

Being Wrong

AECEB Garway 2018

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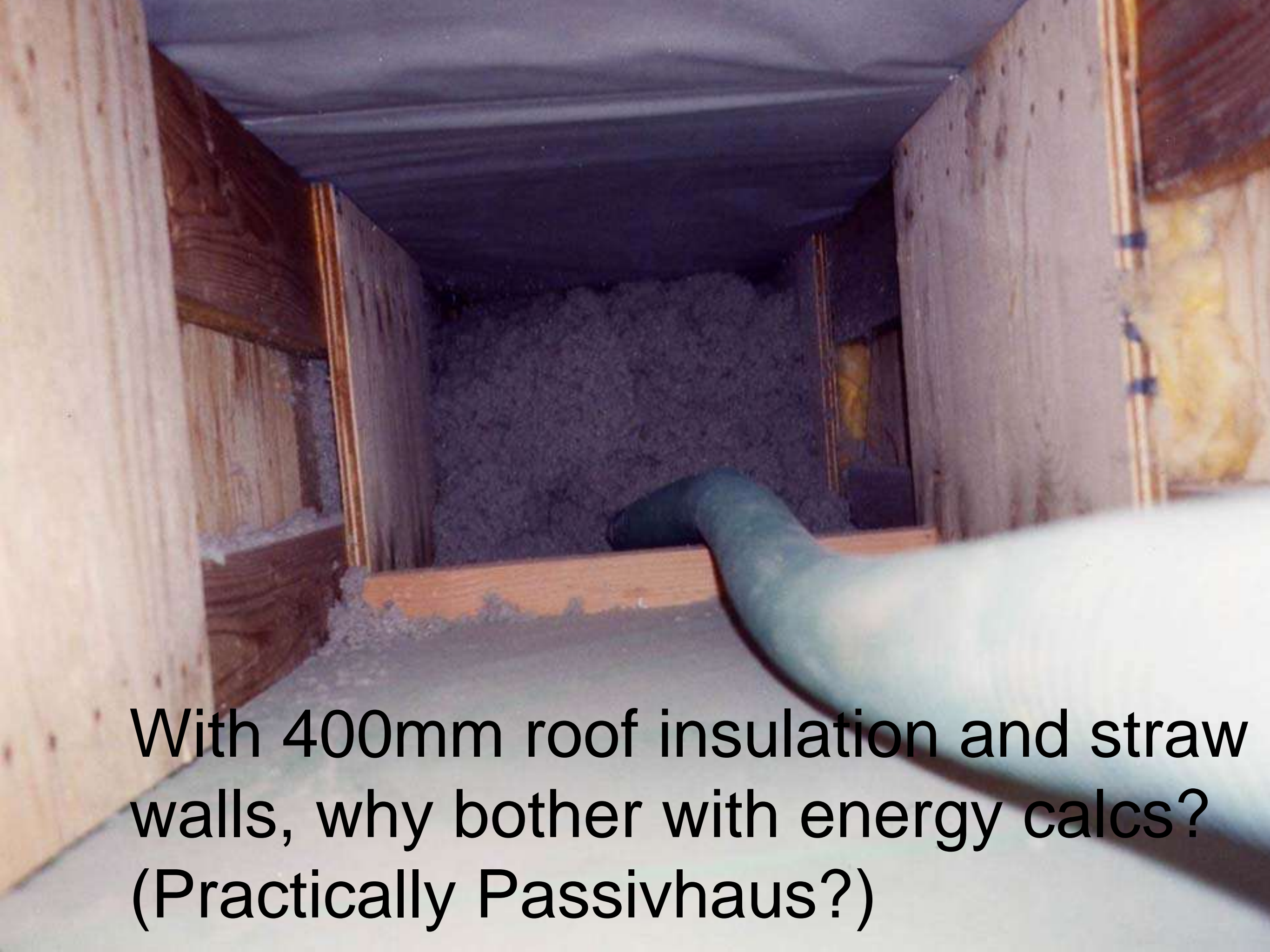
**"Our knowledge can
only be finite,
while our
ignorance must
necessarily be
infinite."**

Karl Popper

Nick's House

An example of just some things that he got wrong after really thinking about them!





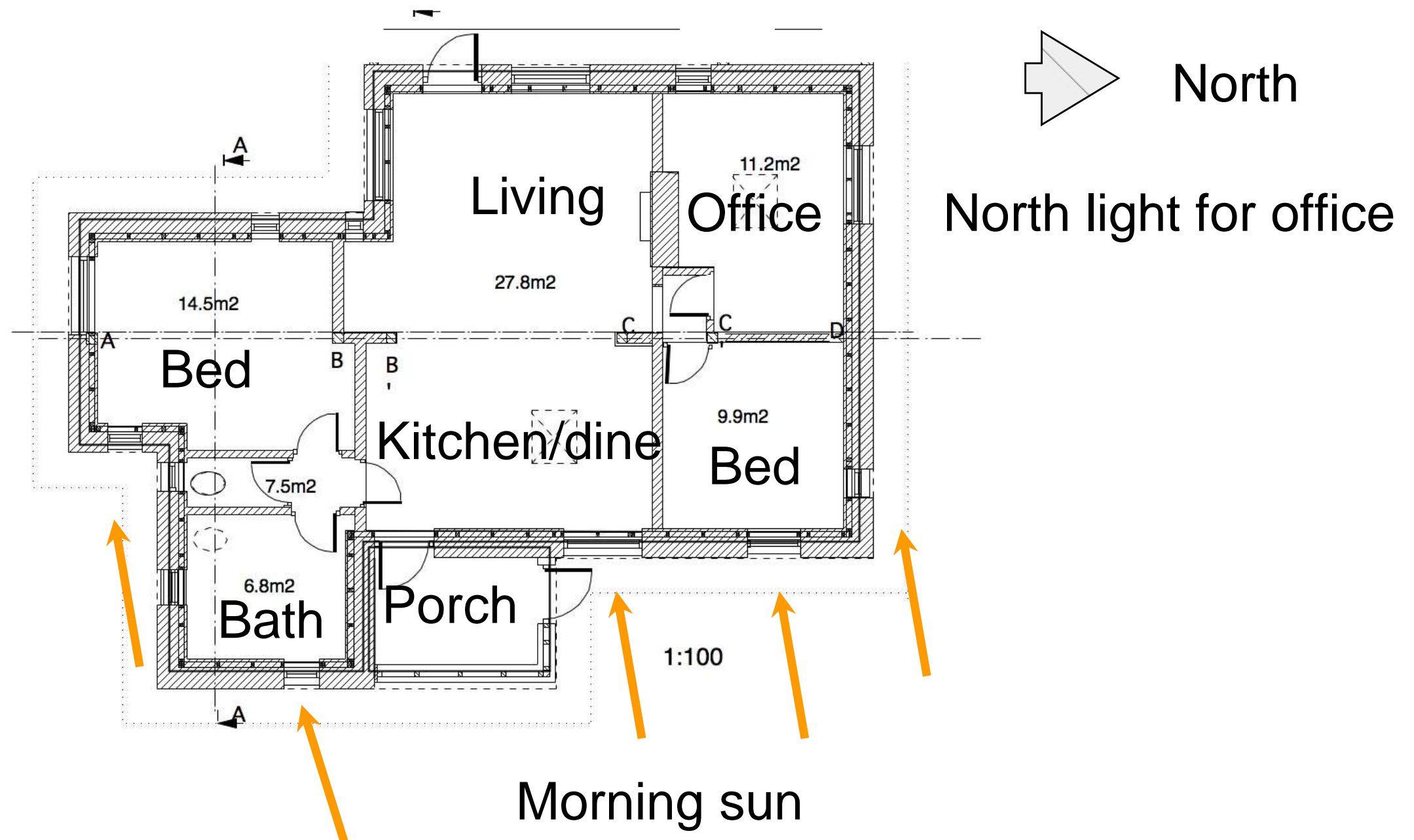
With 400mm roof insulation and straw walls, why bother with energy calcs? (Practically Passivhaus?)

Form Factor = Heat loss area/useful floor area

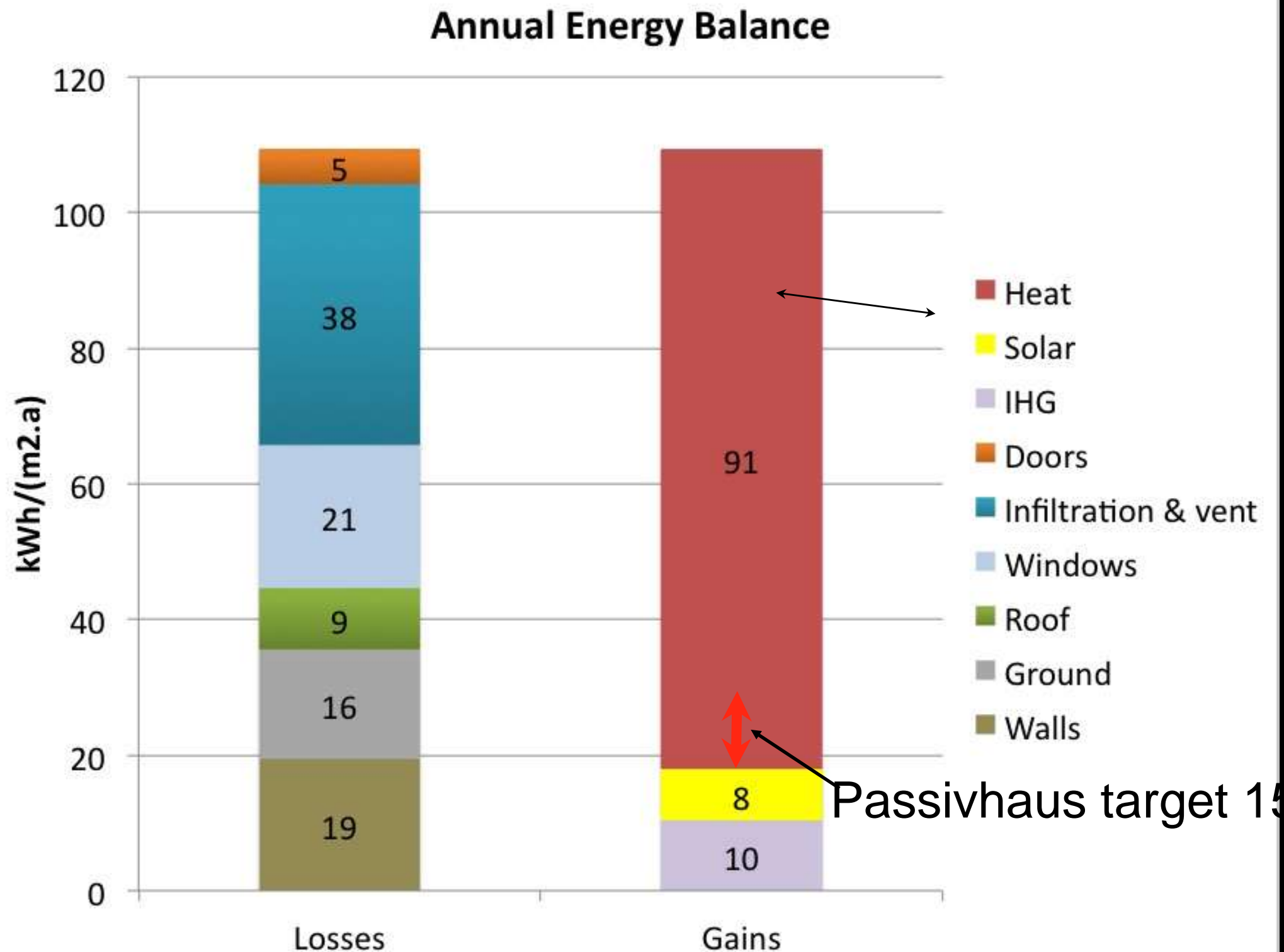
FF about 5!

<3 is good

Informed by Pattern Language and intuition



PHPP after the event; space heat only



Assumes
comfort
conditions:

20°C 24/7

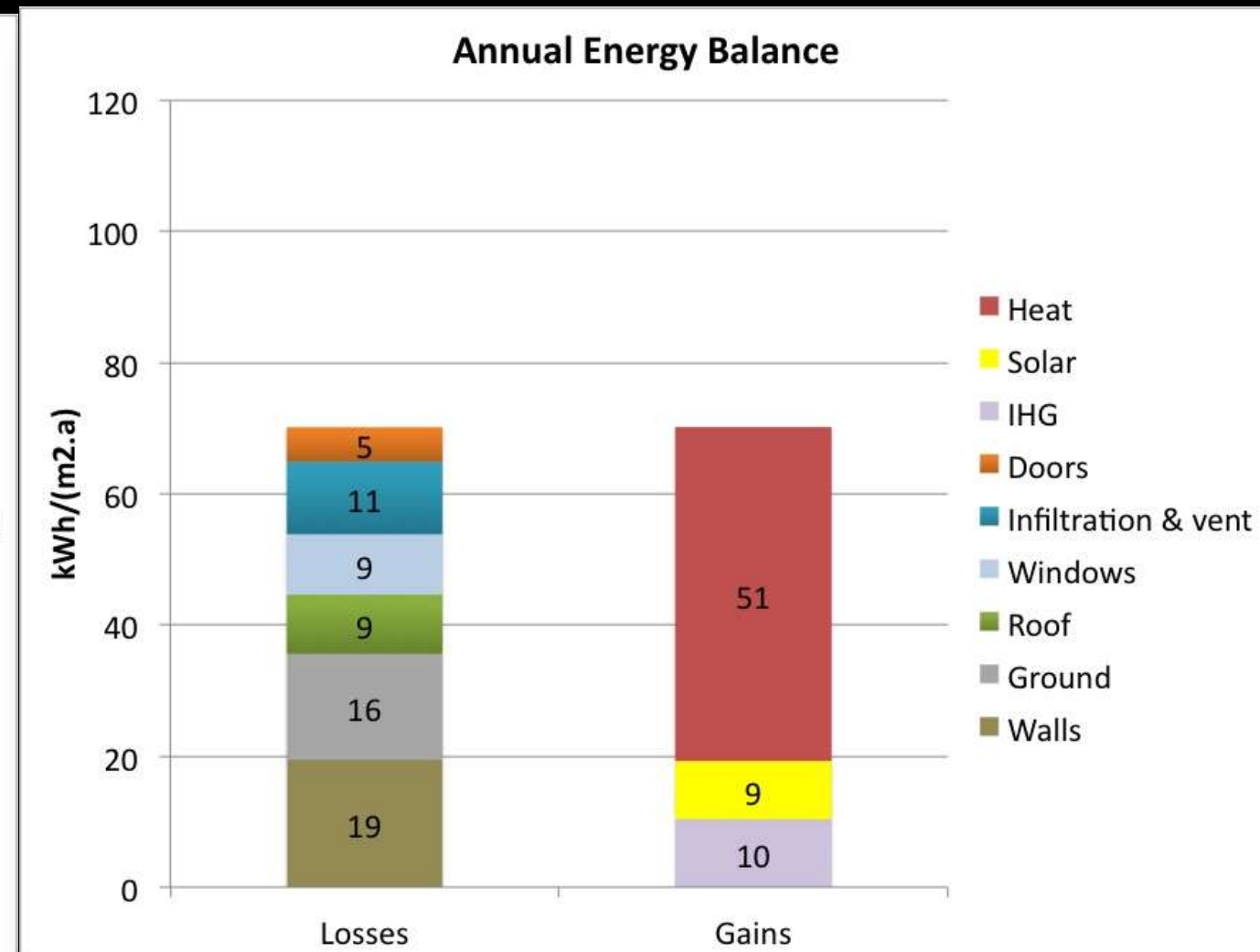
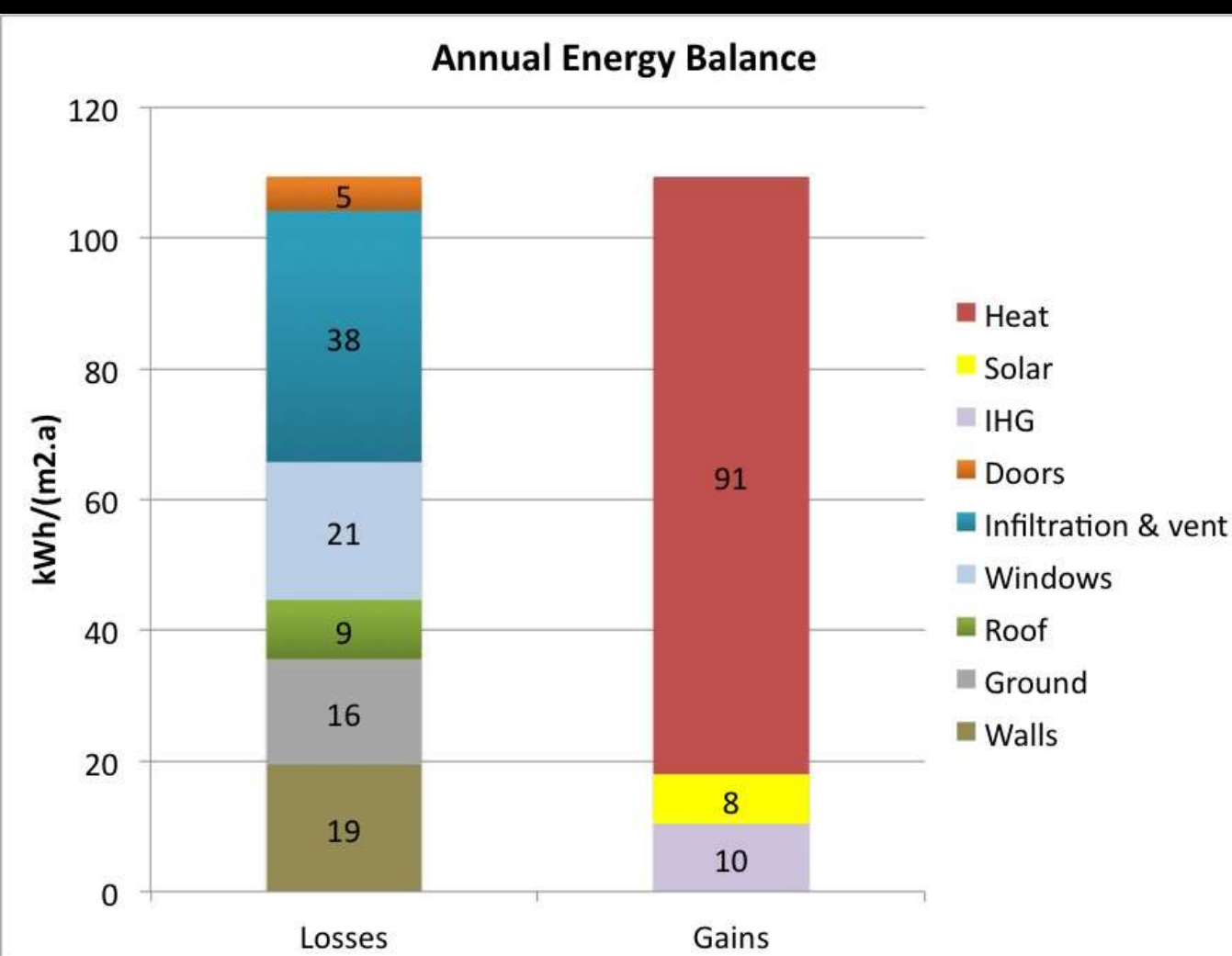
0.4
airchanges/h
ventilation
no heat
recovery.

Full Passivhaus Retrofit?

What saving should we expect?

As built

Triple glazing, MVHR, upgraded airtightness



Can't cheat form factor!



But burning our own trees is zero carbon

CD storage built in!!

One woodstove, no radiators + DIY solar hot water

Biomass - a burning issue

AECEB Conference

CAT October 2010

Nick Grant

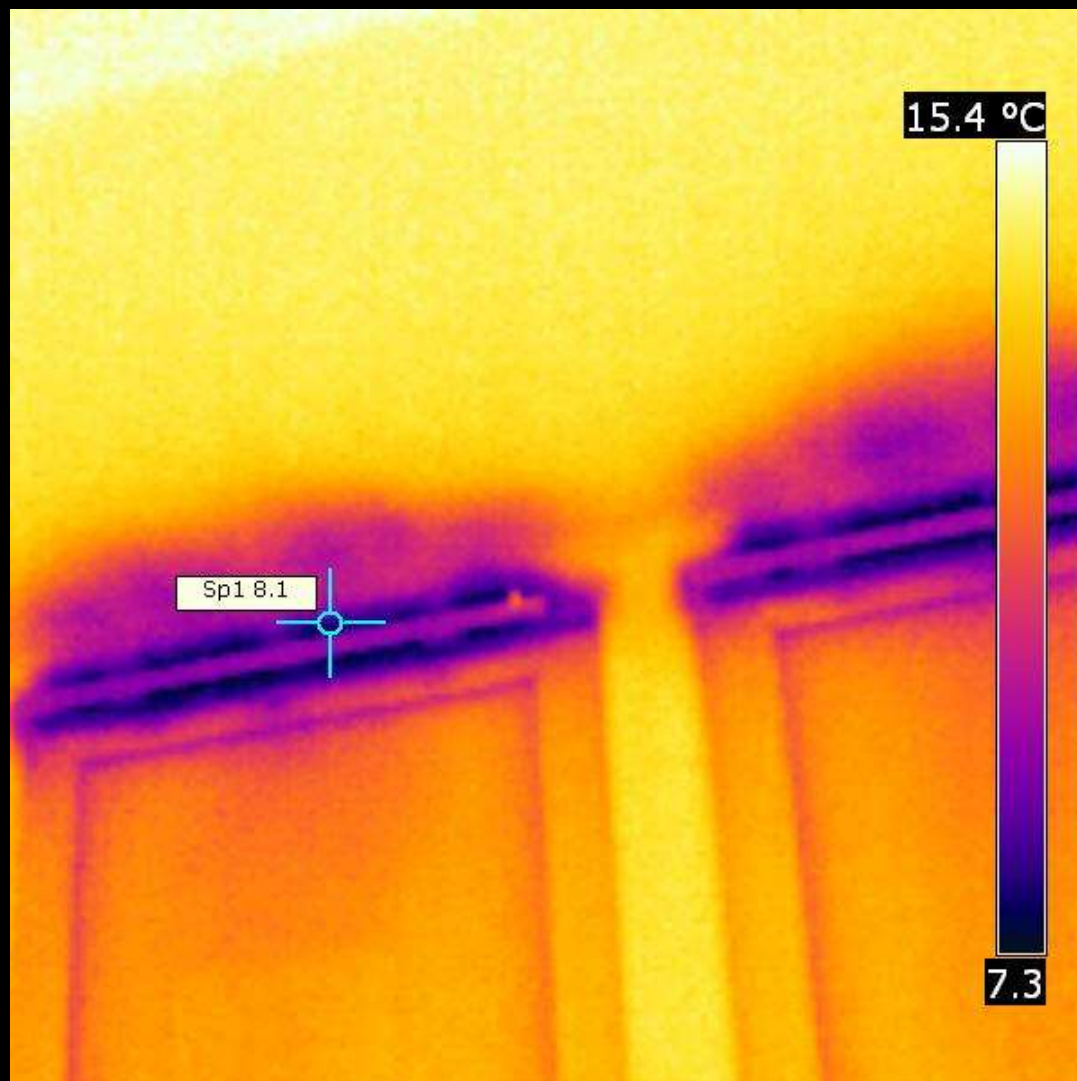
Alan Clarke

Were we wrong then?

Is “woodburner” still the go-
to green heating solution
for you?

Ventilation

- 'Natural vent' assumed lowest carbon as heating with ZC wood.
- No payback for MVHR (true)



7!



Condensation on windows



Assumed cause:

“Condensation on bottom edge of double glazing in bedrooms due to convection - solved by triple glazing (or radiators!)”

- Actually solved by MVHR

But is MVHR best for everyone?

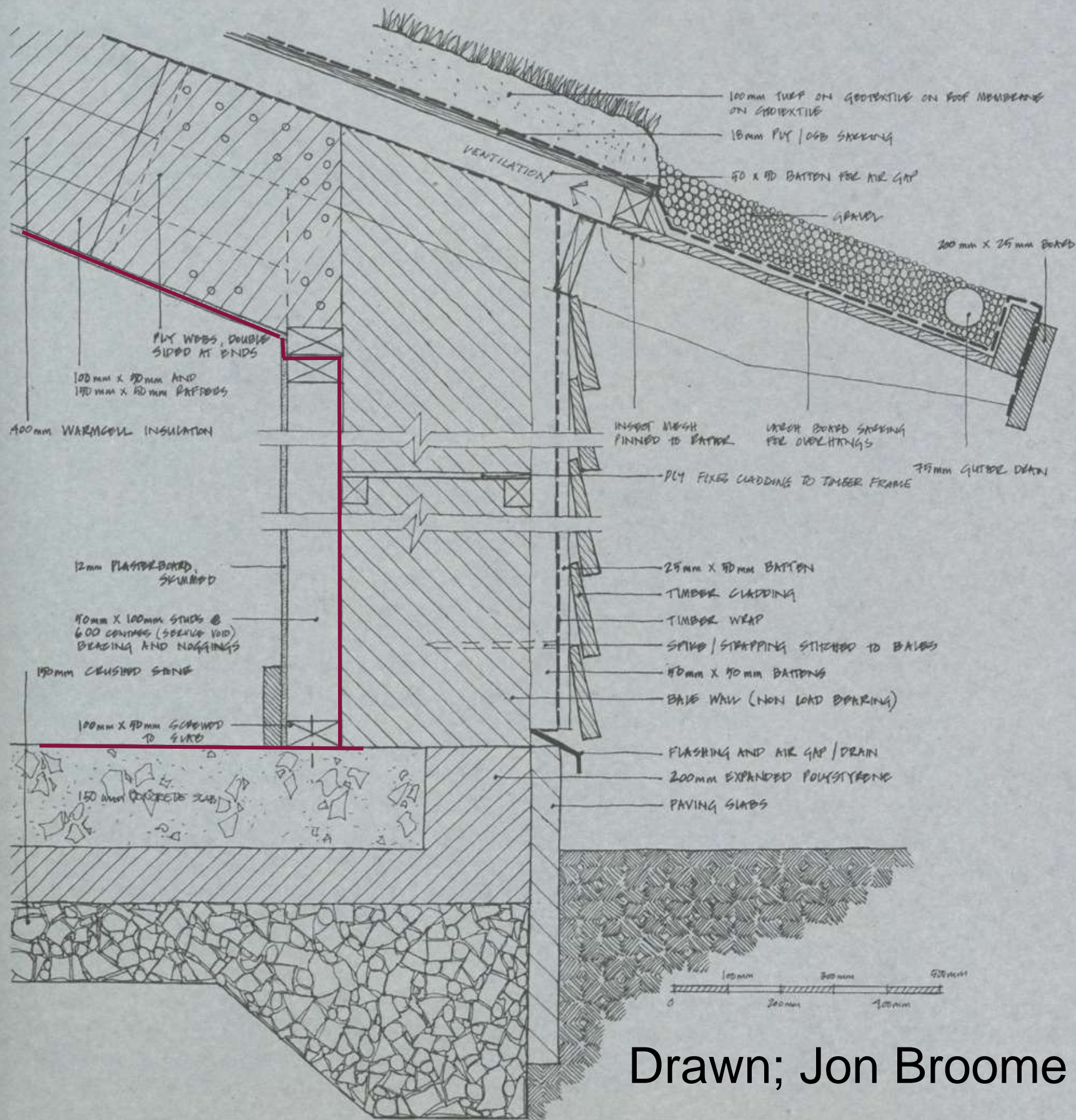
- Expensive to install
- Has filters to change – not cheap
- May not be most effective way for a landlord to deliver IAQ for tenants

Nick's House

What we still think we got right



Basic construction proved sound and has formed the basis for many projects since.



Drawn; Jon Broome





insulated slab as foundations and finished floor – cheap and warm and we love



Pattern Language good bits: window seat

Pattern Language good bits: Alcove



Compost toilets;

www.natsol.co.uk



NatSol the compost toilet specialists

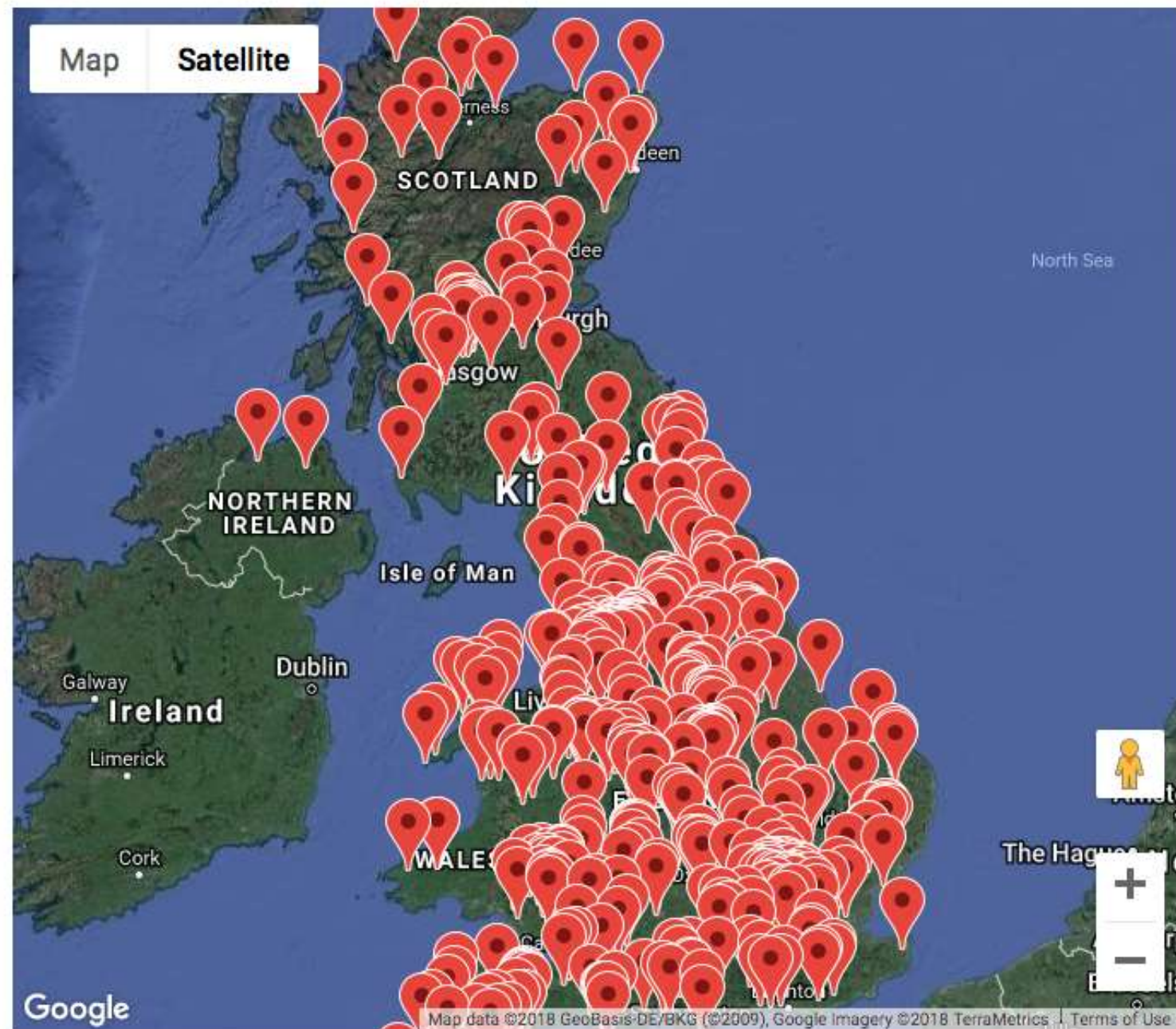


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Map

You are never far from a NatSol compost toilet!

The map shows the approximate locations of some NatSol composting toilets around the UK. Zoom in to see multiple installations in some areas.





Water

Micro-bore pipe, eco-brake tap etc
AECB Water Standards

www.aecb.net

50 litres/person measured
average water use.

ES4 WC

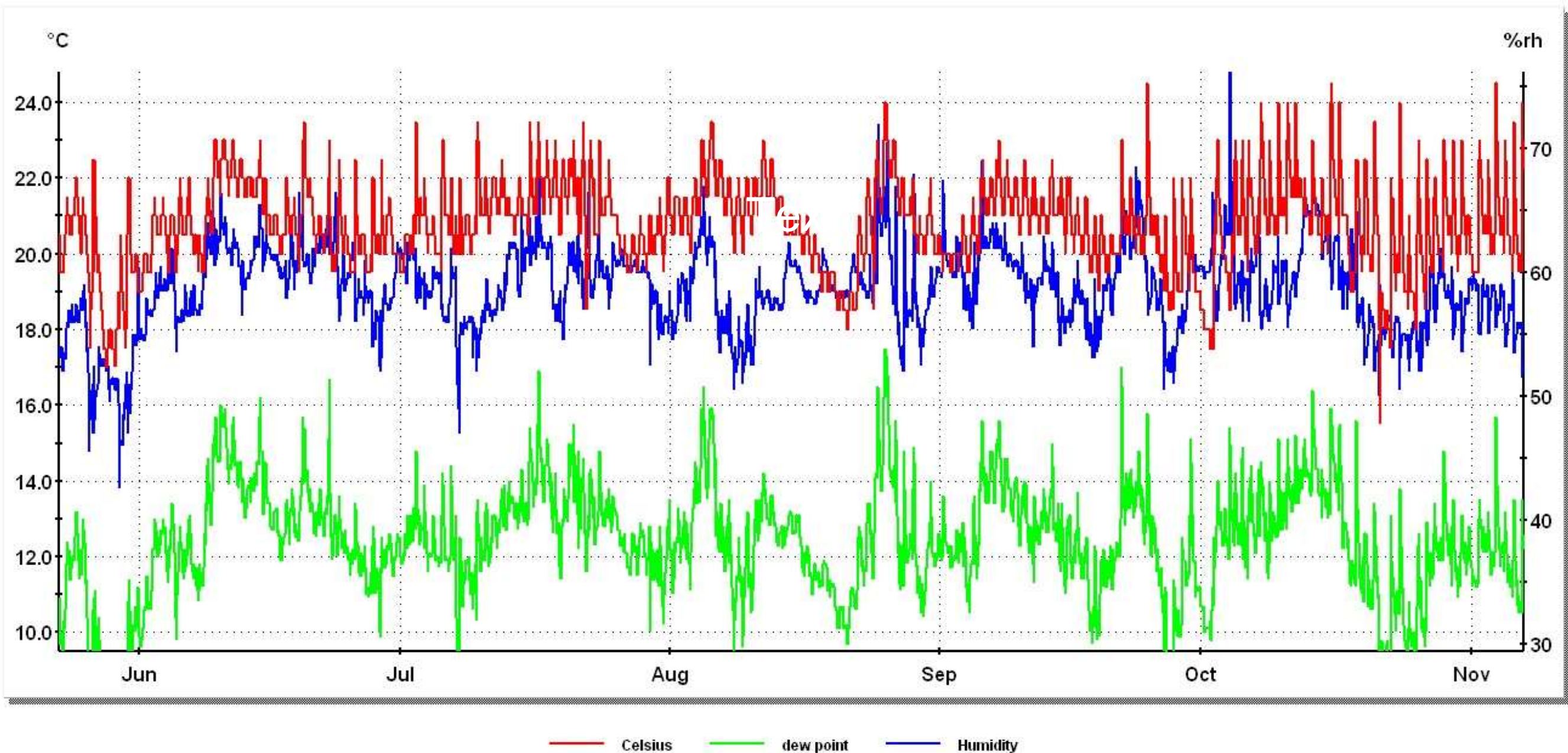
4 litre leak free

www.greenbuildingstore.co.uk



Summer comfort

Always comfortable - warmer in winter!



From:- 22 May 2007 19:47:57 To:- 07 November 2007 00:47:57

What else for Room 101?



Passivhaus = big south facing windows



We know now!



Designing for Summer Comfort
in the UK

August 2016



(Anyone go here this morning?)



Gas heating: cheap AND Green



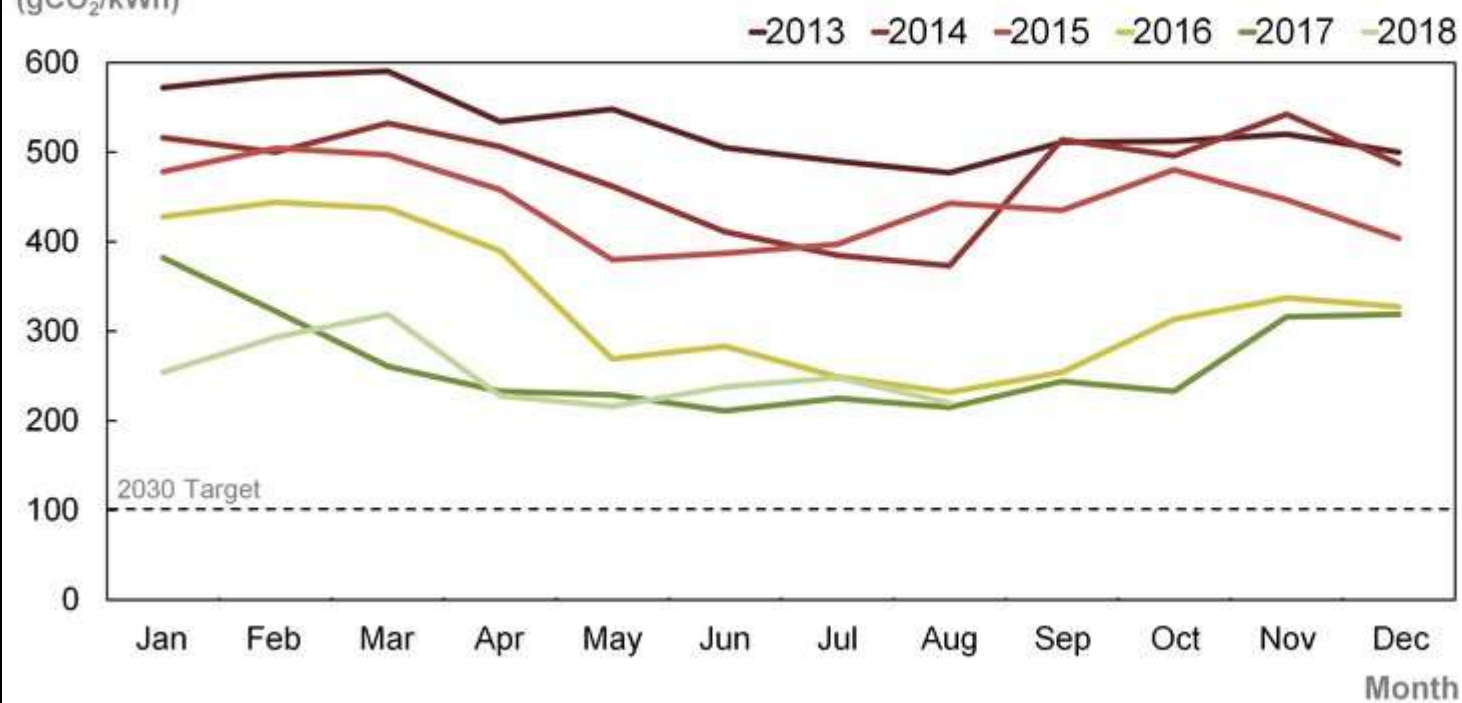
(A Clarke, AECB 2014)

Gas heating: still cheap

The Decarbonisation of British Electricity

2018 has so far been the 'greenest' year on record in Great Britain

Carbon Intensity
(gCO₂/kWh)



49.7% decrease
from 2013 to 2017

2013 **529** gCO₂/kWh

2014 **477** gCO₂/kWh

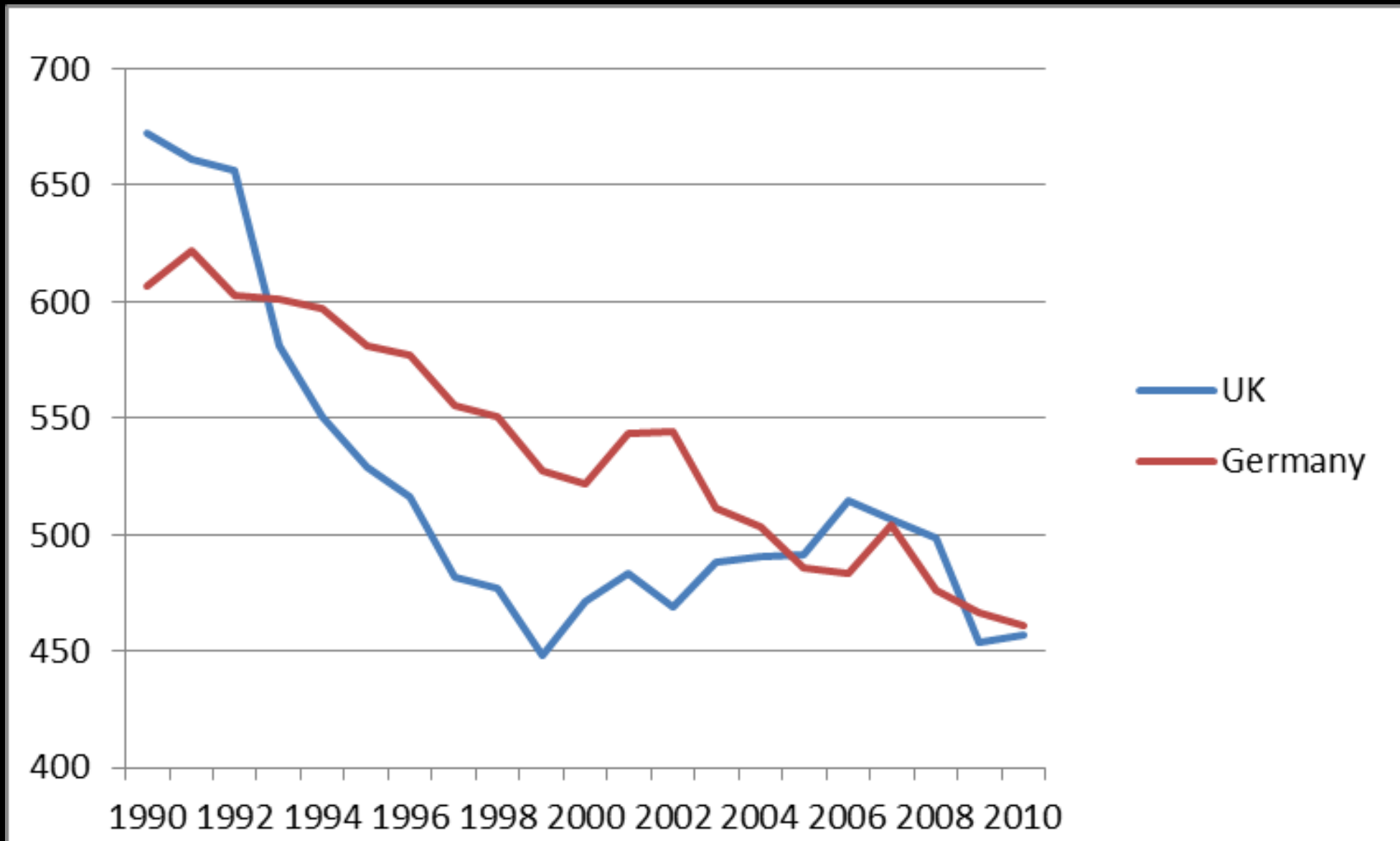
2015 **443** gCO₂/kWh

2016 **330** gCO₂/kWh

2017 **266** gCO₂/kWh

2018 **252** gCO₂/kWh*
year to date

History



UK offshore wind power to double by 2030

Plummeting renewable costs raise questions about government's continued support for nuclear energy



Matt Cardy/Getty Images

🏠 > Business

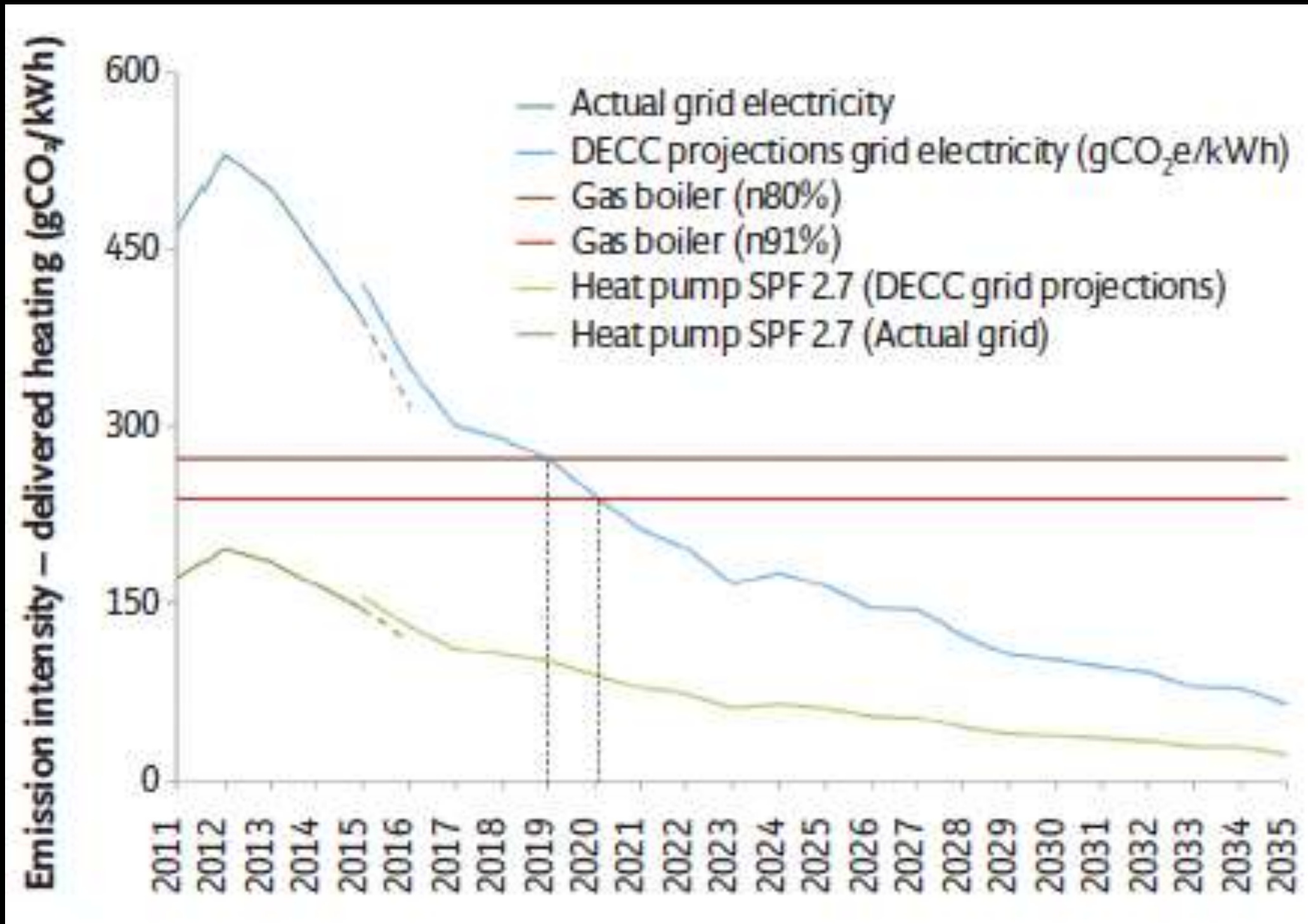
World's largest offshore wind farm opens in British waters to provide electricity to 600,000 homes



🔖
Save 101



Future?



🏠 > Business

Cuadrilla granted go-ahead for UK's first shale fracking project



Preston New Road in Blackpool CREDIT: CHRISTOPHER FURLONG/GETTY IMAGES

Government gives last-minute go-ahead to UK fracking site

Energy minister says extraction of fossil fuel will aid 'transition to a lower-carbon economy'

Harry Cockburn | Tuesday 24 July 2018 22:21 | 56 comments



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The Independent





Are we the baddies?

Fabric first, forget PV

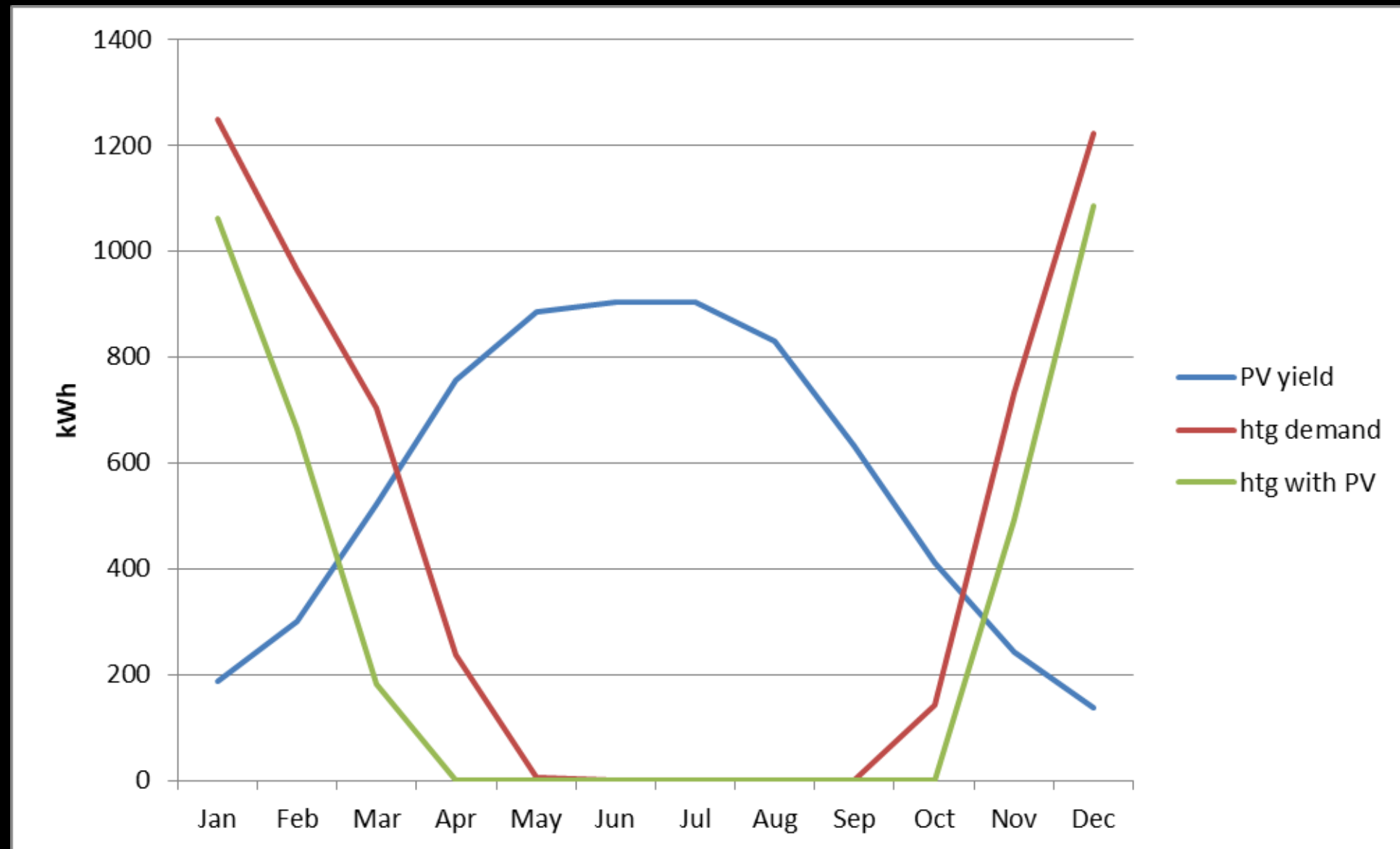
£/kWh

Cheap PV

storage



...or both?



Communal/district heating?



Efficiency?

Real distribution loss?

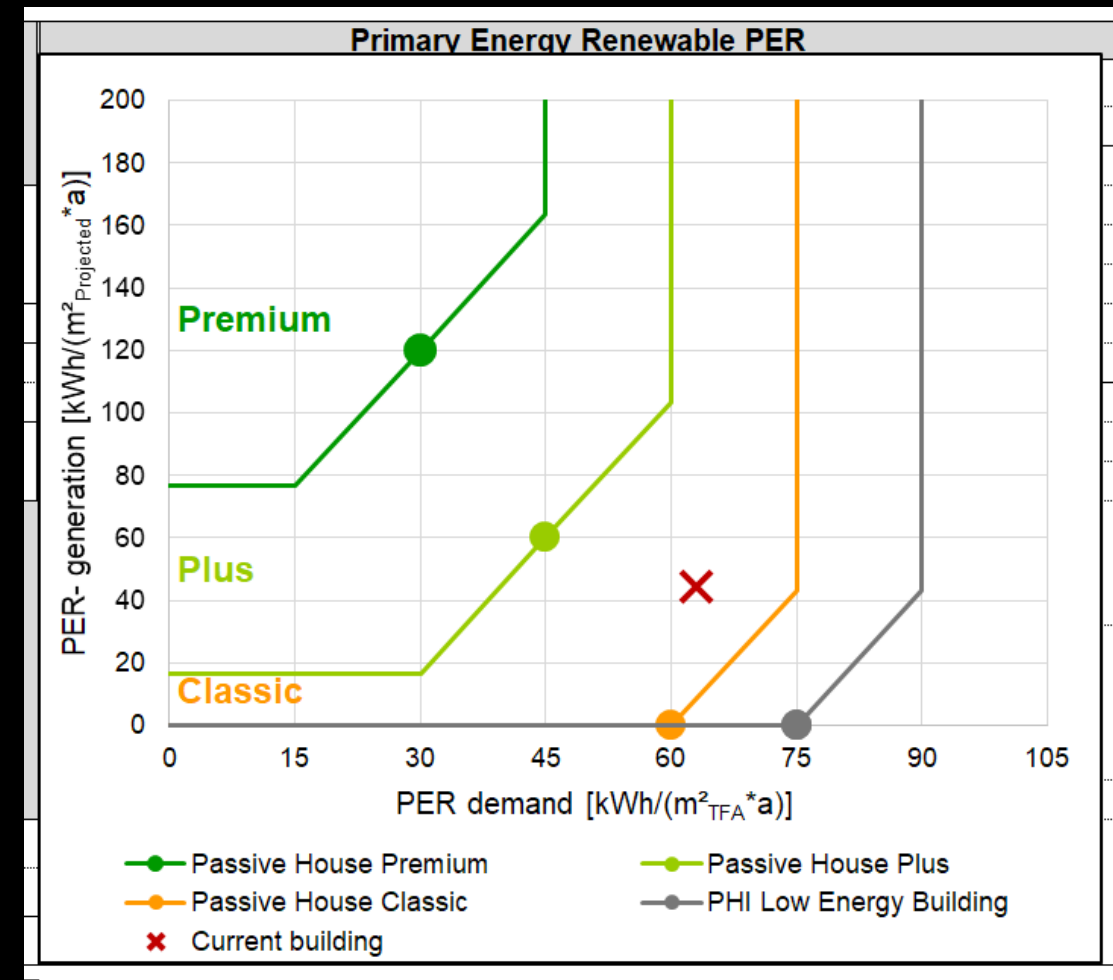
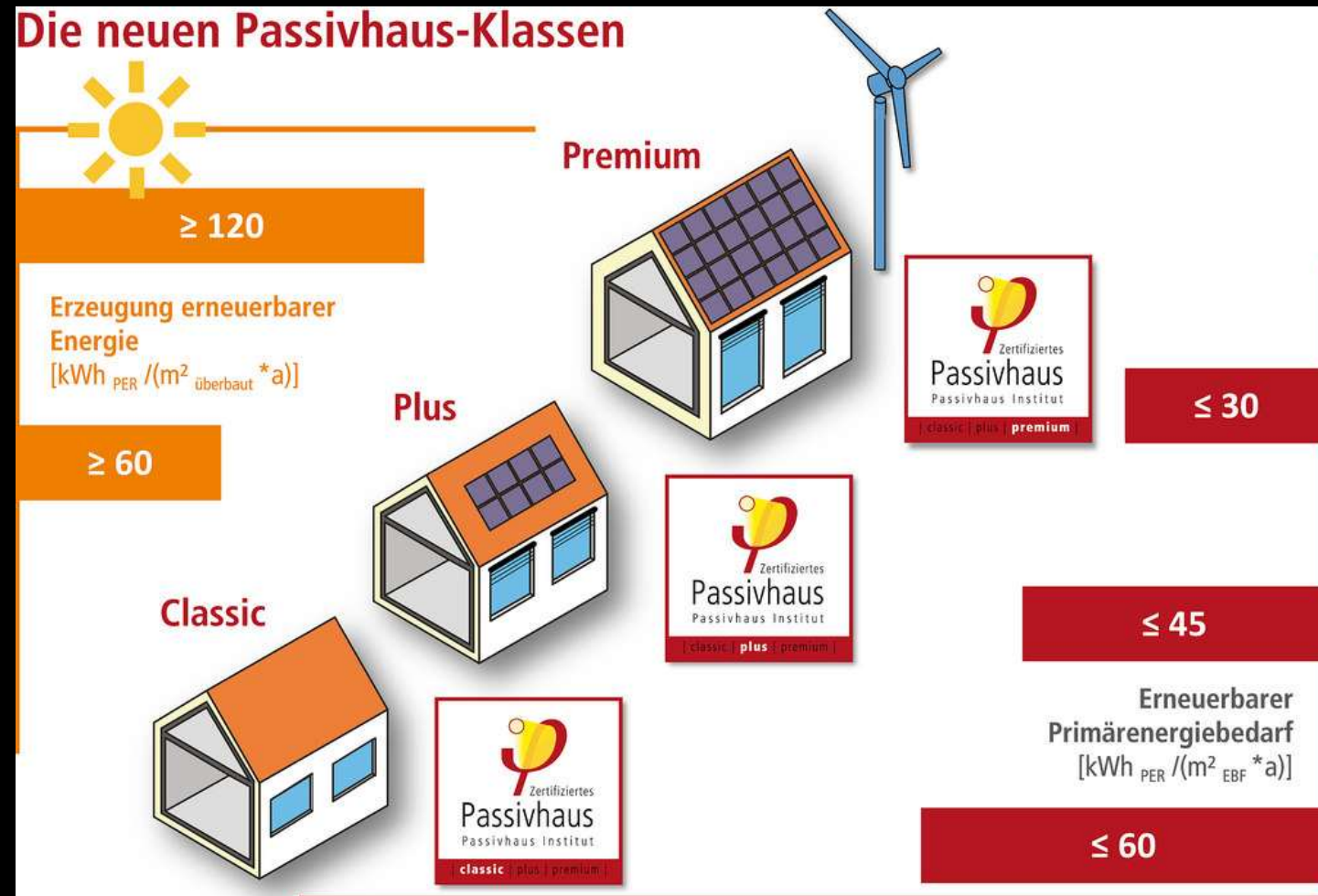
Heat source low carbon?

Summer overheating?

Landlord as utility?

“Renewable Primary Energy”

What NOW Wolfgang?!



What about bad energy?

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- 7 Health Supporting Color Scheme
- 8 Non-toxic Natural Finishes Throughout
- 9 Eliminate Toxic Combustion By-products
- 10 EMR Safety In-house
- 11 Healthy Radiant Heating
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Current events
Updated! - 13 July 2018


About EMR & EMFs
Updated! - 8 September 2018

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Nick's house, radial circuits in bedrooms



0 nT magnetic field 😊
< 20 nT no concern

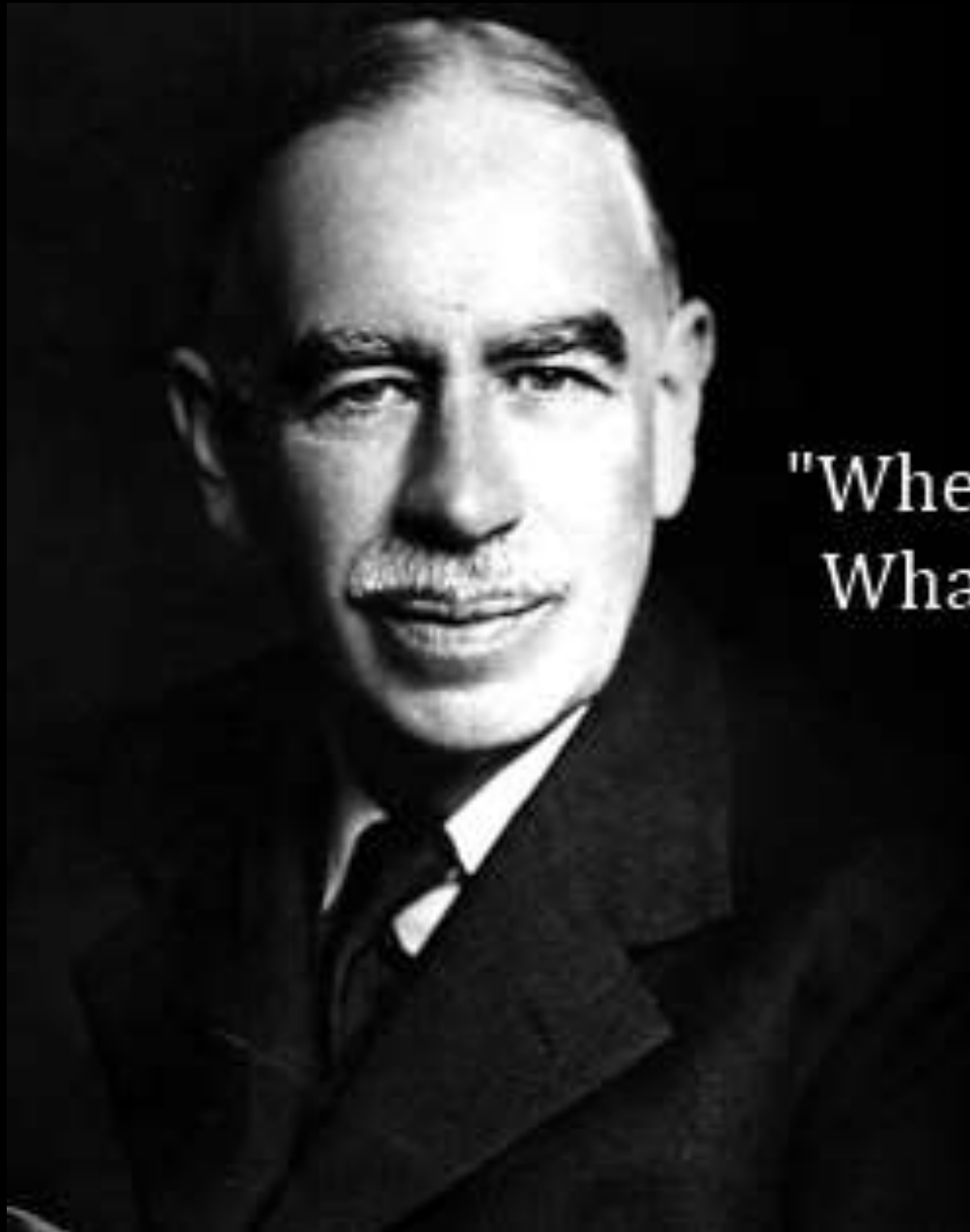


230V/M EMF @ pillow
<1V/m target 😞

The numbers

The numbers are given in the [Supplement: Building Biology Evaluation Guidelines for Sleeping Areas](#)

		NO CONCERN	SLIGHT CONCERN	SEVERE CONCERN	EXTREME CONCERN
Electric field with ground potential	V/m	<1	1-5	5-50	>50
Electric field potential-free	V/m	<0.3	0.3-1.5	1.5-10	>10
Magnetic field	μT	<0.02	0.02-0.1	0.1-0.5	>0.5



"When the facts change, I change my mind.
What do you do, sir?"

- John Maynard Keynes