Occupancy Analytics:

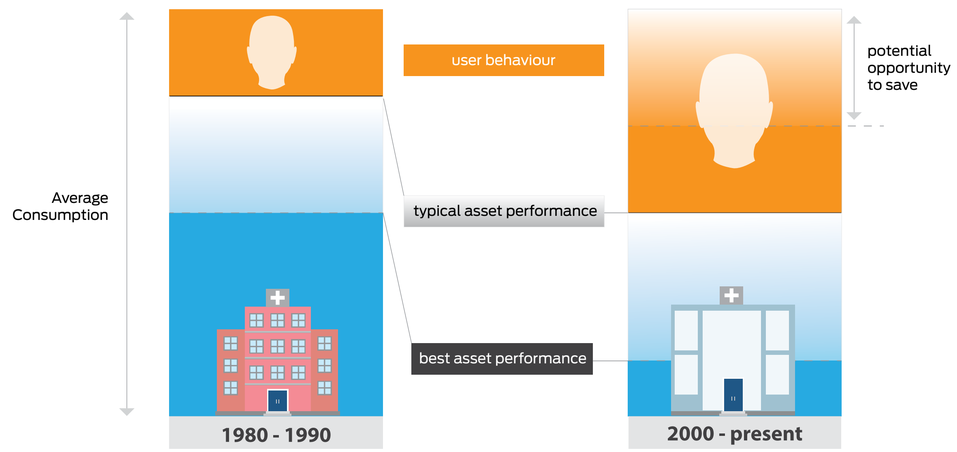
A new buildings science for low -energy - low carbon hospital design and operations.

CONCLUDE

Informed Decision Making

1

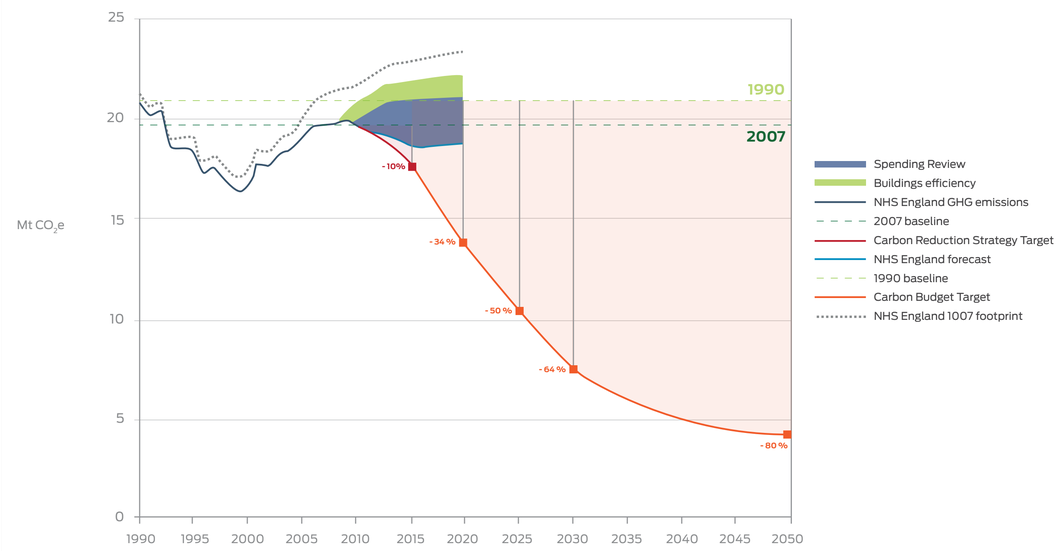
Typical Hospital Performance 400 kWhr/m2



UK hospital buildings in 2013 perform no better from an energy consumption perspective than they did three decades ago.

2

2015 Forecast



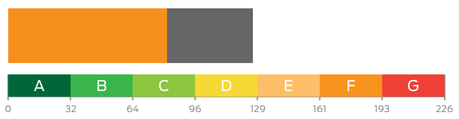
Even today carbon emissions are still rising and not falling as required by the UK governments carbon reduction commitment . In terms of hospital facilities the green area clearly shows that we need to significantly improve their carbon performance.

Source: NHS Sustainability Development Unit (NHS England Carbon Emissions: Carbon Footprint Report Published 2012)

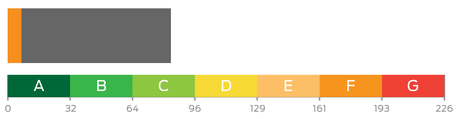
3

Hospital

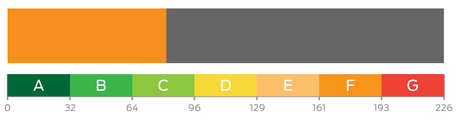
CIBSE TM46 Benchmark (CO_2 kg/m²/yr)



Design Data Medians (CO_2 kg/m²/yr)



Actual Data Medians (CO_2 kg/m²/yr)

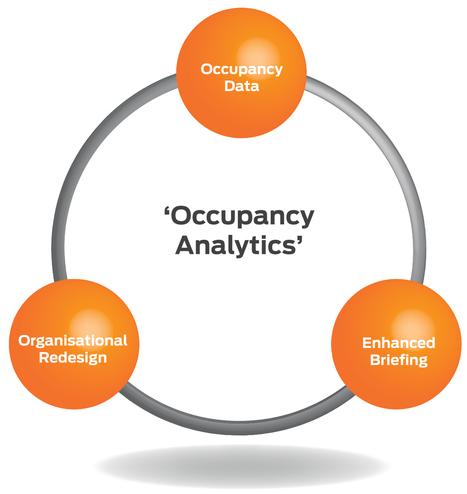


Not only do most UK hospitals perform badly from an energy + carbon emissions perspective – the energy performance of new facilities is rarely achieved in practice - in fact the evidence is that the disparity can be between three and five times! - WHY?

Asset performance. In-Use performance.

Source: Chartered Institute of Building Services Engineers. (TM46 Energy Benchmarks.)

4



Occupancy Analytics

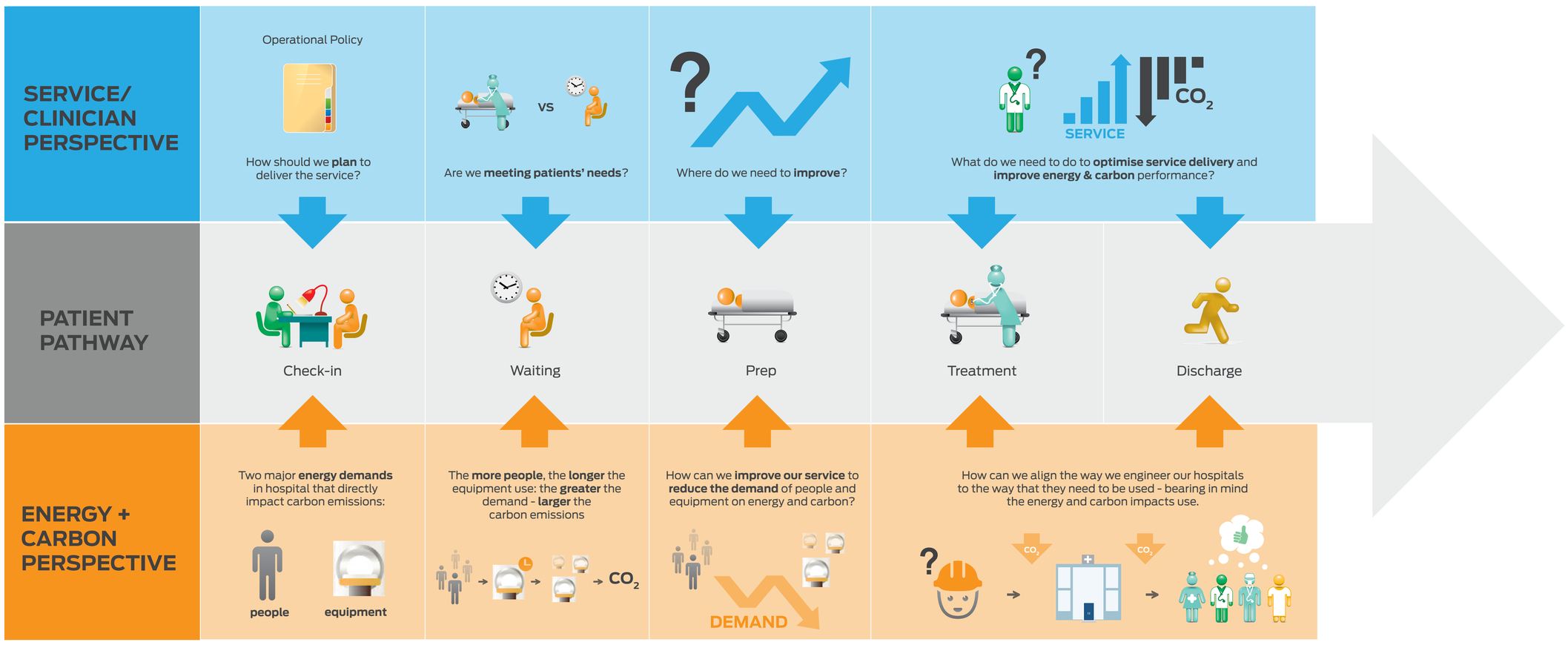
In relative terms for the whole of the government estate the carbon emissions from 'Health' are the largest, and is responsible for 25% of all carbon emissions. 70% of the health care estate in 2011 performed with a DEC rating at a 'D' or worse – WHY?

Because engineering designers lack the data required to enable them to understand the impacts of In-Use. Consequently they make assumptions, and it is these assumptions lead to poor engineering design decisions that impact future hospital energy and carbon performance.

It is also because clinicians often do not understand the impacts of their working practices and consequently have little knowledge to inform what needs to be changed to achieve low energy-low carbon performance. Once they do, their requirements can be communicated in what we refer to as the 'Enhanced Brief'. How do we make this happen?

5

Managing the Service: Patient Pathways, energy and carbon impacts



How?...We make it happen by applying the new science of Occupancy Analytics during the planning and design stages of the new hospital facility. Through working with clinicians we developed an empirical evidence base that is then used to help them learn how to improve their processes as well as their understanding of the energy and carbon impacts of those processes. The new knowledge is then used to 'right-size' the hospital facility in terms of space and engineering system design, communicated through the 'Enhanced Brief.'

The benefits

Profit: Right sized facilities based on optimised use of space.

People: People empowered to drive for improved performance through better information.

Planet: Low energy - low carbon performance driven by better informed working practices.

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