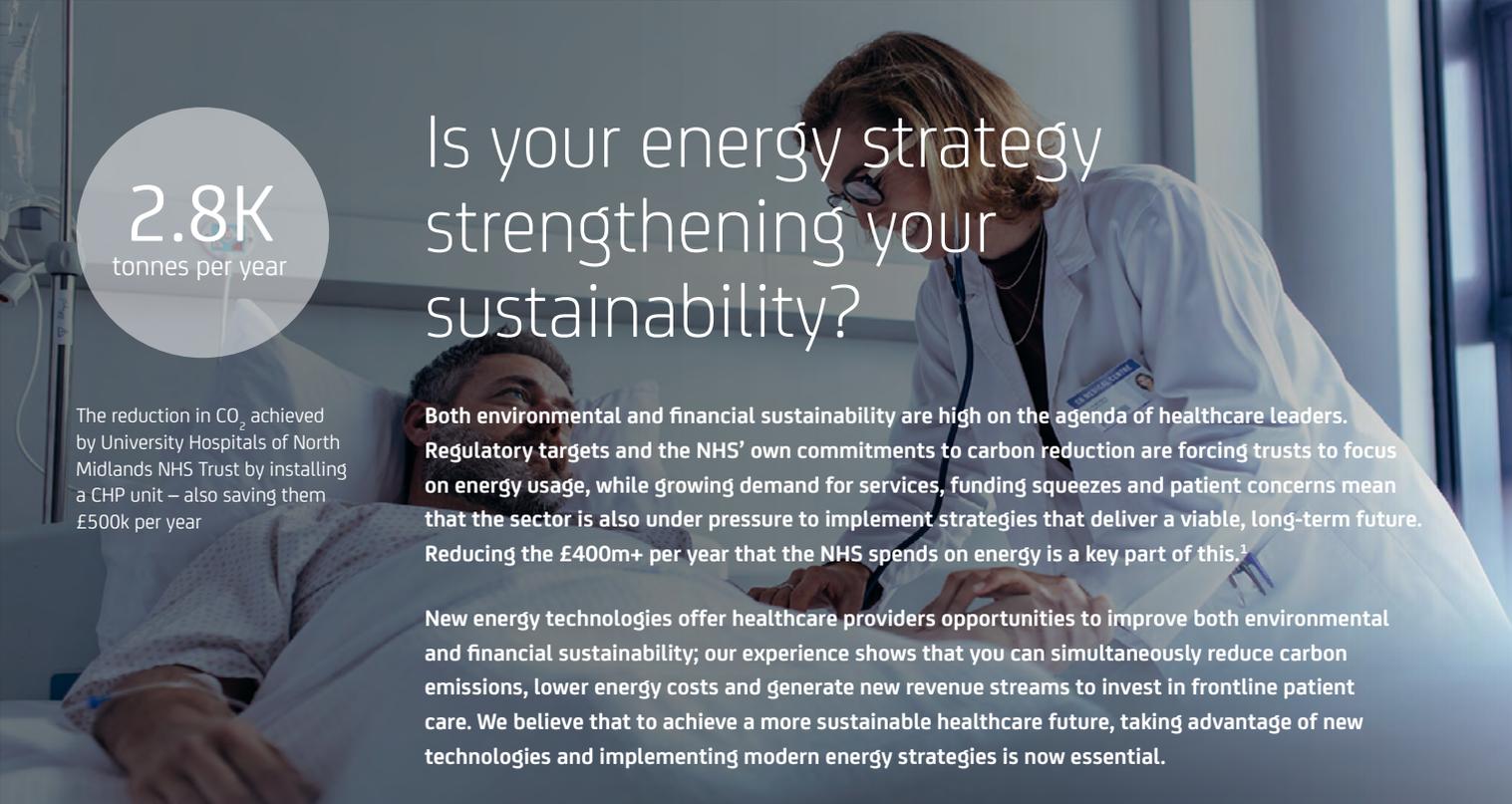


Harness the potential of energy to build a sustainable future

Powering a sustainable future for the healthcare sector



Is your energy strategy strengthening your sustainability?

2.8K
tonnes per year

The reduction in CO₂ achieved by University Hospitals of North Midlands NHS Trust by installing a CHP unit – also saving them £500k per year

Both environmental and financial sustainability are high on the agenda of healthcare leaders. Regulatory targets and the NHS' own commitments to carbon reduction are forcing trusts to focus on energy usage, while growing demand for services, funding squeezes and patient concerns mean that the sector is also under pressure to implement strategies that deliver a viable, long-term future. Reducing the £400m+ per year that the NHS spends on energy is a key part of this.¹

New energy technologies offer healthcare providers opportunities to improve both environmental and financial sustainability; our experience shows that you can simultaneously reduce carbon emissions, lower energy costs and generate new revenue streams to invest in frontline patient care. We believe that to achieve a more sustainable healthcare future, taking advantage of new technologies and implementing modern energy strategies is now essential.

The need to achieve environmental and business sustainability

The UK healthcare sector has a substantial carbon footprint. According to The King's Fund, 'the NHS is the most significant public sector contributor to climate change.'² One study found that CO₂ emissions attributable to the NHS in England were greater than the annual emissions from all aircraft departing from Heathrow Airport.³

With regulatory targets for energy efficiency and carbon reduction becoming ever more demanding, the pressure is on to improve environmental performance.

At the same time, consumers' increasing concern about green credentials now extends to the healthcare sector. As the healthcare market becomes more competitive, protecting your reputation means demonstrating a strong environmental profile. Indeed, many UK hospitals have made public commitments to carbon reduction targets. For example, the world renowned Great Ormond Street Hospital for Children has a target of a 34% reduction in its carbon footprint by 2020, against a 2012/13 baseline.⁴

But sustainability in healthcare encompasses more than just environmental performance. With funding shortfalls likely to be a permanent feature of the landscape, healthcare providers now face the additional challenge of ensuring that they have a sustainable business model.

Achieving this depends in part on diversifying and discovering new revenue streams, offsetting the loss of income from traditional sources. Whilst controversial at times, parking is one area that hospital trusts have already looked to as an additional source of finance. According to one survey, NHS hospitals made a record £174m from charging patients, visitors and staff to park in 2016/17.⁵

80%

The 2050 percentage target for reducing carbon emissions – against a 1990 baseline – that the NHS has committed to, in line with the UK's commitments under the 2008 Climate Change Act⁶

54%

The percentage of healthcare respondents who felt that the link between sustainable energy use and brand image/company values was very important⁷

£22
billion

The estimated funding shortfall that the NHS will face by 2022/3⁸

Enabling a more sustainable future with energy

By taking advantage of low-carbon technologies and supply-side incentives, healthcare providers can simultaneously improve their environmental performance, reduce their energy costs and generate new revenue streams to invest in frontline services.

Many healthcare facilities, such as hospitals and care homes, have underutilised real estate (including roof spaces) that could be used for renewable energy generation. They also have a usage profile which requires lots of energy during the day, making technologies such as solar highly feasible.

If you have mixed energy usage requirements, on-site power production through cogeneration (combined heat and power/CHP) or trigeneration (CHP integrated with absorption chillers) delivers significant benefits. One of our CHP units, for example, is currently saving a university hospital in Ireland more than 80 tonnes per year in carbon emissions. The associated cost savings help the hospital to invest further in patient care.

On-site generation technologies such as solar and CHP not only cut energy costs and carbon emissions, but also enable generation of new income streams by selling excess capacity back to the grid – turning unused space into a productive asset.

Cutting CO₂ emissions by 5.6k tonnes a year

By providing Birmingham Heartlands Hospital with a new, purpose-built Energy Centre, housing a highly efficient ENER-G CHP system, plus other technology including steam-raising boilers and an absorption cooling system, we enabled them to cut CO₂ emissions by 5.6k tonnes a year. That's the equivalent of a forest of 560,000 trees. CHP savings and performance are guaranteed for 15 years.

Overcoming knowledge and funding shortfalls

Despite the potential for significant savings, our research suggests that many healthcare providers are still not taking advantage of new, more efficient generation technologies, in large part because of a lack of knowledge, or a perception that they lack the necessary capital or skills.

But with flexible funding models available, and the option to outsource aspects of energy management to specialist providers such as Centrica Business Solutions, these obstacles can be overcome. For example, as part of a major £5.7m energy infrastructure project that we designed, delivered and funded for Solihull Hospital, we installed a natural gas driven trigeneration system that has reduced their CO₂ emissions by 1,920 tonnes per year and delivers £903k annual energy and operational cost savings.

More options, more savings

It's not only through low-carbon generation that you can improve your energy sustainability. A number of other efficient energy technologies and approaches offer significant potential benefits:

- **Setting appropriate temperatures and ensuring that heating and cooling controls are working effectively** can have a major impact on energy usage, particularly in facilities such as primary care centres where heating accounts for 70% of energy usage.⁹
- **Implementing low-energy LED lighting** can also contribute to lowering carbon emissions. LED lighting is an energy-efficient, sustainable technology that's between 50–90% more efficient and lasts up to 50 times longer than traditional light sources.¹⁰ For example, we helped one large city hospital reduce its energy consumption by 77% and save £31,000 a year by switching 1,716 existing light fittings to LED alternatives.

Another way that energy can help ensure a more sustainable future is by making it easier to introduce new technology that transforms the way healthcare is delivered. With the World Health Organization predicting that by 2030, the global shortage of healthcare workers will exceed 14 million,¹¹ technology has a key role to play in helping to fill the gap.

Increasing staff productivity. Improving diagnosis and prevention. Enabling better targeting of treatments. New technology can support a range of benefits, but they all put greater demands on energy usage. The way forward is to gain actionable insight into your energy usage – understanding where you are now, in order to make the transition to a more efficient, flexible and resilient infrastructure. This provides the platform for digital healthcare, enabling healthcare organisations to realise the full potential of transformational technology.

90%

The percentage of healthcare respondents who agreed that there were opportunities for energy strategies to help enable a sustainable business model¹²

15%

The percentage of healthcare respondents who have implemented solar panels across most of their sites (only 16% have CHP installed at most sites)¹³

70%

The percentage of healthcare respondents who agreed that that they need both commercial and technical expertise to help realise new opportunities relating to energy¹⁴

UP TO 20%

The percentage of energy usage in a hospital that can be accounted for by lighting¹⁵

1 The Carbon Trust Hospital Sector Overview

2 <https://www.kingsfund.org.uk/projects/time-think-differently/trends-sustainable-services>

3 Sustainable health and social care: Connecting environmental and financial performance, Naylor C, Appleby J (2012)

4 Great Ormond Street Hospital for Children, Annual Report and Accounts 2016–2017

5 <https://www.theguardian.com/society/2017/dec/28/nhs-hospitals-made-174m-from-carpark-charges-this-year>

6 NHS Carbon Reduction Strategy for England, NHS Sustainable Development Unit

7 Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organisations

8 Joint statement on health and social care, Nuffield Trust, the Health Foundation and The King's Fund, Nov 2017

9 Primary healthcare: Caring for budgets through energy efficiency, The Carbon Trust

10 Primary healthcare: Caring for budgets through energy efficiency, The Carbon Trust

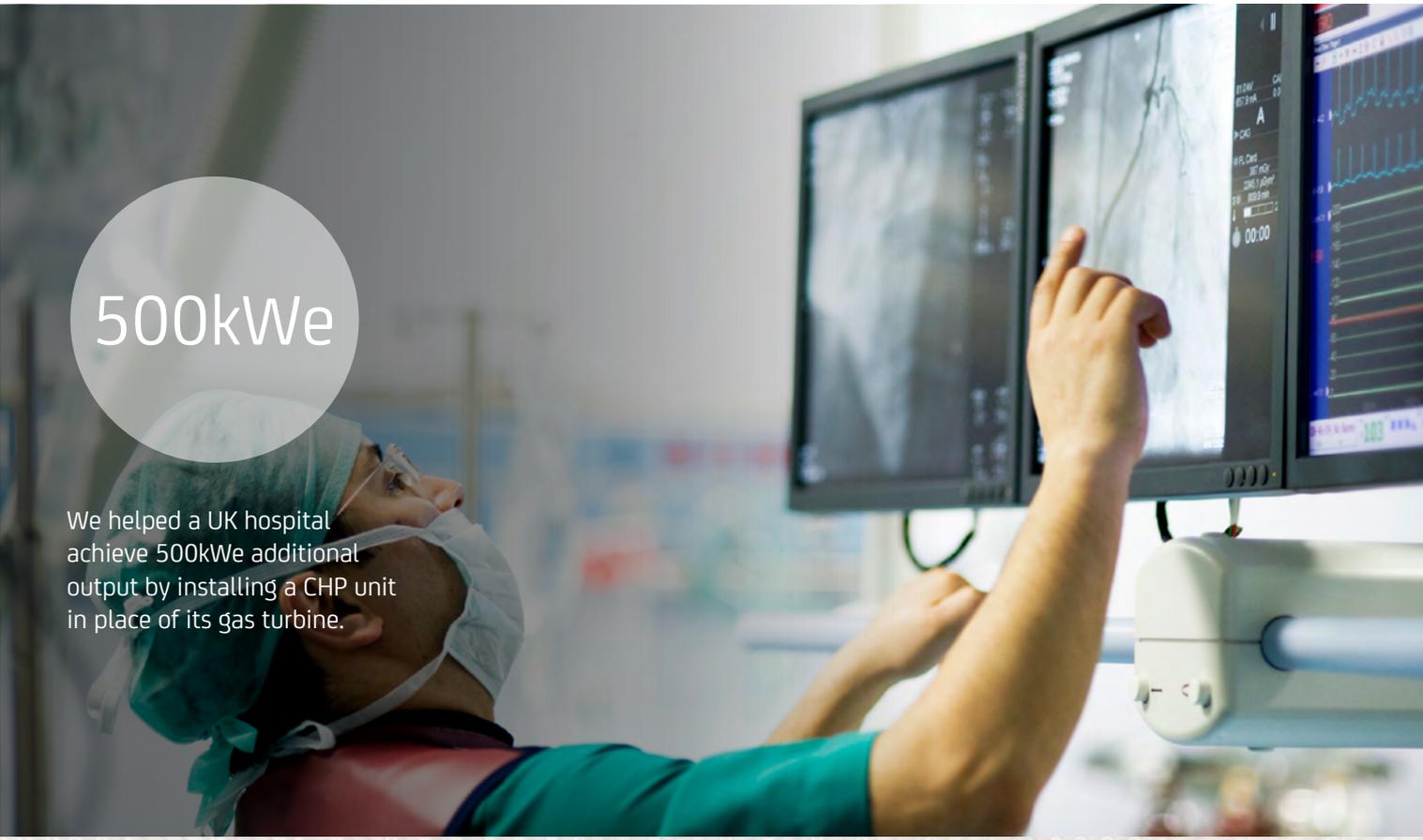
11 Global strategy on human resources for health: Workforce 2030, World Health Organization, 2016

12 Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organisations

13 Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organisations

14 Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organisations

15 Primary healthcare: Caring for budgets through energy efficiency, The Carbon Trust



500kWe

We helped a UK hospital achieve 500kWe additional output by installing a CHP unit in place of its gas turbine.

Your priorities

Our experience of working with healthcare providers has highlighted the energy strategies that we believe you should prioritise, enabling you to build a more sustainable future:

- **Audit existing facilities to identify inefficiencies** in areas such as lighting, heating and cooling, then implement appropriate efficiency measures.
- **Ensure you have the optimum energy strategy in place** – one that supports the needs of a modern healthcare system, including the transition to digital healthcare.
- **Take advantage of low-carbon, on-site generation technologies** to reduce carbon emissions.
- **Capitalise on supply-side incentives** to reduce costs and generate additional income from existing assets.

Our solutions

Our work with leading healthcare organisations means we are ideally placed to help you harness the potential of energy to create a more sustainable future. We do this through our:

- **Expert advice** that helps you deliver and execute a sustainable energy strategy.
- **Energy insight and analytics solutions** that help you identify opportunities to reduce energy consumption and lower carbon emissions.
- **Renewable, low-carbon technologies** such as solar and CHP that help you reduce your emissions and generate your own energy supply.
- **Demand side response and energy trading solutions** that enable you to generate new revenue streams from your on-site energy assets.
- **Flexible funding models** that remove the barriers to deploying new, lower-carbon technologies.

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