



*Highgate Society Sustainable Living Group:
Zero Carbon retrofit: disconnecting the Gas.....and then what ?
14.6.21*

AIMS FOR THIS EVENING

UK Emissions Context & Energy in buildings

Heat Pump viability....some harsh realities...

Zero carbon homes.....the macro picture

Energy Use and loss in domestic buildings...

The current most popular recipe

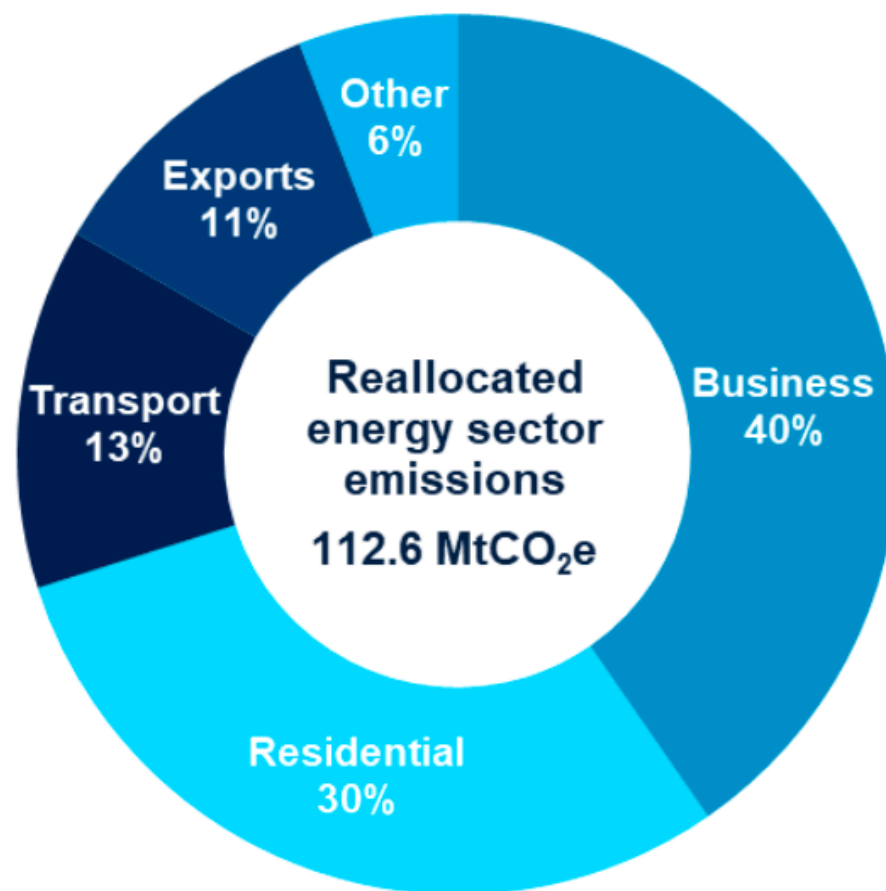
Loft and roofs insulation

Floor insulation

Wall insulation

Q&A

Figure 3: Breakdown of greenhouse gas emissions reallocated from the energy sector to the end user sectors, UK, 2017



Source: Table 3, Final UK greenhouse gas emissions national statistics 1990-2017 Excel data tables



HM Government

The Ten Point Plan for a Green Industrial Revolution

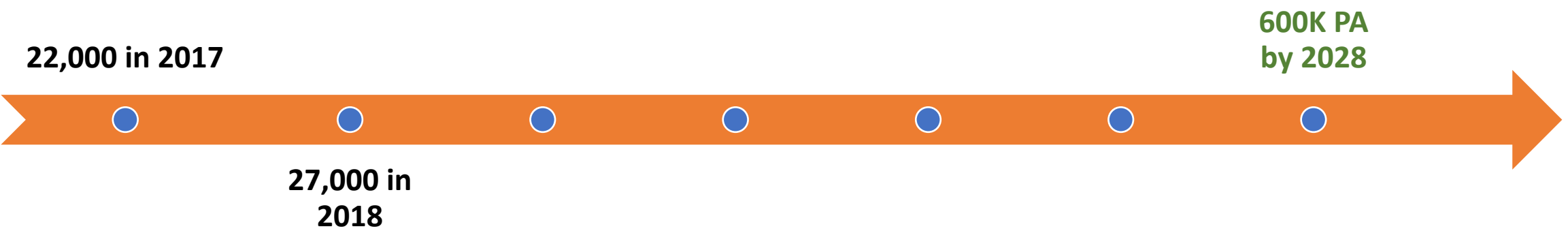
Building back better, supporting green jobs, and accelerating
our path to net zero



*“We will aim for 600,000
heat pump installations
per year by 2028”*

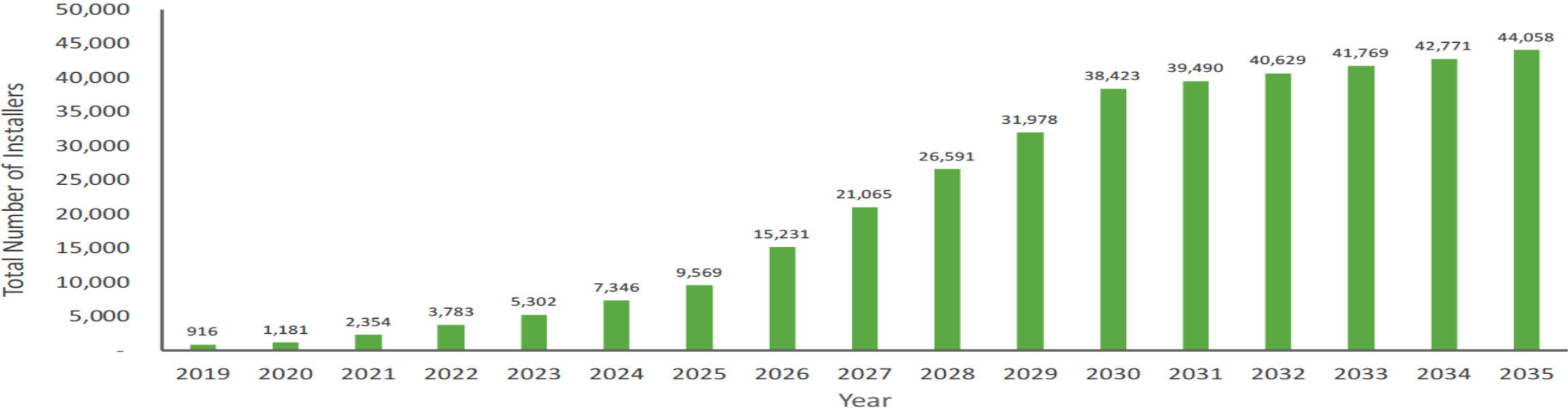
- The Ten Point Plan for a Green Industrial Revolution
BEIS, NOV 2020

“We will aim for 600,000 heat pump installations per year by 2028” ¹



A circa 30 fold increase in 6.5 years.....

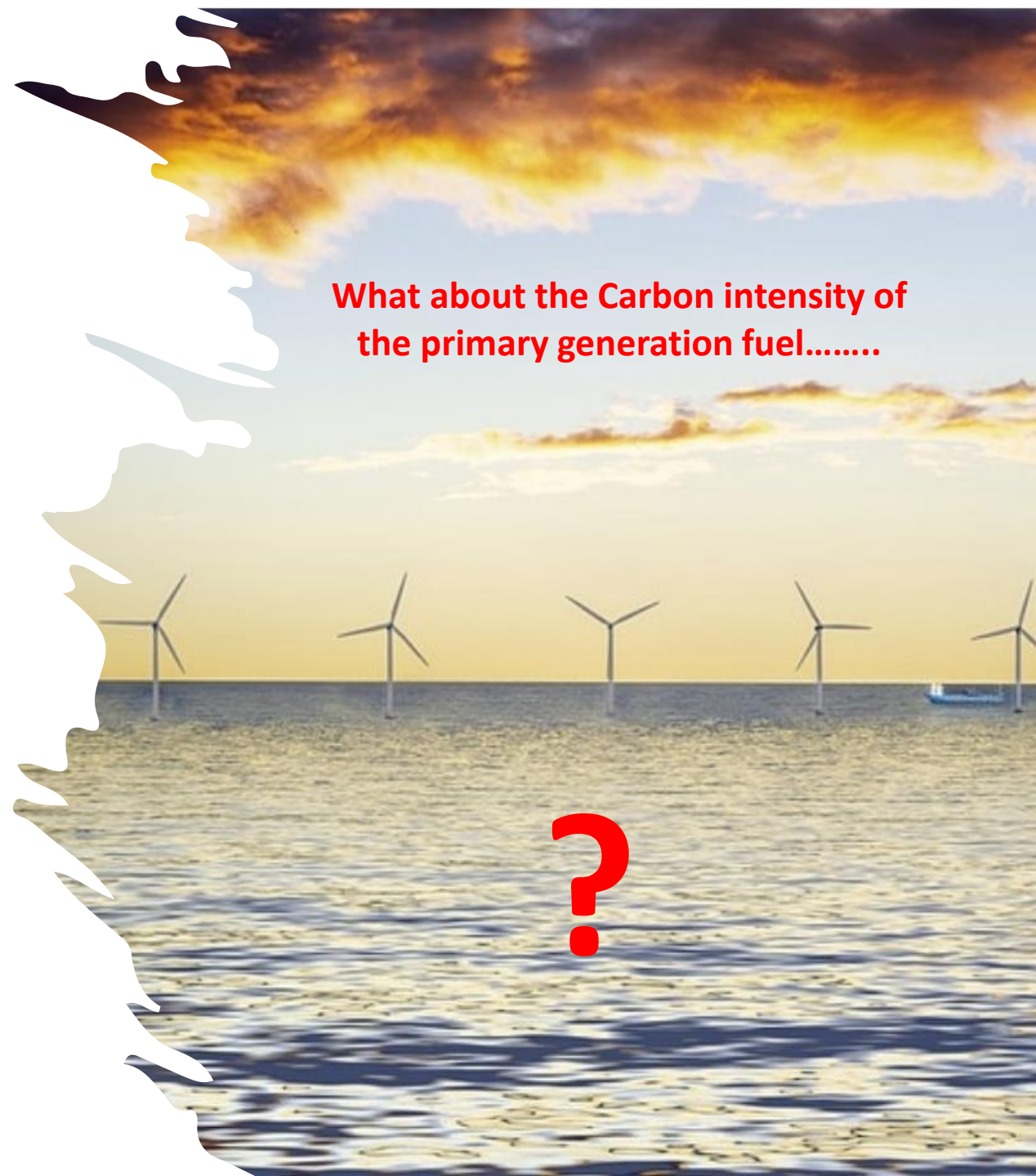
Potential Total Number of Installers Needed



1. The Ten Point Plan for a Green Industrial Revolution BEIS, NOV 2020
2. BSRIA 2018
3. HPA 2020

ZERO CARBON/HEAT PUMP DEPENDENCIES

What about the Carbon intensity of
the primary generation fuel.....



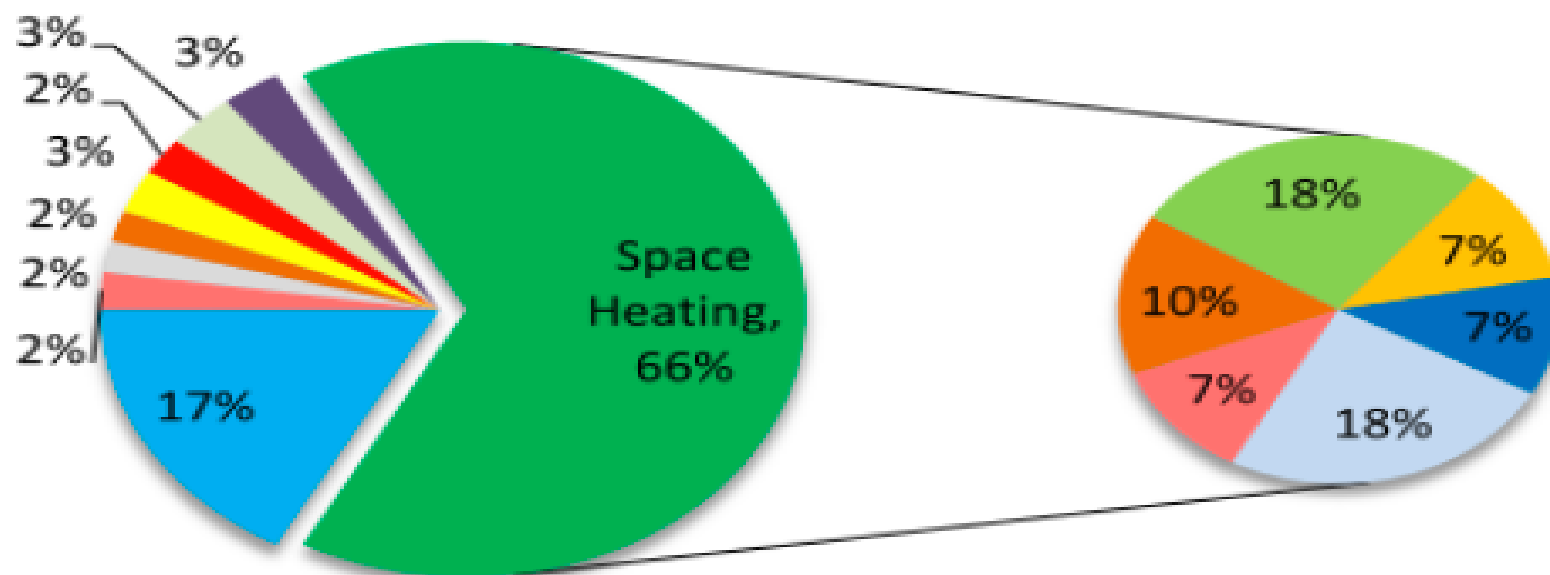
ZERO CARBON/HEAT PUMP DEPENDENCIES



“heat pumps already provide a compelling case for installation in new build properties and houses that are off the gas-grid”

Why it's important

Average UK Energy Use



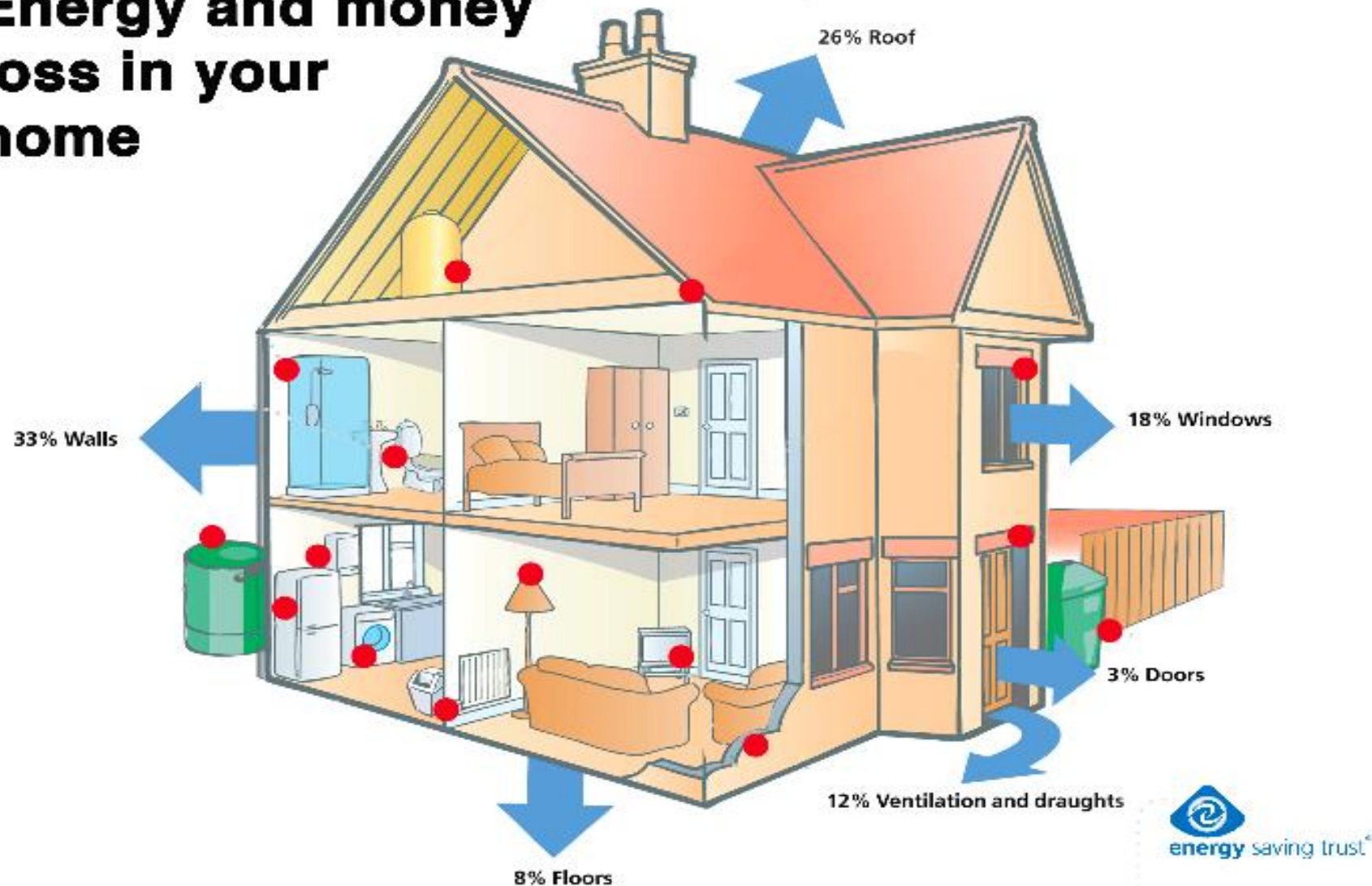
Key (large pie charts)
(labelled clockwise in numbered order)

1	Space Heating
2	Hot Water
3	Cooking
4	Consumer Electronics
5	Computing
6	Cold Appliances
7	Wet Appliances
8	Lighting
9	Miscellaneous

Key (small pie charts)
(labelled clockwise in numbered order)

1	Windows
2	Doors
3	External Walls
4	Ground Floors
5	Roof
6	Draughts

Energy and money loss in your home



CONTEXT FOR ASHP OR GSHP.....

- UK Building Stock Average : 250 kWh m² PA



- 2011 Part L Building Regulations: 100 kWh m² PA



Passive House: <15kWh/m²yr

94% REDUCTION !



PRE-CONDITIONS FOR ASHP OR GSHP.....

1. 60% reduction in your demand



2. Solar PV Array



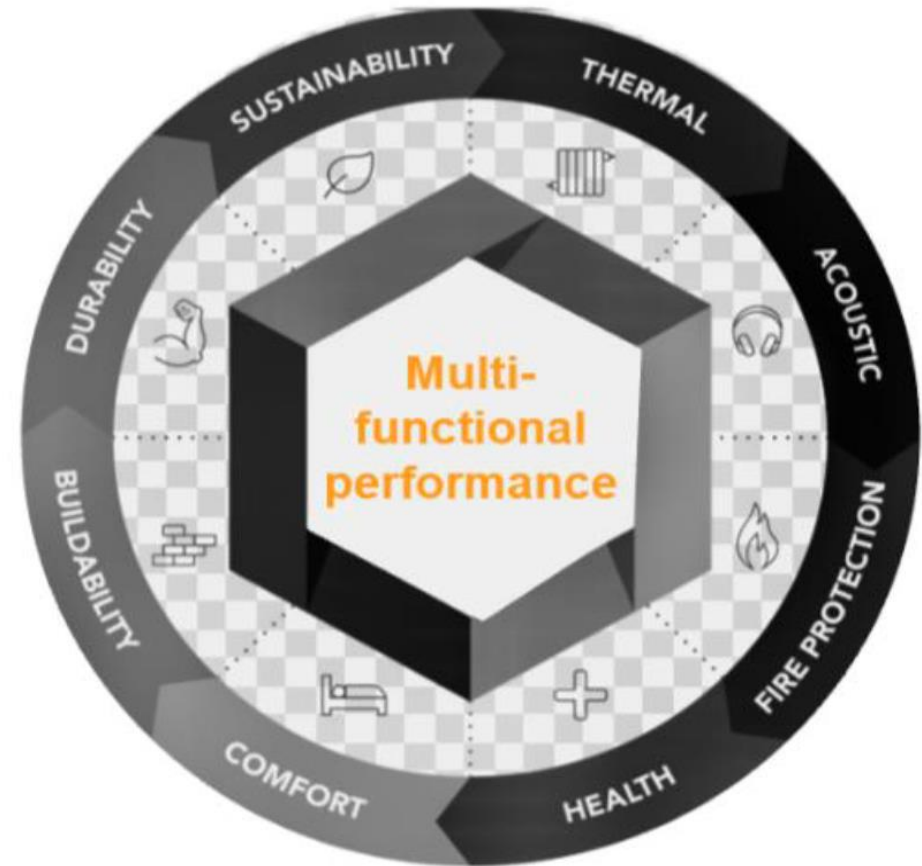
3. Heat Pump



£ Gas per kWh V electricity per kWh



**Insulation is not just
about thermal resistance**



Direct health issues;

- **Off gassing**
- **Consequences – mould**
- **Fire; intensity of fire, fumes from fire**
- **Acoustic**
- **Summertime Overheating**

Indirect health issues;

- **Pollution, plastics**



- above joists
- storage platforms
- dormers

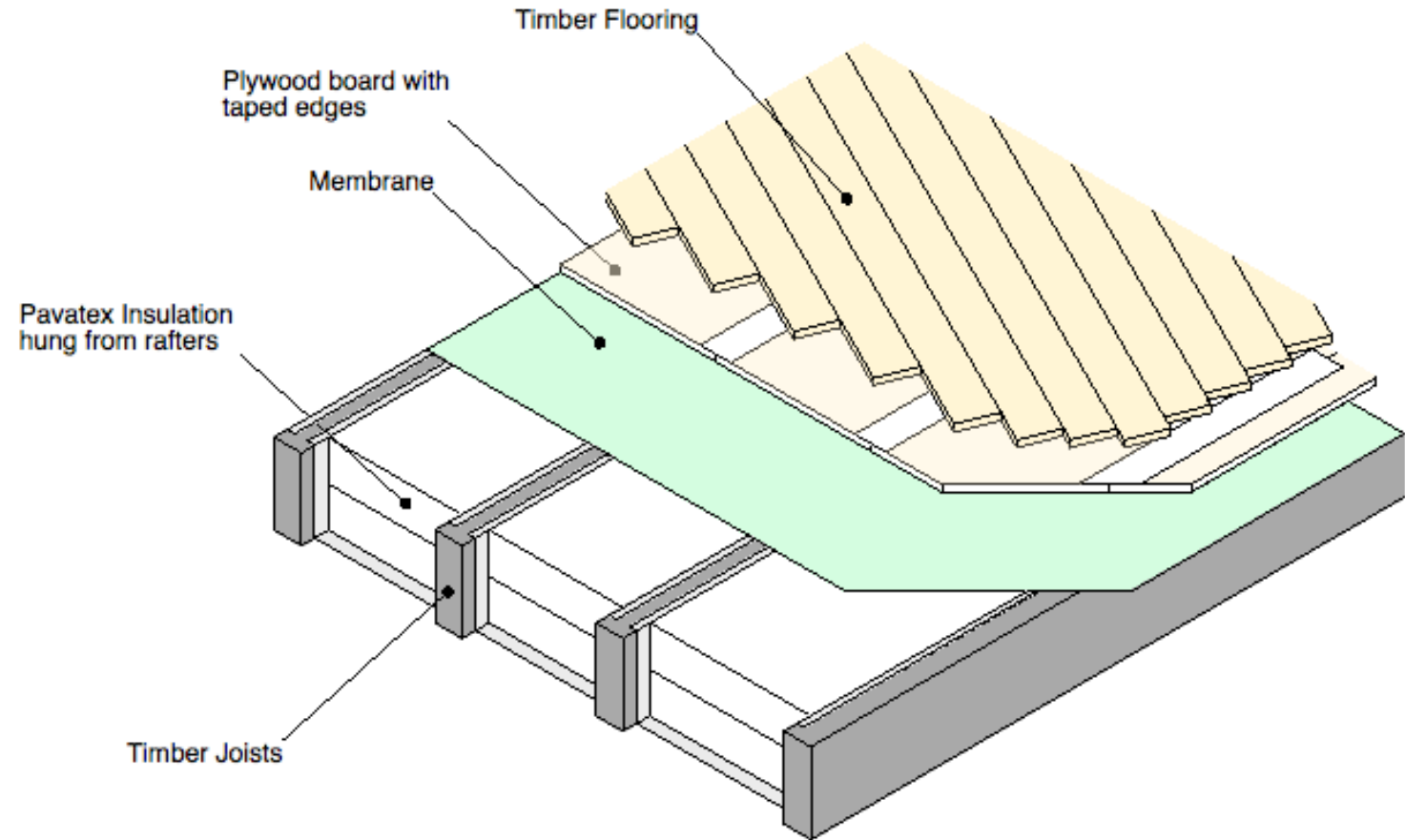
Lofts-under rafter



BELT + BRACES

AIRTIGHTNESS
CARRIER +
OVERLAYER
WITH
PAVAFLEX

Suspended Floor Insulation Detail



Scale 1:20 @A4

Underfloor-
Low cost
option



CAVITY WALL
+ TRIPLE GLAZING
+

EWI-WOODFIBRE



EWI DETAILS







Photo 3



Photo 4 – View up to Flat and pitched roof





And don't forget the
airtightness...with ventilation !



