

South East London ICS Decarbonising general practice - Energy



Your energy footprint

Energy is used for space and water heating and electrical equipment, lighting etc. Energy often has a high financial and carbon emissions cost for a practice.

Do you want to save money, energy or carbon? You can do all three simultaneously!

£260 = 233 kg CO₂e* = 1MWh electricity**

Reductions in use can be achieved through behaviour change and technological advances.

A recent survey of GPs revealed the majority were *more* interested in reducing their carbon emissions than reducing their expenditure.



Energy use contributes to around 25% of the non-clinical carbon emissions from primary care.

In 2020, primary care emitted 250,000 tonnes of greenhouse gases through energy use.

*2020 data ** MWh = megawatt hour of electricity = 1,000 kilowatt hours

Why address your energy footprint?

1. It offers huge financial opportunities – up to 25% savings on energy bills in the first 1-2 years.
2. Energy often has the highest non-clinical emissions footprint
3. It is the easiest way to have a big impact on carbon emissions
4. Reporting of energy use and greenhouse gases emissions is **mandatory** for companies with more than 250 employee. More information is available [here](#).

How to.. Do an energy audit?

1. Record the floor space of the practice
2. Use the bills to identify total use/expenditure
3. Identify equipment for heating and cooling (air conditioning, room heaters, fridges etc)
4. Measure the energy use of the equipment
5. Identify air leaks around doors, windows
6. Measure loft insulation
7. Identify type of windows (double glazed, single glazed)
8. Check lighting and other appliances.

Plug-in energy monitors can help understand the energy use of different pieces of equipment. Measure heating and cooling equipment first.

Find monitoring tools [here](#).

Energy hierarchy triangle

The Energy Hierarchy triangle is a classification of energy options with the most sustainable at the top.

Following the hierarchy approach helps to reduce the environmental impact of the energy use of the practice.

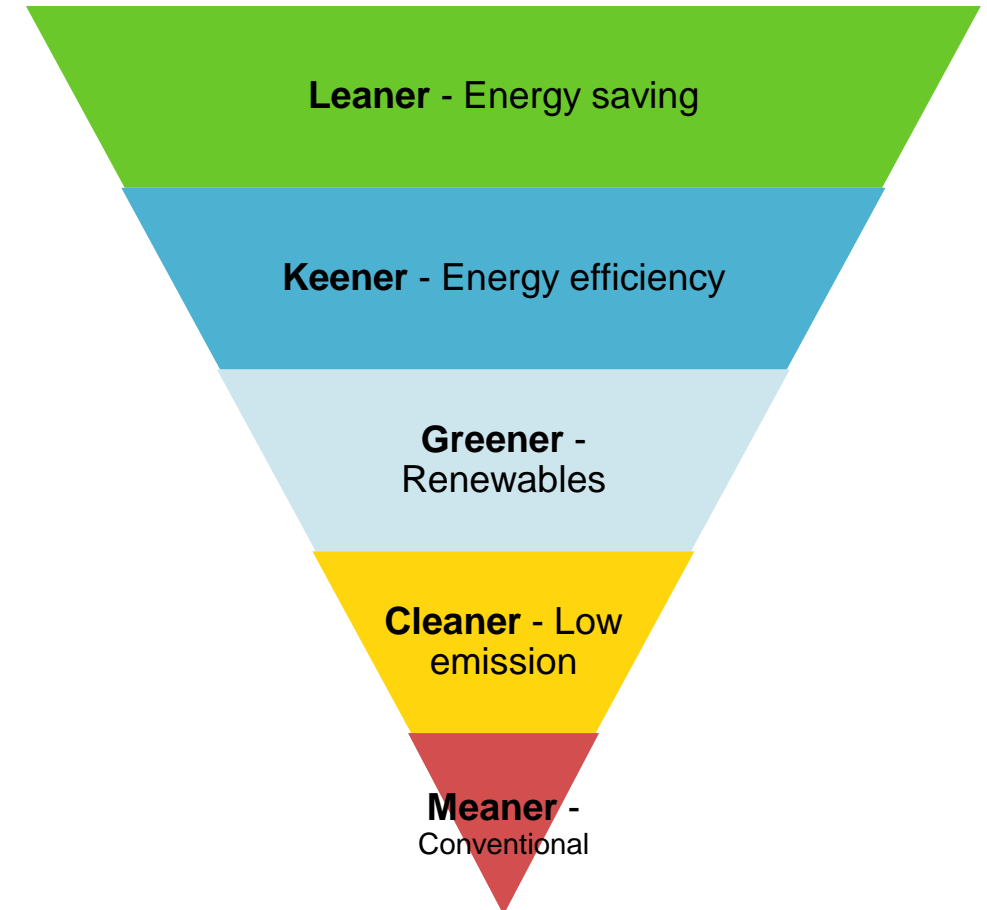
Leaner – The top priority under the Energy Hierarchy is energy conservation or the prevention of unnecessary use of energy. **The cheapest unit of energy is the unit of energy you don't use.**

Keener – The second priority is to ensure the energy that is **used is consumed efficiently.**

Greener – Thirdly, **BUY Green**. The energy that is used is from a renewable energy source. This describes naturally occurring, theoretically inexhaustible sources of energy e.g., 'elemental energy' from the sun, wind, wave, tide or rain (hydropower).

Cleaner – Fourthly, low impact energy production such as nuclear or fossil fuel with carbon capture and storage (not available at scale currently).

Meaner – Finally, energy production using unsustainable sources, such as unabated burning of fossil fuels.



Top actions you can take

1. Understand your current energy use better:

- Carry out an energy audit.
- Install a smart meter for better monitoring.

2. Make a plan and incorporate the energy hierarchy:

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

How much does our practice spend?

An annual electricity bill of £6,000 is equal to emissions of **over 5 tonnes** of CO₂e each year.

Four step approach to decarbonise the NHS estate

Step 1 Make every kWh count

- Carbon and energy management
- LED lighting
- Building Management Systems
- Space heating
- Ventilation
- Building service distribution systems
- Air conditioning and cooling
- Digitalisation
- Small appliances.

Step 2 Prepare buildings for electricity-led heating

- Improve building fabric
- Check EPC rating
- Doors, windows, insulation.

Step 3 Switch to non-fossil fuel heating

- Heat pumps
- Hydrogen boilers
- Electrical hot water.

Step 4 Increase onsite renewables

- PV installation.

Step 1: Energy saving

Reduce energy use through behaviour change

General Practice Energy Management Floorplan

This energy management floorplan can be used as a guide for ensuring that all rooms/areas have the correct energy saving options available. Sites can apply this as practically as possible, noting different estates types may allow for different solutions.

Treatment and phlebotomy rooms

- Ensure computers and printers/peripherals are switched off every night eliminating standby settings
- Set all PC monitors to go to sleep after 5 or 10 minutes of inactivity - a third of a PC's energy is used by the monitor.
- Use thermostats on radiators to control room temperatures.

GP and nurse consulting rooms

- Close doors and window where possible
- Avoid electric heater as they can affect thermostats
- Reducing your PC monitor brightness from 100% to 70% can save up to 20% of the energy the monitor uses.
- Open blinds for natural light.

Non-clinical areas

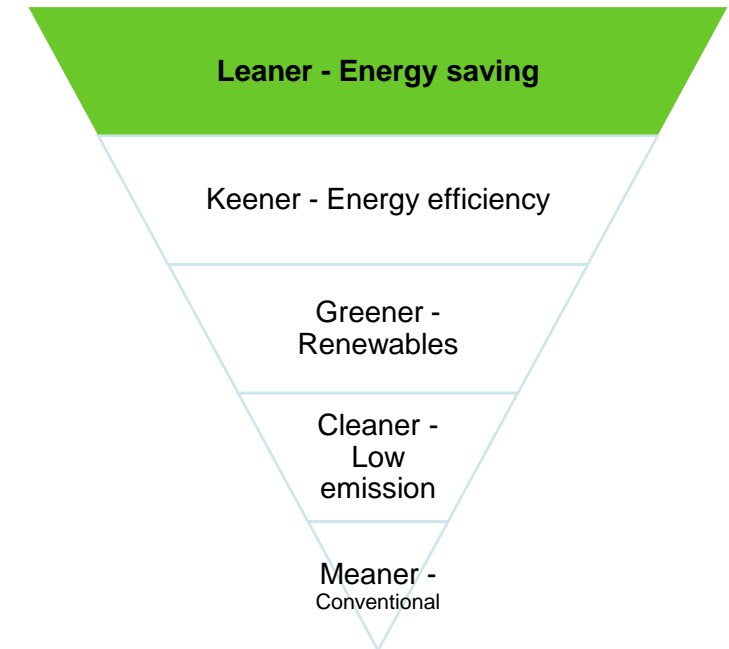
- Consider highest energy efficiency rated appliances within your budget when needing to replace
- Ask staff to only boil as much water is needed in a kettle.
- Use 'on-demand' water heaters instead of kettles.

Shared space/corridors

- Turn the thermostat down 1°C saves 8% in heating costs
- Lights on timers e.g., automatically off overnight
- When replacing equipment choose the highest energy efficiency ratings available.

Outside/Roof space

- Check and upgrade insulation where needed
- Annual maintenance of boilers and electrical items
- Look to improve thermal efficiency of doors and windows
- Prevent heat loss in the winter - Close windows and doors, improve draft exclusion.



Case study

One practice asked their clinicians to switch off at the wall as part of their '*Electricity Responsibility Plan*'. The depowering of the rooms decreased the practice electricity consumption by 30%.

Step 2: Energy efficiency

Reduce energy use through by increasing energy efficiency.

E.g., improved fabric efficiency, upgrades to lighting and cooling equipment, controls and metering.

Short-term investments in technology:

- Examine the current insulation – is it sufficient? The [National Insulation Association](#) can help.
- Is the thermal efficiency of windows enough? Do they feel cold? Are they double glazed?
- Heating – are there thermostats to control individual room temperatures? There is evidence that multizone control can drive higher savings.
- Can you use an 'On demand' water heaters instead of kettles for hot water?
- Water softening: Build-up of limescale in a central heating system due to hard water can reduce the efficiency of heating systems. Practices can include measures for water softening.

Electricity use

Lighting

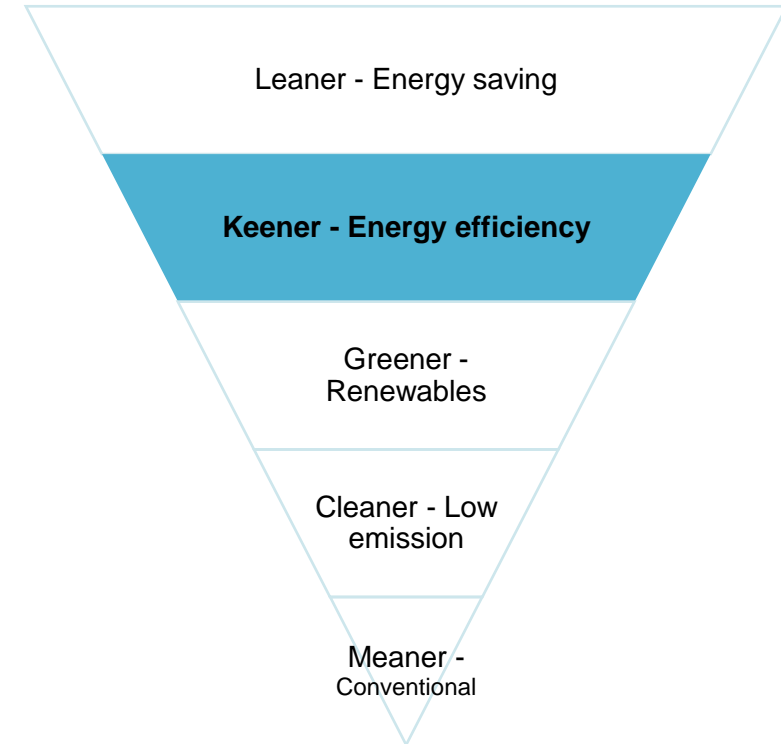
- Movement sensors, occupancy-controlled lighting, automatic light sensors
- Lights on timers e.g., automatically off overnight
- Change to LED bulbs

Computers & printers

- Put computers, printers and chargers on powerbanks can be turned off remotely or on a timer every night. Best buy reviews are [here](#), [here](#) and [here](#)

Equipment

- When replacing equipment choose the highest energy efficiency ratings available
- Low energy AAA rated electrical equipment e.g., refrigerators.



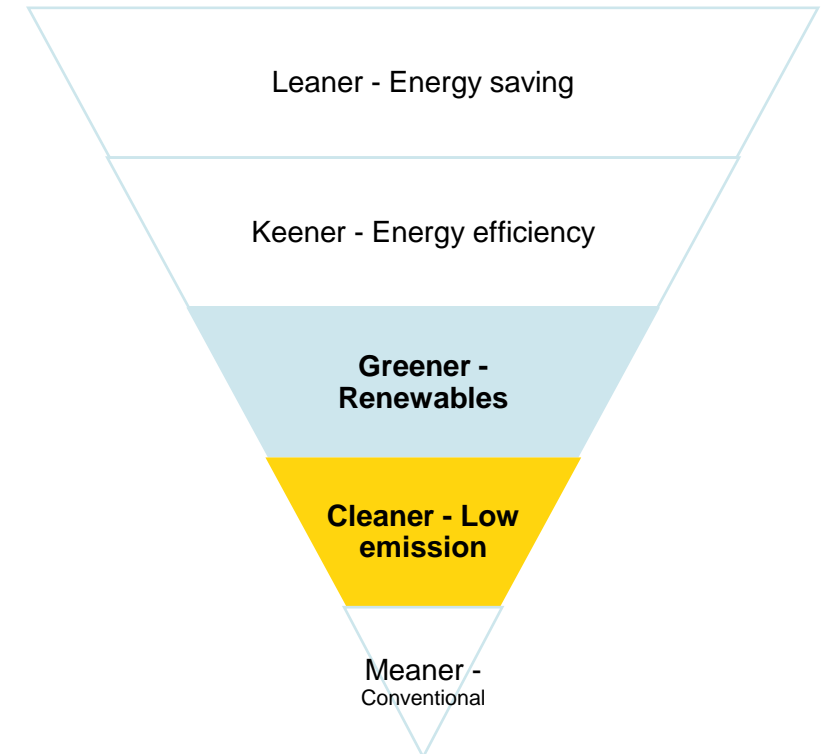
Step 3: Renewables and low emissions

Switch to a green tariff

Only those that are increasing the amount of green energy provision should be invested in. The others are not actually changing the energy-mix on the grid.

To help reduce the amount of carbon used in the UK, you need to look more closely at your choice of tariff. The only truly carbon reducing tariffs are those that buy renewable energy and the REGOs (renewable energy certificates called Renewable Energy Guarantees of Origin) directly from the companies that generate it. **Greener is not necessarily more expensive**, most suppliers now absorb the costs of REGOs*.

According to information from Ofgem and research by Which? and the Energy Saving Trust, the greenest tariffs are available from Good Energy, Green Energy UK and Ecotricity.



*Energy prices are due to rise significantly from 2022 and beyond. Good deals are likely to be hard to find and the number of energy companies reduced.

Going further: Self generation and heat management

Self generation

Solar panels can be a cost-effective way of converting the natural power of sunshine into electricity or heat. Solar PV generates electricity on site which can be used by the practice, stored for later use or sold back to the grid. Solar Thermal uses sunlight to heat water and offset heating costs. Many UK solar energy manufacturers, suppliers and installers are members of the [Solar Trade Association](#) (STA).

Useful information on selling electricity to the grid is available at:

- www.goodenergy.co.uk/business/generation
- www.ecotricity.co.uk/your-green-energy/solar-power-export

Case study – Urban practice

Panels installed on a practice generated 1.3 MWh in 2020. The practice pay the owner for what it uses and any excess is sold back to the grid.

The practice knows where its electricity is generated, and the carbon emissions are zero.

Heat management

Pre-heating: Where the practice is sufficiently well insulated, it is possible to pre-heat ahead of peak times. This enables access to cheaper tariffs which reflect the reduced costs associated with producing power off-peak and reducing requirements for network reinforcement to manage peak loads.

Smarter heating management and use: A 3-6% reduction in heat demand can be achieved through more informed and smarter management of heating the practice.

Smart meters and real time displays have been found to result in energy savings of around 3%, driven by associated actions such as turning the thermostat down or reducing the amount of time the heating is on.

Case study – Urban practice

Unit prices increased in the period studied by between 5% and 10%. Despite those increased unit prices, the practice were able to reduce their energy bill in real terms by £2,500 ex Vat in the like for like period.

How?

Decrease energy consumption by reducing thermal loss using intelligent building management system. This refines the timings of the heating system to come on based on actual and predicted outside temperatures to reduce overheating the building when isn't being used.

NHS Property services

NHS Property services are responsible for 3,000 properties including some GP premises and health centres.

They state “NHS Property Services will align with the ambitions of the wider NHS, aiming to become net zero carbon by 2050”.

Their environmental sustainability strategy covers

- Carbon,
- Waste,
- Fuel,
- Water
- Environmental management.

Their pledges to reduce their carbon emissions are [here](#).

Their webinar on designing and implementing a strategy to achieve the Net Zero goal is [here](#).

Their contact is via www.property.nhs.uk.

OUR PLEDGE

To reduce our carbon emissions

Why is this important?

The Climate Change Act 2008 (2050 Target Amendment) Order 2019 commits the UK government to reduce carbon emissions by at least 100% by 2050, effectively establishing a net zero carbon emissions position by that date.

100% ↓ ↓ ↓ ↓ ↓
by 2050 ↓ ↓ ↓ ↓ ↓

What have we done in the past 12 months?

We have launched a series of initiatives as we commit to making our sites more environmentally friendly:

- In April 2020, we signed two new energy contracts. By moving to 100% renewable electricity, we will offset 37,000 tonnes of CO2 per year without any increase in costs to either the NHS or our tenants. With the implementation of a new procurement strategy, as part of the new contracts, we will be able to deliver some of the best prices in the market, while managing risk and maintaining budget certainty.
- We have kicked off a three year programme to proactively install LED lighting in, initially, 40 properties which represents an investment of £1.65m. LED lighting can produce electricity savings up to 75% or more compared to traditional forms, are more adaptable and produce a clearer, crisper light to work under. Over this three year programme we anticipate the cost savings to be in the region of £1.5 - £2m, which is money that can be reinvested in other parts of the NHS, and reducing our carbon footprint by about 2,000 tonnes of CO2.
- We are undertaking energy audits at our top 50 energy consuming sites and produce concise reports detailing findings and recommendations. These reports will be used to gather and consolidate

The health and care system in England is responsible for approximately 5% of the country's carbon footprint and therefore in January 2020, the NHS launched it's 'For a Greener NHS' campaign to accelerate efforts to tackle climate change with a series of co-ordinated measures to reduce its carbon output.

Energy options

There are many options which can be considered when looking to reduce heat use or heat losses. This list covers the majority of topics which a practice can consider and research in more detail. The installations costs are a guide only and each practice will need to assess the impact and costs for themselves.

Proposed measure	Description	Potential level of impact	Implementation cost	Running cost*	Ease of installation
Heating, cooling, ventilation (HVAC)					
Heating	Air Source Heat Pump (with 100% renewable electricity supplier)	High	> £1,000	=	Difficult
	Ground Source Heat Pump	High	> £1,000	=	Difficult
	Heating - electric heating (with 100% renewable electricity supplier)	Medium	£100 to £1,000	- = +	Easy
	Connect to existing district heating	High	> £1,000	- =	Difficult
	Heating – thermostatic radiator valves or zone control valves	High	> £100	-	Easy
	Heating - discrete controls	High	> £100	-	Easy
Cooling	Cooling - plant replacement/upgrade	Medium	£100 to £1,000 - > £1,000	- =	Difficult
	Replacement of air conditioning with evaporative cooling	Low	£100 to £1,000	- =	Difficult
Ventilation	Fans – air handling unit	Low	£100 to £1,000	-	Easy
	Fans - high efficiency	Low	> £100	-	Difficult
	Ultrasonic Humidifiers	Low	Less than £100	-	Easy
	Ventilation - distribution	Low	£100 to £1,000 - > £1,000	-	Easy
Buildings and building fabric	Cavity wall insulation	High	> £1,000	-	Difficult
	Double glazing with metal or plastic frames	High	> £1,000	-	Difficult
	Dry wall lining	Medium	> £1,000	-	Difficult
	Loft insulation	High	£100 to £1,000	-	Easy
	Floor Insulation	Medium	£100 to £1,000 - > £1,000	-	Difficult
	Roof insulation	High	£100 to £1,000	-	Easy
	Secondary glazing	Medium	< £100 - £100 to £1,000	-	Easy
	Draught proofing	Medium	< £100	-	Easy
	Automatic/revolving doors	Medium	£100 to £1,000	-	Easy
	Radiator reflective foil (external walls)	Low	< £100	-	Easy
	Pipework insulation both external and internal	Low	< £100	-	Easy
	Building management systems	High	£100 to £1,000 - > £1,000	-	Easy
	Lighting and Lighting controls	LED - new fitting	Medium	< £100 - £100 to £1,000	-
Lighting - discrete controls or centralised control system		Medium	< £100 - £100 to £1,000	-	Easy
Renewable energy	Solar PV	High	> £1,000	-	Difficult
	Solar Thermal	High	> £1,000	-	Difficult
Computers & IT solutions	CRT to LED monitors	Low	< £100 - £100 to £1,000	-	Easy
	Energy Efficient Server Replacement	Low	< £100 - £100 to £1,000	-	Difficult
	LED monitors instead of LCD (cost difference)	Low	< £100 - £100 to £1,000	-	Easy
	Network PC power management	Low	< £100 - £100 to £1,000	-	Easy
Hot water	Flow restrictors	Low	< £100	-	Easy
	Hot Water - Efficient taps	Low	< £100 - £100 to £1,000	-	Easy
	Hot Water - Point of use heaters	Medium	< £100 - £100 to £1,000	- =	Easy

*Running cost:
 + More than current options
 = Cost neutral
 - Less than current options

Resources



SEE Sustainability seesustainability.co.uk



UKHACC www.ukhealthalliance.org/carbon-literacy-guide

CENTRE for
SUSTAINABLE
HEALTHCARE
inspire • empower • transform

Centre for Sustainable Healthcare
sustainablehealthcare.org.uk/courses/introduction-sustainable-healthcare



Green Impact for Health – Toolkit www.greenimpact.org.uk/giforhealth

Carbon Literacy
Project

The Carbon Literacy Project carbonliteracy.com

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