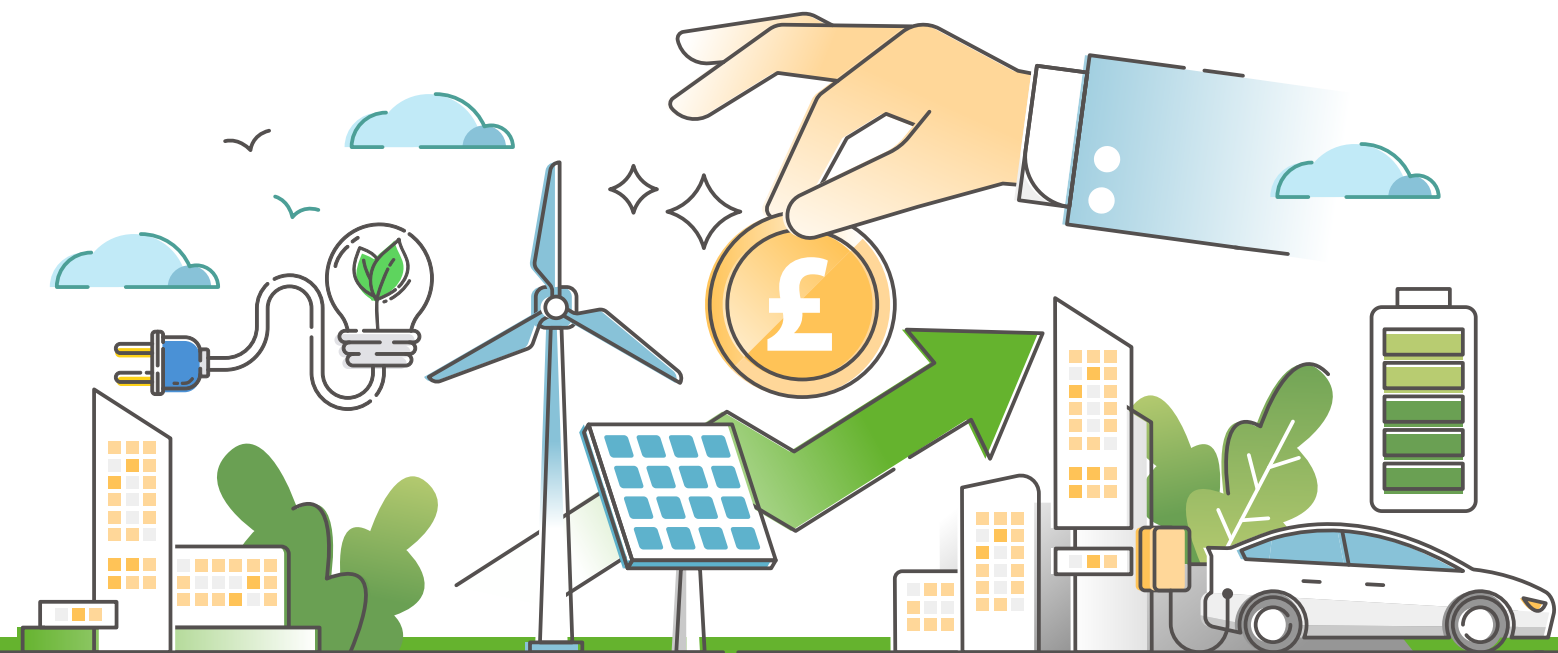


Estates 'Net Zero' Carbon Delivery Plan

Summary Report



Overview

Climate change and human health are inextricably linked, with rising global temperatures and air pollution contributing to the direct and immediate increase in rates of major diseases, including asthma, heart disease and cancer, and to health inequalities. Left unabated, climate change threatens to undermine the foundations of good health, with the potential for floods, storms, and heatwaves to significantly disrupt health services across the country. The Greener NHS national programme draws together a wide range of work streams, all designed to deliver the commitments laid out in the NHS's decarbonisation strategy, as set out in the ['Delivering a Net Zero National Health Service'](#) report.

This delivery plan aims to address the aspects of the net zero strategy pertinent to estates and facilities activities. It will be of particular interest to NHS leadership and management teams, sustainability and energy professionals and those who support the NHS's ambitions for a net zero carbon future. It links closely with complementary [Green Plan guidance](#) and will support trusts and Integrated Care Systems to develop their decarbonisation plans and estates strategies. It sets out a clear, sequential four step investment approach to decarbonising NHS sites ([see figure 1](#)).

Four step approach to decarbonise the NHS estate

- 1. Making every kWh count: Investing in no-regrets energy saving measures**
- 2. Preparing buildings for electricity-led heating: Upgrading building fabric**
- 3. Switching to non-fossil fuel heating: Investing in innovative new energy sources**
- 4. Increasing on-site renewables: Investing in on-site generation**

The document also references a range of actions to tackle climate change in other areas, including:

- **Driving forward a circular economy**
- **The electrification of the NHS fleet**
- **Engaging the supply chain**
- **Preparing the estate for severe weather**
- **Committing to active travel**

This document is supported by a technical annex which will be of interest to NHS staff with responsibility for delivering the contents set out within. The technical annex can be accessed on the [Future NHS Estates & Facilities](#) workspace.

Introduction

The UK is leading the way on tackling climate change and improving sustainability, and the NHS is leading the way in England.

In 2019, the UK became the first major economy to commit to net zero emissions by 2050. In 2020, the NHS set out its intent to support this ambition through its [‘Delivering a ‘Net Zero’ National Health Service’](#) report. The report sets a clear target for achieving a net zero health service for direct emissions by 2040 and indirect emissions by 2045.

The NHS estate has a critical role to play in achieving this ambition. It is an area where the NHS can take direct and cost-effective action with a high degree of confidence. It is vital that we seize this and every other opportunity across the NHS. The [world’s best climate scientists](#) are clear: we have less than 10 years to take bold and immediate action on climate change before the crisis becomes irreversible. The NHS must play its part.

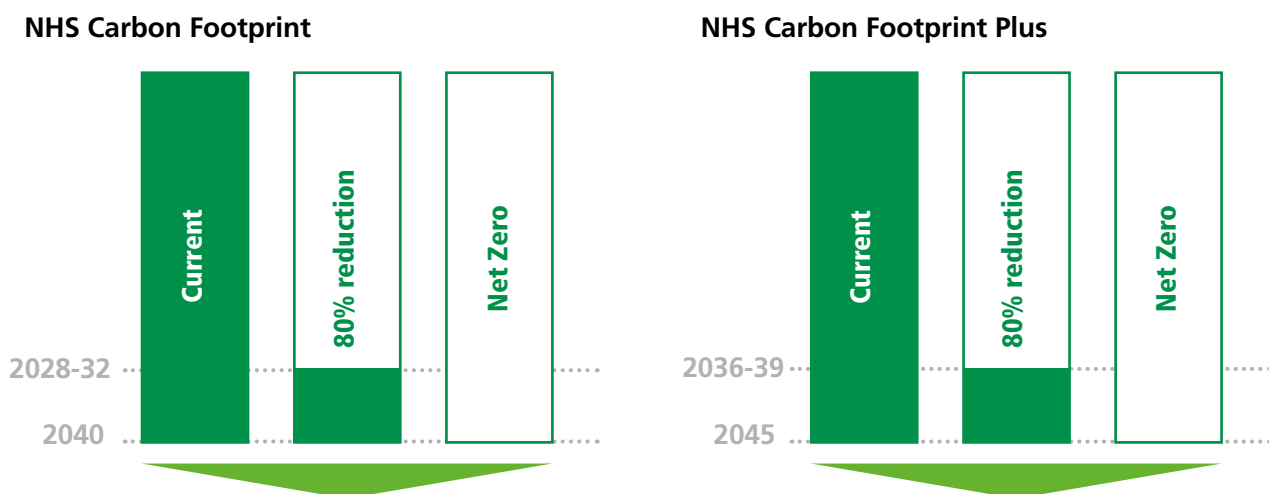
Despite significant progress, the NHS remains one of the [largest single emitters](#) of carbon dioxide in the UK. Its operations account for [5.4%](#) of the UK’s total carbon emissions and 40% of all public sector emissions. Action needed goes far beyond NHS estates and facilities services, reaching everything from supply chain contracts to patient travel. Nonetheless, as set out below, the estate is a significant part of the NHS carbon footprint. Importantly, it is one of the key areas where we have direct levers and can bring about the vital early action needed to help reduce emissions.

How estates and facilities fit within the wider NHS footprint

As set out in our Delivering a Net Zero NHS report, the NHS has divided its carbon footprint into two core parts:

1. **The NHS Carbon Footprint:** this covers emissions from the areas under the NHS' direct control e.g. its buildings energy use, the waste it generates, business travel carried out by its staff and NHS vehicles, and the use of anaesthetic gasses. Direct carbon emissions from NHS building energy use alone account for 2,518 ktCO₂e per annum; and
2. **The NHS Carbon Footprint Plus:** this covers emissions that the NHS can influence rather than directly control, predominantly through its buying activities e.g. the equipment and medicines it buys, the construction of its new hospitals and the food it purchases for its patients.

The report then sets out key target dates for emission reduction. They are:



Emissions relating to the estates and facilities services span both the *NHS Carbon Footprint and the NHS Carbon Footprint Plus*, accounting for over 60% of the NHS Carbon Footprint (mostly due to emissions from energy use) and also a significant proportion of the Carbon Footprint Plus, through staff travel, construction, catering plastics and capital spend, food and our wider £9 billion estates and facilities annual supply chain spend.

Why estates and facilities should lead the way on net zero

The Delivering a Net Zero NHS plan sets out the critical role estates and facilities services will have in achieving the NHS' overall net zero carbon ambitions. It focused on eliminating emissions from our estates and facilities operations, setting out clear actions, timelines for completion and the key enablers that will support delivery.

Success in reducing the emissions of the NHS estate will lay the foundation for carbon reductions across the NHS. We can lead the way on net zero through decarbonising the estate – helping to give other functions the confidence and direction needed to define their own actions to support our joint progress.

There are six compelling reasons for the NHS estates and facilities function to lead the way on net zero carbon:

1. Actions on estates will **set the standard** for the rest of the NHS, showing how net zero can directly benefit patient care and support joint progress.
2. Action makes **great business sense** and will lead to long-term revenue savings, which can be invested in patient care.
3. It's an **obvious place to start** – it is responsible for the largest portion of service-related emissions, and a significant part of public sector building emissions.
4. NHS buildings, from large hospitals to local GP surgeries, are the most **prominent physical manifestations** of the NHS – this creates an opportunity for the estate to help inspire patients, the public and other organisations.
5. It's **already ahead of the game** – effective action is already defined, well understood and underway to various degrees – with smart planning we can make a big difference, quickly.
6. Net Zero investment in buildings also offers **other significant social value and health benefits**, including economic growth and job creation.

Early action – between 2021 and 2031 – will focus on our areas of greatest opportunity, achieving operational reductions in emissions from building energy, water, waste and our estates and facilities fleet. Progress will also be made on longer term goals in our New Hospital Programme, through engaging our suppliers and improving access to low-carbon transport for staff.

This early action will help to mitigate against rising costs for carbon offsetting. Offsetting is not an accepted mitigation factor within the NHS for the NHS Carbon Footprint, due to the urgent need to focus on reducing emissions that we are responsible for.

Achieving our goals will result in significant savings on energy spend. Through the actions detailed within this report, [University College London](#) (UCL) have used [BEES](#) and [ERIC](#) data to estimate the NHS can reduce its annual energy bill by between 72 and 83%. Based on 2019-20 figures this would mean the NHS' energy bill of £576M would be cut to just £98M – a recurrent saving of nearly half a billion pounds which would be re-directed into patient care activities. These actions apply across primary and secondary care and, whilst the challenges and scale will be different in different sectors of the NHS, the core actions remain the same.

What needs to be done and by when

We have developed eleven strategic actions to provide a clear systematic framework for delivering net zero carbon estates. These are set out in the following sections. The accompanying [technical annex](#) details the interventions, activities and timelines required to achieve the eleven strategic actions.

Investing in our buildings

Aim: To eliminate 3.1 million tonnes of carbon every year from our building energy and water use

The NHS will achieve this by [investing](#) in our buildings; upgrading our heating, lighting and ventilation systems; installing onsite solar panels to generate additional renewable energy to NHS buildings; and ensuring our estates are fully digitally integrated. Whilst the NHS will seek to secure other funding to support these aims wherever possible, it is expected that most of this funding will need to be prioritised from the existing NHS operational capital budgets. The order in which we progress these upgrades is important to prevent an increase in our energy bills; **for example upgrading heating systems without delivering the efficiency and building fabric improvements could increase energy bills by 12%.**

Actions will need to be taken across both our primary and secondary care estate, although most of the impact will come from reducing emissions from our hospitals which account for 93% of building energy across the NHS. Figure 1 below details the specific areas that require upgrading and the order in which upgrades should logically take place.

£1 in every £187 spent in the NHS is spent on building energy. Building energy is the single biggest area estates and facilities can influence, making up 41% of the NHS Carbon Footprint. The four-step approach needed to deliver actions 1 and 2 is set out in Figure 1 below, followed by an overview of each step.

Action 1: Make every kWh and m³ count

Action 2: Run on 100% clean renewable energy

Figure 1: Four step approach to decarbonise the NHS estate by 2040

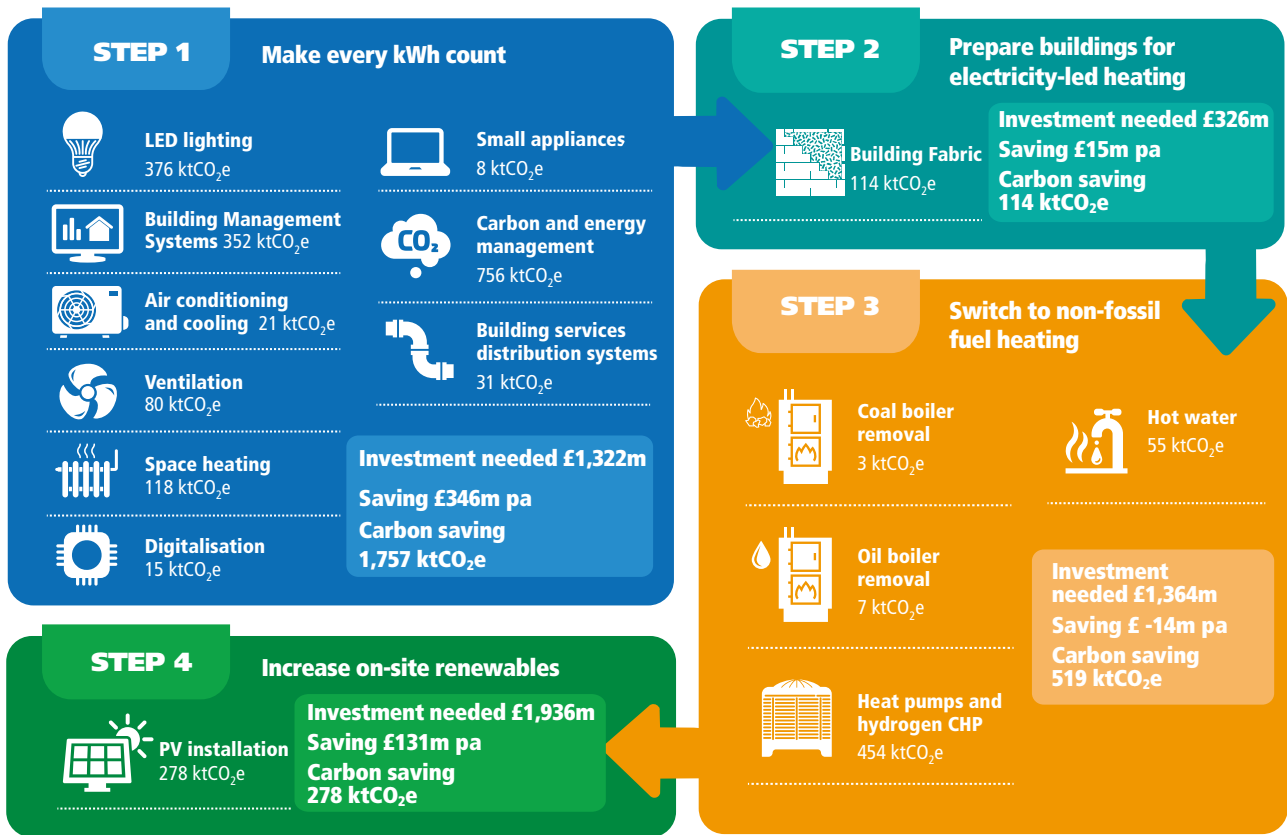


Figure 1 includes indicative numbers to illustrate the scale of the challenge to decarbonise the NHS estate by 2040. These are not actuals.

STEP 1: Make every kWh count

The first step demonstrates that, on average, every £1 million invested across the NHS in the actions listed will deliver a 1.33ktCO₂e saving per year. The cumulative capital costs of these investments would be offset by equal revenue savings over only 3.8 years.

Our current approach is to prioritise these cost-effective actions which will be beneficial to all decarbonisation pathways. This means prioritising energy efficiency improvements, measures to create a smart and flexible energy system, and (as set out in a later section) building the skills and supply chain that can be drawn upon to support and embed progress.

Investing in energy performance measures to reduce energy demand delivers a wide range of benefits, such as:

- reducing emissions by minimising heat loss from buildings
- mitigating issues with peaks in demand and reducing overall energy demand
- preparing buildings for low-carbon heat sources
- reducing NHS energy bills.

STEP 2: Prepare buildings for electricity-led heating

These interventions deliver 0.35ktCO₂e for every £1 million invested and have a longer, 21-year payback. This step is vital to make sure that low carbon heating upgrades are not larger or more expensive than necessary.

Improving the thermal performance of buildings before transitioning to low-carbon heating will further reduce energy demand. This is because, once a building is more energy efficient, a smaller heating system can be installed. This reduces operating costs and enables low temperature systems to operate more efficiently and effectively. Improving energy performance is also an investment in patient and staff health and wellbeing, as it leads to warmer, more comfortable buildings with better air quality, when paired with adequate ventilation. In the long-term, energy performance improvements also provide benefits such as increased productivity and longevity for regular users of NHS buildings.

Buildings with poor thermal efficiency, where excess cold, dampness and mould growth are present, create significant:

- **direct costs (including NHS treatment costs for associated health problems and higher energy bills)**
- **indirect costs (lack of wellbeing and productivity, for example).**

STEP 3: Switch to non-fossil fuel heating

Doing this provides 0.38ktCO₂e for each £1 million spend but does not have a financial payback due to the current low price of gas as a heating source relative to electricity.

A key barrier to the decarbonisation of heat is the difference in price between electricity and other energy sources, such as gas. Recent funding, including the Public Sector Decarbonisation Scheme, have supported investment in this area. The UK domestic electricity price is comparable to neighbouring countries. From January-June 2020 it was approximately 19 pence per kWh (including about a 30% tax component). By comparison, gas prices are slightly below the European average at 4 pence per kWh (including 6% tax).

STEP 4: Increase on-site renewables

This delivers 0.14ktCO₂e saving for every £1 million, although prices of renewable energy installations continue to fall, as technological developments continue. This step provides a payback of 14 years but provides a crucial final step in minimising the energy needed from the National Grid, whilst increasing site energy resilience and supporting local network issues. The installation of renewable electricity is a visual manifestation of the NHS commitment to meet carbon reduction targets and can inspire partners and local communities to act. This is consistent with the NHS' role as an anchor institution.

NHS organisations generating renewable energy beyond their own requirements can sell this surplus energy to the National Grid to generate additional income. It is important to note that step 4 should be completed after the earlier steps, so that renewable energy installations are correctly sized for their use. This will also provide time for alternative options to come to market or for prices of renewable energy installation and generation to reduce.

The steps set out above align with recent [BEIS](#) guidance. NHS organisations will be at different stages in their decarbonisation strategies, but it is important that the NHS collectively is clear on the investment needed and are working towards the same goal.

The subsequent sections highlight further actions for trusts and Integrated Care Systems (ICs) to take across five thematic areas. The actions are wider than energy reduction and will help to deliver sustainable estates and facilities functions. More details on the rationale for these actions, and resources to support implementation, are contained in the [technical annex](#).

Driving forward a circular economy

Aim: To eliminate waste, turning all waste into a resource

Between April 2019 and March 2020, the NHS generated 624,000 tonnes of waste, including around [133,000 tonnes](#) of Single Use Plastics (SUPs). Much of this waste could have been removed completely, either replaced by safe, reusable alternatives or reused, remanufactured, or recycled. Waste is visual and tangible, and something that everyone in the NHS can contribute to eliminating. In estates and facilities, we will work to increase the use of the [circular economy principles](#) and drive down waste from areas such as SUPs, packaging on supplies and products, and food waste from our catering activities. For waste that cannot be eliminated currently, there is a growing field of innovation for low carbon processing. We will measure volumes of waste and work with staff, procurement and our supply chain to eliminate waste, where possible.

Action 3: Increase resource productivity

Action 4: Reduce volume of residual waste

Electrifying our fleet

Aim: to eliminate harmful exhaust emissions from our fleet

To achieve our net zero commitments, the NHS must transition to a fully zero emission fleet. Where appropriate, estates and facilities teams in the NHS should consider the purchase or lease of ultra-low or zero emission vehicles. Estates teams will also be instrumental in supporting the transition of the NHS fleet to zero emission vehicles, through the installation of Electric Vehicle (EV) charging points and ensuring sites have the electrical capacity to support Electric Vehicle infrastructure.

Action 5: Using Ultra Low Emission Vehicles (ULEV) and Zero Emission Vehicles (ZEV)

Action 6: Establish EV ready Estates

Engaging our supply chain

Aim: To eliminate emissions from the goods and services we buy in estates and facilities

Estates and facilities spends upward of £9 billion every year on critical goods and services to keep our buildings safe and well maintained. Across the NHS our supply chain is responsible for a colossal 18.9 million tonnes of carbon emissions (CO₂e) every year; every pound we spend has a material impact on our carbon footprint. Over the coming years we will be working closely with our suppliers to reduce emissions and drive innovation. Estates and facilities teams across the country will play a critical and specific role in reducing the carbon emissions from the operations and supply chains of the organisations that they purchase from. The NHS Carbon Footprint Plus target is an 80% reduction by 2039 or sooner, and net zero by 2045.

All new buildings and major refurbishment projects, including the [New Hospital Programme \(NHP\)](#) and primary care upgrades will need to comply with the new *Net Zero Carbon Healthcare Building Standard* currently in development. To support this critical element of the carbon footprint across NHS estates and facilities, we will be focusing our efforts on three core, high impact areas over the next 36 months. They are:

Action 7: Ensure our suppliers meet the minimum standards expected on net zero and social value

Action 8: Ensure all our construction and capital spend is net zero carbon and all tenders include a minimum of a 10% weighting for [social value](#)

Action 9: Increasing healthier, more sustainable menu choices

Preparing for severe weather

Aim: To increase our resilience to climate related severe weather events

Over the past decade the number and severity of extreme weather events globally has visibly increased; from floods to fires, extreme snowfall to heatwaves. NHS hospitals in England are at a high risk of flooding and overheating events. It is [predicted](#) that these events will continue to increase, both in frequency and severity. It is therefore essential that we prepare our healthcare buildings to be as resilient as possible, minimising potential disruptions in patient care. Fully adapted buildings are better able to cope with changing weather patterns. International health care systems have experience of providing services in different climates and learning can be gained from them. For example, buildings designed to reduce heat gain require less energy-intensive cooling equipment, thereby reducing the carbon emissions for our estate.

NHS England and NHS Improvement will ensure organisations have plans to mitigate the effects of flooding and overheating, develop a climate change risk assessment and incorporate predicted climatic changes into estates strategies and business continuity plans. Further [guidance](#) is available through the Greener NHS programme.

Action 10: Prepare our estates for severe weather events

Committing to active travel

Aim: To reduce emissions from staff commuting

Estates and facilities teams and functions across the NHS employ a total of 100,000 employees. The choices these staff members are supported to make regarding how they commute to work and undertake business-related travel can have a significant impact on the NHS carbon footprint. Estates teams are also responsible for active travel infrastructure (cycle storage, lockers and personal storage, staff showers) and can use these investments to support all NHS staff to consider active travel options. Through development of active travel plans across individual organisations and integrated care systems, estates staff can implement improvements that can lead to considerable carbon emission reductions. Active travel programmes can also deliver a range of health benefits for staff, patients and visitors, from improved air quality to regular exercise.

Action 11: Support and encourage our staff to make lower carbon travel choices

What is needed to make this happen

Every estates and facilities team in England will need to take significant and immediate action to ensure the NHS achieve its, and the UK government's, carbon reduction targets.

Planning and governance

All organisations must plan and execute their organisational and Integrated Care System (ICS) green plans. Estates and facilities teams should ensure comprehensive plans to decarbonise their estate are included in their Board-approved organisational green plans. Reports on progress should be presented to organisational Board representatives and risks of delivery reported through the organisational and ICS risk registers. Best practice across organisations and Integrated Care Systems will be shared and celebrated. Further guidance on green plans can be found [here](#).

Capital prioritisation

Investment in energy efficiency projects [reported through ERIC] in 2018-19 and 2019-20 was around £75 million a year, cumulatively across the NHS. Central capital investments, through the NHS Energy Efficiency Fund (NEEF) and the recent Public Sector Decarbonisation Scheme (PSDS) have seen additional contributions of £310M.

To meet its targets for estates and facilities, organisations will need to ensure that all operational and capital expenditure between now and 2032 not only addresses the purpose that it is to be used for but also enables the implementation of measures that support emissions reduction, as set out in figure 1 above. Importantly, this does not need to be spent exclusively on decarbonisation projects but can and should form a central part of NHS capital planning and decision making.

Figure 1 above already demonstrated how cost-effective many of these investments can be, and how effective they are at reducing carbon emissions quickly and sustainably. Planned backlog maintenance and plant replacement offer opportunities to deliver energy efficiency improvements and reduce emissions by specifying carbon reduction as part of the programme. Efforts to reduce backlog maintenance can also drive co-benefits for carbon emission reduction, without the need for new, additional capital.

Where appropriate and cost effective, NHS England & NHS Improvement will continue to work with other Government partners to attract additional investment in cost-effective net zero carbon initiatives. However, our teams will need to focus efforts on prioritising existing capital allocations to ensure co-benefits are maximised and upgrades are made which reduce energy demand, remove fossil fuel heating systems, and increase on-site renewable energy generation.

To help organisations to plan their capital requirements for their estate, NHS England & NHS Improvement has developed the Estates Net Zero Carbon [Capital Planning Tool](#).

Skills and capability

Delivering a net zero carbon NHS Estate brings with it great opportunities for our workforce: from attracting new talent, to creating career development and re-training opportunities for our existing, highly skilled workforce.

Opportunities to develop new skills and careers, including data analytics, project delivery, net zero carbon engineering, circular economy management and digitisation, all can have huge intrinsic benefits in addition to supporting this delivery plan. This supports our role as an anchor institution, benefiting the local community and national green skills.

NHS England & NHS Improvement will assess the skills needed to deliver our commitments and will support the development of a diverse workforce, ensuring equality of opportunity for under-represented groups. For our net zero carbon workforce, this will help us to drive the government's ambitions for a [green industrial revolution](#) and recovery following the Covid-19 pandemic. Organisations must develop their workforce with the technical expertise needed to deliver the NHS' net zero carbon commitments.

To support this, NHS England & NHS Improvement will set up regional energy and sustainability hubs to build collaboration across organisations and ICS', developing strong primary and secondary care networks of action across regions and creating opportunity for career growth.

Data

It is critical that data is accurately captured and measured to track our progress to 2040 and beyond. The development of central data collection tools, templates, and reporting frameworks, in partnership with the Greener NHS national programme, will assist with providing the timely and high-quality data we need, as we enter this focused delivery phase. Enhanced and accurate data will allow us to understand and address unwarranted variation on estates' carbon performance and to advocate the need for further improvements, confident in the projected and delivered outcomes.

Digitalisation, automation, standardisation, and accessibility will be at the heart of our focus for estates and facilities data. Working towards a digital-ready estate also enables the NHS estate to prepare for new service models. Estates and facilities teams should consider their own internal data analytics capability and build capacity to support the increasing focus in this area.

Personal efforts by everyone

Every one of our 100,000 strong workforce can make a difference, positively impacting the NHS' carbon footprint through their personal behaviours at work. Every single member of the estates and facilities community in England can make a personal contribution to reducing the NHS carbon footprint, including by identifying projects and opportunities within their area to further reduce emissions. Evidence shows that NHS staff believe strong environmental stewardship is a key requirement of the NHS and to their work. In addition, reducing waste and increasing building performance provides further opportunities for estates and facilities staff to enhance patient experience. To support staff to understand their contributions to net zero carbon, NHS England & NHS Improvement will work with organisations to identify relevant training and educational packages to all staff, including those in primary care who can make local impacts across a very large number of buildings.

Reporting and accountabilities

Plans to decarbonise the NHS estate, should be developed as part of trust or integrated care system (ICS) [green plans](#) and approved by the trust board or ICS governing body. Trusts have been asked to submit their green plans to ICSs by 14 January 2022, to be consolidated into system-wide strategies. These, in turn, should be submitted to the relevant NHS England & NHS Improvement regional team for final peer review, ahead of publication.

Progress against an approved green plan should be formally reported annually to the trust board or ICS governing body. Progress should also be reported formally to the relevant regional Greener NHS team, in a format and frequency agreed with them.

While approved green plans cover a three-year period, each Trust and ICS should formally review and update their plans annually to consider:

- **the progress made and the ability to increase or accelerate agreed actions**
- **new initiatives generated by staff or partner organisations**
- **advancements in technology and other enablers**
- **the likely increase in ambition and breadth of national carbon reduction initiatives and targets.**

Regional teams will hold ICSs to account on delivery of the latter's green plans, and ICSs will be tasked with holding organisations within their system to account in a similar fashion.

Trusts and ICSs are expected to set out clear plans in their estates strategies on how they anticipate delivering a net zero carbon estate by 2040.

