

#UKPHC19

The Buildings Mission 2030 and the Future Homes Standard

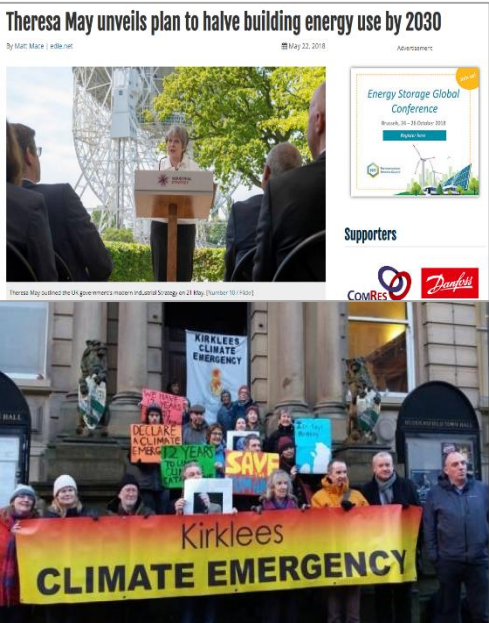
Lynne Sullivan OBE, RIBA
Chair of Good Homes Alliance
UK Green Construction Board and Taskgroup Chair



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Emerging Context for National Policy for the Built Environment

- UK Net Zero by 2050
- PMs Jodrell Bank commitment to halve all buildings energy use by 2030
- Core Cities, Smart Cities and Local Authorities' ambitions on decarbonisation and electric vehicles
- Requirement for Biodiversity Net Gain on developments
- APPG on Healthy Homes + Buildings; air quality statistics on effects such as cognitive impairment
- NHS England Healthy New Towns - the importance of public open space: greening/leisure
- Impact of Grenfell Inquiry and the Each Home Counts review on quality
- Impact of the hottest summer(s) to date; increasing extreme wet weather events
- National Design Quality Guidance; Building Better, Building Beautiful; Future Homes Consultation
- CCC's call to reduce industrial emissions and 'offshoring' of product and materials emissions
- Ambition to design out waste, design with less, and inculcate the circular economy



The biggest resource we don't use: Q&A with Amory Lovins, energy innovator

Amory Lovins (April 2019):

It's quite astonishing to me that most of the conversations, especially in this country, about decarbonization are 99 percent on the supply side, and almost all that electricity, whereas something like two-thirds or more of action is on the demand side.

Golden: How can we conquer that barrier?

Lovins: It's simple and unsatisfactory to say, just pay attention. There are some opinion leaders who could help with this by giving more attention to what's happening in efficiency and realizing that it's not static, it's highly dynamic, and the innovations are not only in technology but at least equally in design, business models and finance.

I don't see a coherent message emerging about the relative importance of efficiency and renewables. Obviously, we need both of them and they reinforce each other, but I think a casual observer might come away thinking that practically all the action is on the supply side, and it's not.



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Buildings Mission to halve energy use in NEW buildings by 2030

- Tackle demand reduction:
 - energy efficiency
 - systems efficiency
- Deliver real-life energy savings and emissions reduction
 - move to performance in use verification
 - acknowledge that previous regulated/unregulated split is an artificial one
















- Need more precision on starting point: understanding breakdown of total energy used at the meter
- Need more confidence in end result: actual outcomes in energy bills, indoor conditions



NB GCB's Report illustrates how halving newbuild emissions over today's performance is possible through energy and systems efficiencies ie to reduce demand



Buildings Mission to halve energy use in NEW buildings by 2030

6.1 Offices	6.2 Primary schools	6.3 Domestic
<p>National Energy Foundation, Milton Keynes Built in 2004 430 m² GIFA Total energy consumption 81 kWh/m² Improvement on typical 64%</p> 	<p>Rogiet Primary School Monmouthshire 1,660 m² GIFA Built in 2009 Total energy consumption 93 kWh/m² Improvement on typical 53%</p> 	<p>Rowner Renewal Phase 2 Hampshire 2 Blocks; 5 units (out of total 24) Total energy consumption 60 kWh/m² Improvement on typical 59%</p> 
<p>Canolfan Hyddgen, Macchynleth, Wales 400 m² GIFA Built in 2009 Total energy consumption 95 kWh/m² Improvement on typical 57%</p> 	<p>St Lukes CoE Primary School Wolverhampton 2,600 m² GIFA Built in 2009 Total energy consumption 99 kWh/m² Improvement on typical 49%</p> 	<p>Wimbish Essex 14 units Built in 2011 Total energy consumption 75 kWh/m² Improvement on typical 48%*</p> 
<p>Enterprise Centre Norwich 3,400 m² GIFA Built in 2015 Total energy consumption 70 kWh/m² Improvement on typical 68%</p> 	<p>Bushbury Hill Primary School Wolverhampton 1,808 m² GIFA Built in 2011 Total energy consumption 73 kWh/m² Improvement on typical 63%</p> 	<p>Lancaster cohousing Lancashire 41 units Built in 2012 Total energy consumption 61 kWh/m² Improvement on typical 59%</p> 
<p>Keynsham Civic Centre Bristol 6,365 m² GIFA Built in 2015 Total energy consumption 107 kWh/m² Improvement on typical 52%</p> 	<p>Montgomery Primary School Exeter 2,786 m² GIFA Built in 2012 Total energy consumption 60 kWh/m² Improvement on typical 69%</p> 	<p>Racecourse estate Durham 25 units Built in 2012 Total energy consumption 70 kWh/m² Improvement on typical 53%</p> 
<p>BSD Office Kettering 420 m² GIFA Built in 2017 Total energy consumption 104 kWh/m² Improvement on typical 54%</p> 	<p>Wilkinson Primary School Wolverhampton 2,610 m² GIFA Built in 2014 Total energy consumption 60 kWh/m² Improvement on typical 69%</p> 	<p>Lark Rise Buckinghamshire 1 detached house Built in 2015 Total energy consumption 32 kWh/m² Improvement on typical 78%</p> 

* This is close to a 50% and was therefore still included as a case study with interesting findings

Buildings Mission 2030

Background report to Recommendations from the Green Construction Board in response to the 2030 Buildings Mission
April 2019



NB GCB's Report illustrates how halving newbuild emissions over today's performance is possible through energy and systems efficiencies ie to reduce demand

- Identify current benchmark for building typology: aim to halve energy demand: many of our examples were Passivhaus
- Use efficient low-carbon building systems: eg MVHR, ASHP
- Then factor in integrated renewables, grid decarbonization, storage, local demand management



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Buildings Missions for Retrofit – key lessons for approach

	<i>Before /m2</i>	<i>After /m2</i>	<i>Before House</i>	<i>After house</i>
Space heating [kWh]	162	25	14,723	2,275
Hot water [kWh]	24	19	2,145	1,729
Lighting, pumps and fans [kWh]	7.2	6.0	654	546
Electric (home) appliances [kWh]	24.2	20.0	2,200	1,820
<i>Totaal</i>	217	70	19,722	6,370 ¹¹

Table showing assumed energy split - Energiesprong Transition Zero document p20 2015

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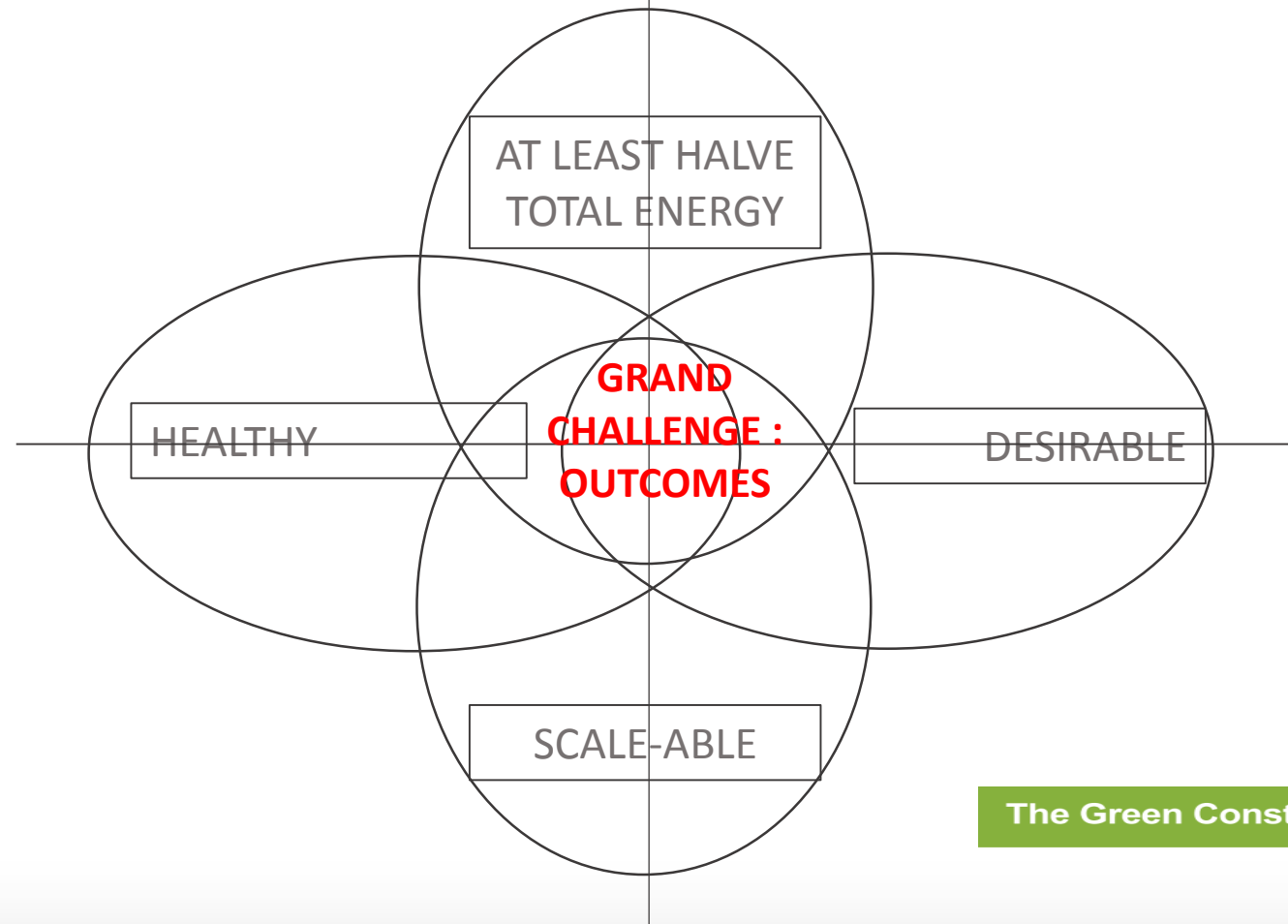
Energiesprong aims to be self-financing on the basis of : capitalising future spend on repair and maintenance; continuing income from energy bills based on existing levels; net metering ie not having to front-load bills with standing charge



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Buildings Mission to halve energy use in NEW buildings by 2030

PATHWAY TO 2050 – RESPONDING TO THE 2030 GRAND CHALLENGE



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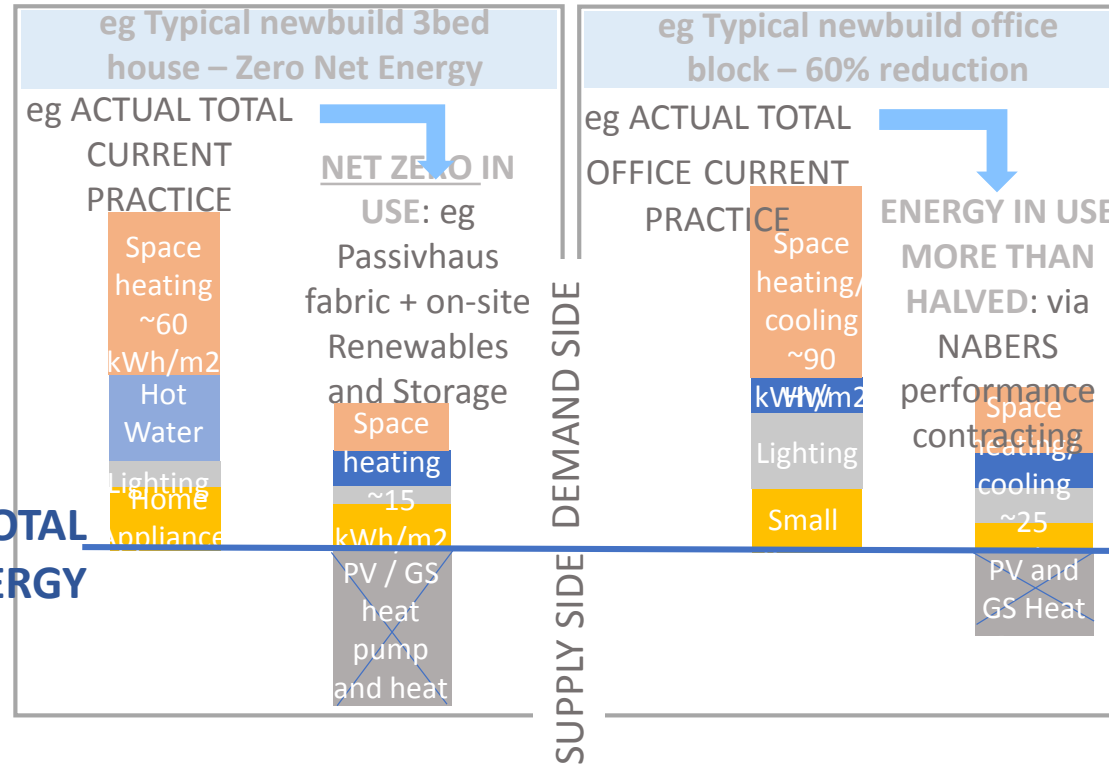
Halving building (operational) energy use by at least 2030..

PATHWAY TO 2050 – RESPONDING TO THE 2030 CHALLENGE

AT LEAST HALVE ENERGY IN USE BY 2030

- All energy in use (not modelled)
- Strategies and choices: demand-side and supply-side
- Domestic and Non-Domestic
- Examine Techniques against Outcomes eg Passivhaus, Specific, Zero Positive, Zero Bills, NABERS, Energiesprong
- Define regulatory/fiscal/voluntary drivers

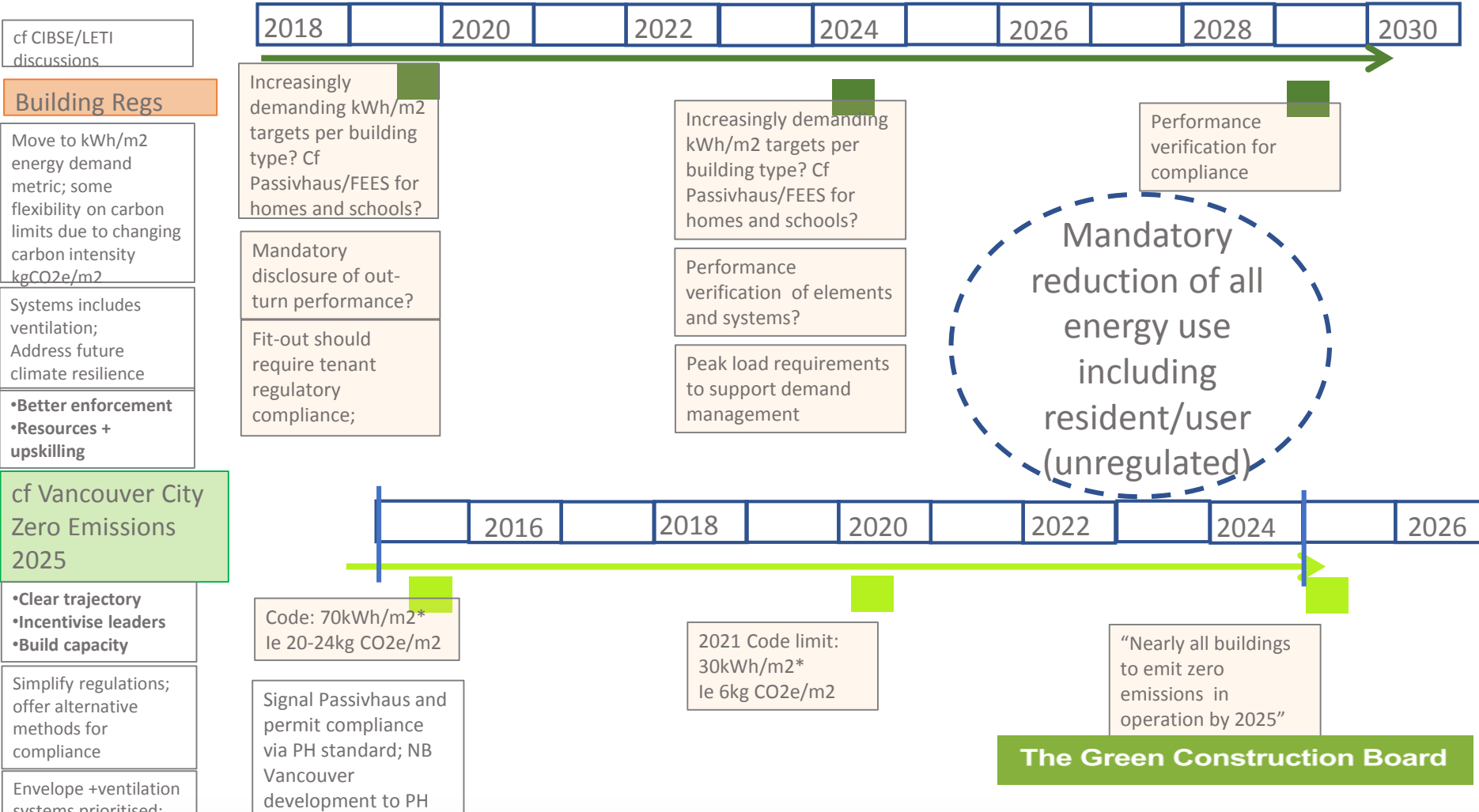
ZERO (NET) TOTAL ENERGY



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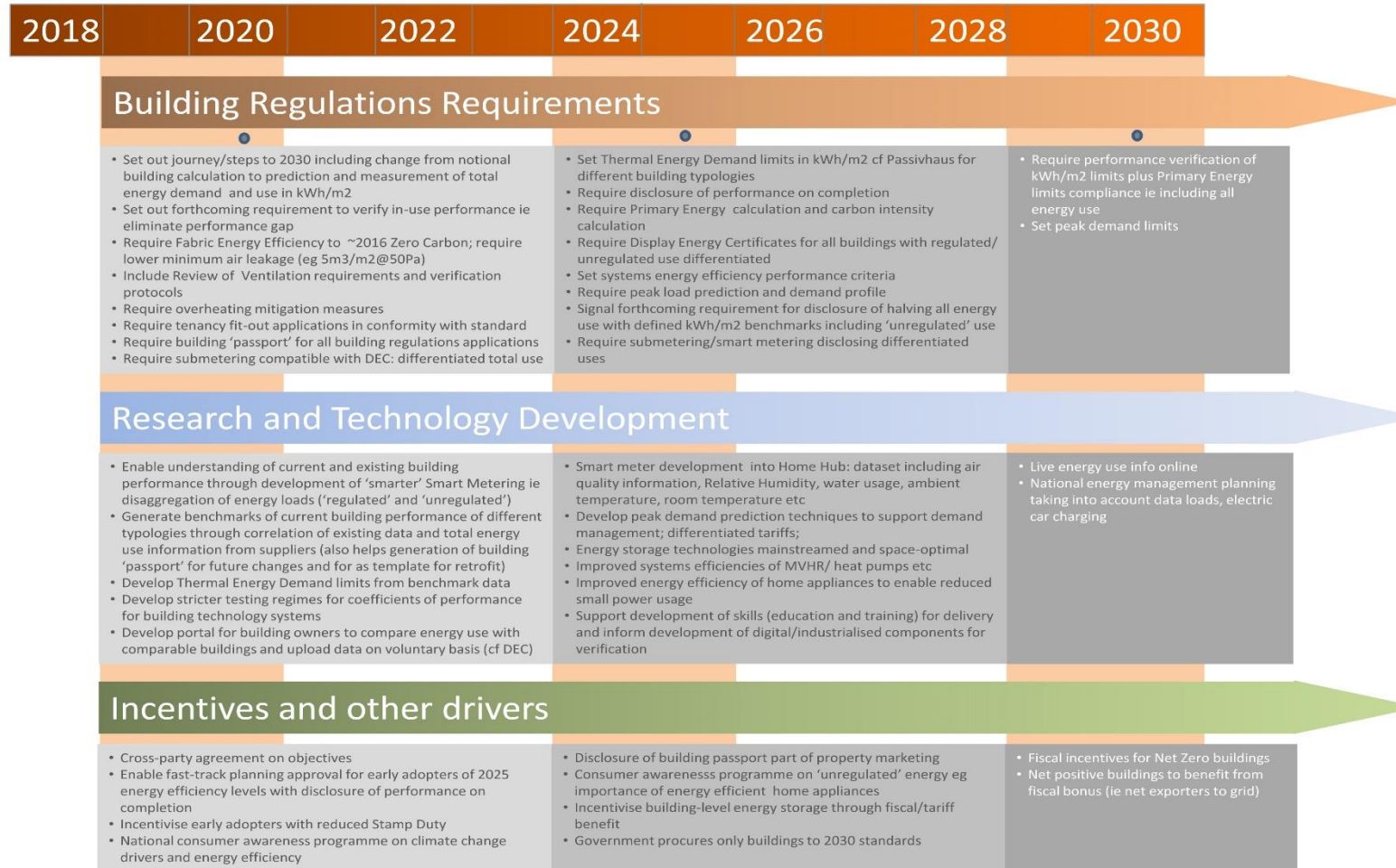
Motivating higher standards in development



Motivating higher standards in development

The Green Construction Board

GCB BUILDINGS ENERGY TASKGROUP – SUMMARY OF RECOMMENDATIONS FOR NEWBUILD IN RESPONSE TO 2030 'MISSION'*



*NB to be read in conjunction with BEM Taskgroup Background Report

APRIL 2019 LS



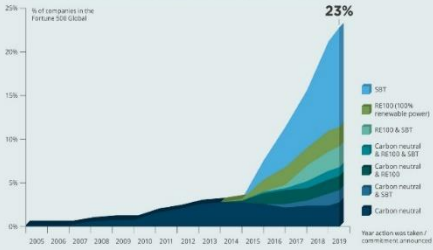
Leadership in decarbonisation – examples in commercial buildings



Fortune 500 Global companies are increasing climate action

1/4 of Fortune 500 Global companies have made a public commitment that they are, or will be by 2030, carbon neutral, using 100% renewable power or meeting a Science Based emission reduction target (SBT). **4x** increase in the number of companies with a public commitment to the Paris Agreement in 2015 (from 31 companies to 114).

Fortune 500 Global companies that have made a public commitment that they are, or will be by 2030: carbon neutral, using 100% renewable power, or meeting an SBT

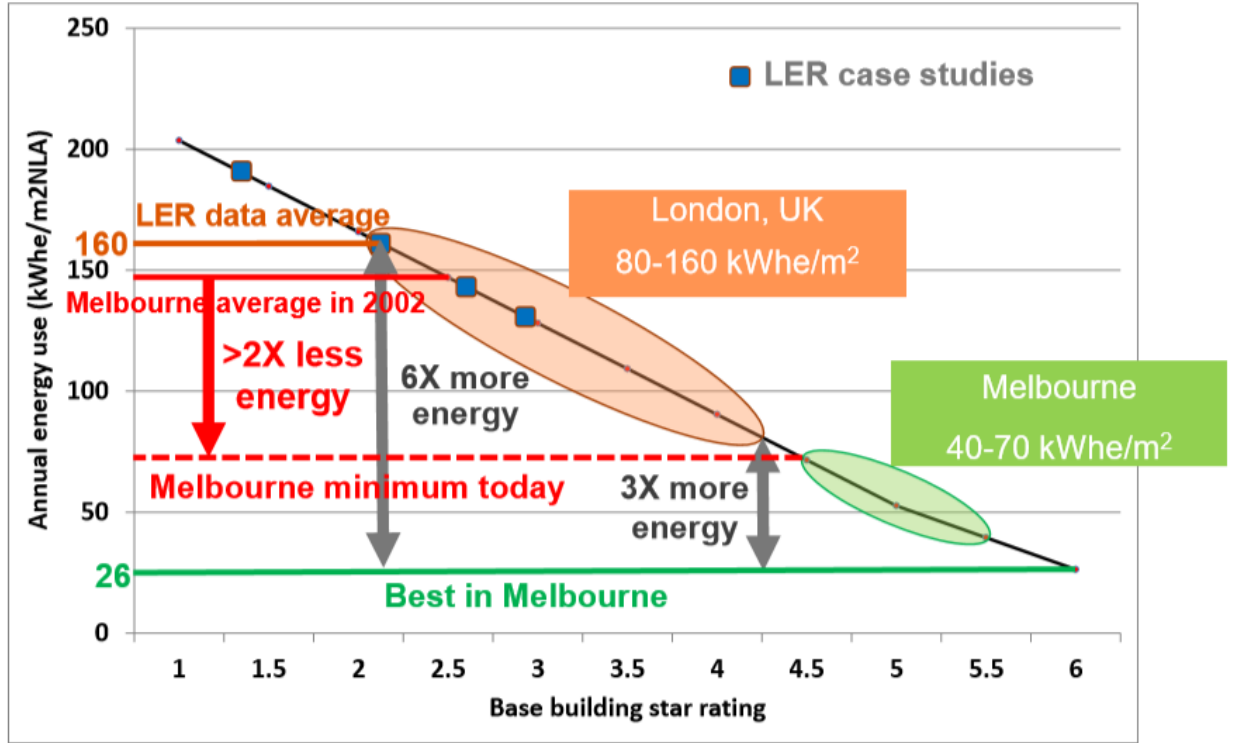


We looked at which Fortune 500 Global companies have made a public commitment that they are, or will be by 2030, carbon neutral, using 100% renewable power, or meeting an SBT. We found that:

- \$8 trillion of Fortune 500 Global companies have made a public commitment that they are, or will be by 2030, carbon neutral, using 100% renewable power, or meeting an SBT.
- 18 million employees of Fortune 500 Global companies have signed up to public climate commitments.
- 42% of Fortune 500 Global companies have signed up to public climate commitments.
- 25% of Fortune 500 Global companies have signed up to public climate commitments.
- 17/19 sectors have signed up to public climate commitments.
- 79% of Fortune 500 Global companies have signed up to public climate commitments.
- 4x more Fortune 500 Global companies have signed up to public climate commitments.
- 6x more Fortune 500 Global companies have signed up to public climate commitments.

Ex NaturalCapitalPartners 2019

Can we do it? Yes we can! Australia is beautiful, really smart!



p.3 19 June 2018 LETI Declaration for a/c offices Launch: How to inspire new buildings to achieve energy efficiency promises. Hoare Lea, King's Cross, London



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Future Homes - Quality and Performance

- Quality control key to accountability – on site or in factory
- Delivering real energy and carbon reductions is not possible without accuracy of prediction and accountability for outcomes
- Required Outcomes for Net Positive gains can be defined and verified on completion: eg air quality, resource footprint, ecological benefits, energy performance



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Thank you

Lynne Sullivan OBE, RIBA
Chair, Good Homes Alliance

UK Green Construction Board Member & Taskgroup Chair

lynne.sullivan@lsastudio.co.uk



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Thank you...



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