planning & Energy Act 2008

- **‘Energy efficiency standards’** means standards that are ‘referred to ... set out or endorsed’ by Sec of State (laws, regulation, policy statements)
- **Probably means Part L calculation methods**
- ‘Not inconsistent’ with relevant national policy
- Now being tested by emerging plans

Written Ministerial Statement (WMS) 2015

- Local requirements for carbon reductions are expected to be no more than Code for Sust Homes Level 4** (-19% vs Part L 2013)
- BUT: exceeded by London, Reading, Milton Keynes, and new Part L 2021
 - AND: Statement made in relation to legislation that was never enacted
 - AND: Subsequent policy statements contradict the WMS.

NPPF (2021)

Building sustainability requirements should “reflect the Government’s policy for national technical standards”

S106 obligations: necessary, directly related, proportional

Feasibility and viability are valid reasons to not comply with local requirements for decentralised energy

Planning Practice Guidance

Repeats (obsolete) 2015 WMS re Code for Sust Homes

Repeats NPPF re ‘national technical standards’

Local standards should:

- **Be based on robust credible evidence**
- **Pay careful attention to viability**

Getting through inspection

The four tests of ‘soundness’ (NPPF 2021)

Plan should be positively prepared

- Responding to objectively assessed needs
- Delivering ‘sustainable development’

Plan should be justified

- Based on evidence
- Having considered reasonable alternatives

Plan should be effective

- Deliverable in the plan period
- Based on effective joint working on cross-boundary strategic matters

Plan should be consistent with national policy

- Enable delivery of ‘sustainable development’
- In accordance with suite of NPPF policies
- In accordance with other statements of national planning policy, where relevant

How can a local plan act on net zero buildings?

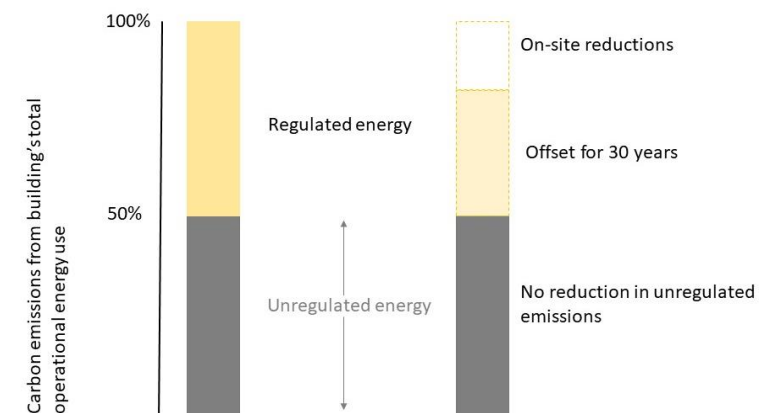
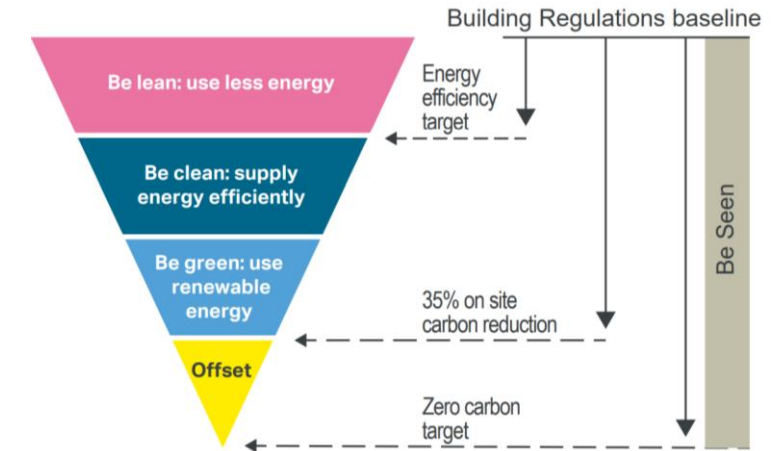
A few adopted precedents – net zero and energy hierarchy

London, Reading, Milton Keynes

- Require 35-40% percentage reduction on the Part L Target Emission Rate (TER)
- Apply energy hierarchy:
 1. Energy demand reductions to deliver 10-19% TER reduction
 2. Clean & efficient energy supply (e.g. heat networks if available)
 3. Renewables.
- Offset remaining Part L carbon:
 - First year CO₂ x £90/tonne x 3years)
 - OR £200/tonne x 1 year
- Offset fund ringfenced for local projects, BUT:
 - *Administrative burden*
 - *Sometimes unspent / returned*
 - *Offset price is outdated (old BEIS value)*

The 'energy hierarchy' pyramid means that **offsetting should be the last and smallest step.**

In reality, these policies allow the largest part of the reductions to be achieved through offsetting – and usually do not cover unregulated carbon.



How can a local plan act on net zero buildings?

A few adopted precedents – renewables

Merton

- “Merton Rule”
- 10% of energy needs to be supplied via on-site renewable generation
- Adopted by many other local plans since Merton’s pioneer policy

Milton Keynes

- 20% reduction in Part L Target Emissions Rate to be achieved by renewable energy measures (major developments only)
 - *after* the initial reduction of 19% has been achieved through energy efficiency / energy supply measures
 - Renewable energy measures can be on-site, or local renewable networks.
- Target based what is already achievable – revealed by analysis of energy statements submitted in previous years.

Sutton

- 20% reduction in Part L Target Emissions Rate to be achieved by renewable energy measures, in major developments

Swindon (standalone renewables)

- Used Local Development Orders to promote growth of renewable energy generation
- Specifically: identifying specific sites for solar arrays
 - Began with ‘call for sites’
 - Sites assessed against various criteria
- This LDO de-risks the process of developing renewables.

[This is a separate topic from net zero carbon individual buildings – but is relevant to the district’s wider net zero carbon transition]

How far can we go beyond the precedents?

Sticking within Planning & Energy Act powers

Planning & Energy Act 2008

- **“Energy efficiency standards”**
means standards that are “set out or endorsed” by Sec of State (probably means Part L metrics)
- “a proportion of energy used ... to be from low-carbon or renewable sources in the locality of the development”

Metrics to use as ‘levers’

Homes regulated energy & carbon (SAP)

- TFEE (fabric efficiency)
- TPER (primary energy)
- TER (carbon emissions)

Non-residential regulated energy & carbon (SBEM)

- TPER (primary energy)
- TER (carbon emissions)

Renewables to meet TOTAL energy use, incl. unregulated:

- Homes: BREDEM or Part L Appendix L
- Other builds: CIBSE TM54

Section 106 offsets to deliver any remaining carbon savings or renewable energy that is unfeasible/unviable to deliver on site

Going the extra mile

Alternative metrics – riskier for planning, but more effective

Absolute energy & carbon targets using PHPP or TM54

- Space heat demand
- Energy Use Intensity target (set low enough to rule out gas boilers)
- Renewables to match 100% of onsite energy use across course of a year

Assessing risks & developing potential policies

Mismatch between duties/needs, and planning powers to fulfil them

Climate	Occupiers / users of building	Infrastructure & sectoral readiness	Planning acceptability
<ul style="list-style-type: none">• Carbon budgets & net zero goal• Necessary sectoral changes• Is the carbon responsibility proactively accepted, shirked, passed on, or postponed?• Opportunities grasped or missed	<ul style="list-style-type: none">• Energy bills• Future retrofit: costs; disruption	<ul style="list-style-type: none">• Electrical grid• Technical feasibility• Materials availability• Skills availability	<ul style="list-style-type: none">• Viability• Compatibility with national technical standards (current & incoming e.g. Part L 2025)• Compatibility with national strategy / formally stated future policy direction• Explicitly granted powers• Explicitly stated restrictions• Adopted precedent plans

In our recent work with local planning authorities, we have created and used a “risk matrix” to assess the relative merits of various different policy options against the range of topics shown here.

Four examples of potential policy approaches

Adopted & emerging local plan policy precedents

1. Well-established precedent: London; Milton Keynes; Oxford

- 35-50% reduction on the Target Emissions Rate set by Part L 2013
- 5-15% of this reduction to be via energy efficiency measures
- 10% of Part L energy use to be met with renewables
- Offset 30 years of Part L emissions via S106, £60-90/tonne
- Not always much improvement on Part L 2021 (-31% vs 2013)
- No absolute targets. Offset price may not be sufficient to fund local carbon reduction projects.

2. Accelerating future stated national policy (FHS)

- Targets set to reflect Future Homes Standard (all Part L calcs):
 - 10% improvement on Part L 2021 fabric efficiency (TFEE)
 - 75% reduction on Part L 2013 Emissions Rate (TER)
- Recalculate SAP on completion with input from surveys
- Onsite renewables as far as feasible & viable
- Offset 30 years' Part L emissions at national carbon £value; calculation to reflect electricity grid changes – spend locally
- Cost impact info available ✓

3. Acceleration+

- Targets for energy efficiency and carbon using Part L calcs:
 - Regulated energy use intensity (kWh/m²/year; to be set)
 - Space heat demand 15-20kWh/m²/year
 - 75% reduction on Part L Target Emissions Rate (TER) before PV solar panels
- Energy performance gap process
- PV to match regulated energy use onsite/nearsite, unless unfeasible
- Offset as per approach 3 but also including unregulated carbon; to spend mainly on local renewables
- Cost info available ✓

4. Cutting edge (Greater Cambridge; Central Lincs)

- Space heat demand target of 15-20kWh/m²/year
- Energy use intensity target of 35kWh/m²/year (homes) or 55-70kWh/m²/year (others)
- PV to match annual energy use
- All calculations PHPP or TM54
- Energy performance gap process
- Offset only via renewable energy
- Much more technically effective
- Higher planning risk (non national metrics); needs evidence on feasibility / cost; requires scarce energy specialist skills.

5. Discussion points

Discussion points raised with our recent local authority partners

What planning submission information would officers be comfortable with processing – now or with training?

- Energy statements?
- Part L SAP/SBEM calculations?
- PHPP/TM54 calculations, or other unregulated energy calculation?
- Documentation to demonstrate that the energy performance gap has been mitigated?
- Offset calculations – static, or declining over time?
- Post-occupation energy monitoring?
- Studies proving non-feasibility?
- Embodied/whole-life carbon?

Offsetting: what are the opportunities and caveats?

- Setup & admin of fund?
- Identifying fundable projects?
- Collaborate or mutually learn with other local planning areas that have similar requirement?
- In future: potentially pool resources for efficiency?

Value of ‘informational’ planning requirements (as opposed to ‘target’ compliance)

- Do officers see the value in gathering information for the purpose of future target setting and as a developer education exercise? Such as:
 - PHPP / TM54 energy calculations without a target to hit
 - In-use energy monitoring data
 - Embodied carbon calculations

How far are we willing to push the boundaries – and which ‘risks’ do we prioritise?

- Energy and carbon calculation methods – national standards (SAP / SBEM), or accurate ones?
- Legislated national carbon targets and building users’ bills/disruption?
- Viability & feasibility – do we need custom local assessments or are we willing to draw on others’?

Discussion points

Further questions?

Thank you

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