



Sustainability Across the Pond:

How Hospitals in Britain are Responding to Climate Change

One of the biggest trends to hit the healthcare industry over the past few years is the idea of environmental

sustainability. Increasingly, hospitals from the grassroots up or from the top down are asking their staff to conserve water and energy, reduce or recycle waste, and institute greener business practices. There are good examples of hospitals here at home that are leading this green wave, but we would be wise to look abroad for ideas and lessons as well.

The National Health Service (NHS) — the United Kingdom's (UK) publicly funded healthcare system of 1600 hospitals and many other facilities — is committed to one of the most aggressive reductions of hospital carbon emissions anywhere. It's causing them to re-think hospital designs, payback times, energy sources, transportation planning, and waste reduction. What's driving these sustainability goals? How are hospitals responding and will they in fact meet their targets?

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UK's Climate Change Policy

The UK adopted an initial target to reduce its greenhouse gas emissions by 12.5% from 1990 levels over the period 2008-2012. The government

increased this target in 2003 to a 60% reduction in CO₂ emissions from 1990 levels by 2050. All sectors of the economy are expected to help meet this national target, including the NHS. As the largest public agency in the UK, the NHS is expected to reduce its net emissions by at least 600,000 tons of CO₂ by 2050.

For now, the NHS is attempting to meet a short term reduction target set in 2001 by the Department of Health. Hospitals in England and Wales are mandated by 2010 to cut their primary energy consumption by 15% from 2000 levels. Hospitals in Scotland are committed to a 2% reduction in energy consumption per year.

Large Carbon Footprint

According to the NHS Confederation, the latest research suggests that the NHS has been slow to implement

change and will need to aggressively pursue reduction strategies in the remaining years if they are to meet their targets on time. But the sheer size of the organization, with 1 million patient contacts every 36 hours, creates a considerable carbon footprint and makes reduction efforts extremely challenging:

- NHS healthcare facilities spend £400 million (\$821 million US) on energy per year with net emissions of around 1 million tons of carbon.
- 5 percent of the UK's transportation emissions are attributable to NHS-related trips. The 1.3 million staff of the NHS, along with its patients and visitors, traveled nearly 15.5 billion passenger miles for NHS-related purposes in 2001, predominately by car or van.
- One out of every 100 tons of domestic waste generated in the UK comes from the NHS, with the vast majority going to landfills.

To help hospitals evaluate the environmental impacts of their activities and to develop a strategy to improve performance, the UK Department of Health launched the NHS Environmental Assessment Tool (NEAT). NEAT strategies center on fuel switching to less carbon intensive fuels, increasing facility energy efficiency, decentralized generation (e.g. CHP), sourcing locally produced food, waste reduction, and improving alternative forms of transportation.

While energy consumption has increased overall throughout the NHS, many individual hospitals have made substantial progress in carbon reductions.

Rising to the Challenge

Addenbrookes Hospital is reported to be the largest single generator of traffic in Cambridgeshire, with over 18,000 traffic movements per day. To encourage staff to use more sustainable transportation methods, the hospital launched the first public bus service in the country to be managed by the NHS. Addenbrookes also began offering interest free loans for bicycle or moped purchases, 16 ride-share cars, and discounted weekly



bus tickets. It has also increased bicycle parking to 1300 spaces. The latest reports show their efforts are paying off. Car use has fallen from 60 percent in 1999 to 38 percent in 2006. A quarter of the staff take the bus to work (up from 12% in 1999) while another 25% ride their bike (up from 21% in 1999).



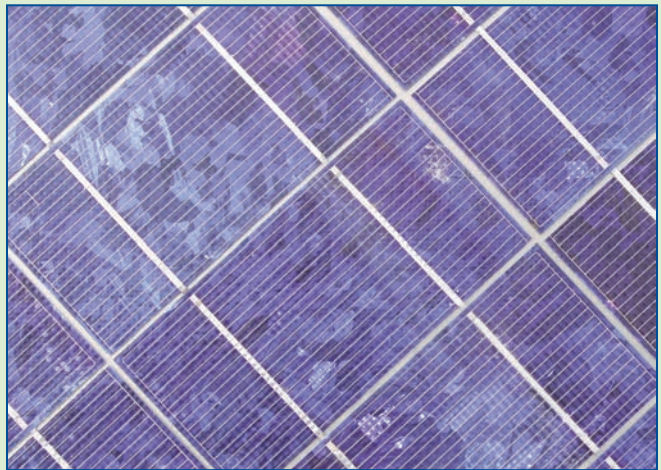
Antrim Area Hospital, a 350 bed acute care facility in Northern Ireland, installed a 120 foot high 660 kW wind turbine in 2005. It was expected to generate 1.2 million kWh of electricity per year worth £90,000 (\$185,000 US), with the potential of providing 100% of the hospital's electrical needs during the night, and two-thirds of the power needed during the day. During the first two years of operation, the savings totaled £140,000. The turbine cost £495,000 (\$1 million US), of which 80% was subsidized by a government grant. Current savings suggest a payback period of around 6.9 years, with the potential of reducing this to 4.6 years through the sale of renewable energy certificates. (For more on these certificates, see the Sept/Oct 2004 edition of *Inside ASHE*)

Bronllys Hospital in Powys Wales became the first hospital in the UK to install solar panels on their roof in June 2005. Calculations show that on a sunny day, the hospital will be able to be powered completely by the sun but the panels are expected to cover 6% of total annual energy needs, about 45,500 kWh per year. The installation cost was £547,586 (\$1.1 million US). Bronllys received government subsidies to defer the cost of the panels.

Prince Charles Hospital in North Glamorgan, Wales cut its energy consumption by 10% after completing a capital upgrade program that included installing a 500kW combined heat and power (CHP) plant, energy efficient boilers, new lighting, and an energy management system. Nearly 10% of its general waste is recycled.

Noble's Hospital on the Isle of Man reduced its clinical waste by 83% when it replaced disposable diapers (or nappies as the Brits call them) with cloth ones made by a local organization it created to manufacture them. Although reusable diapers require laundering, the hospital has saved more money by avoiding clinical waste disposal costs, which is six-and-a-half times more expensive than domestic waste disposal. Overcoming the old method of calculating laundry costs was crucial. Prior to the switch, laundry costs

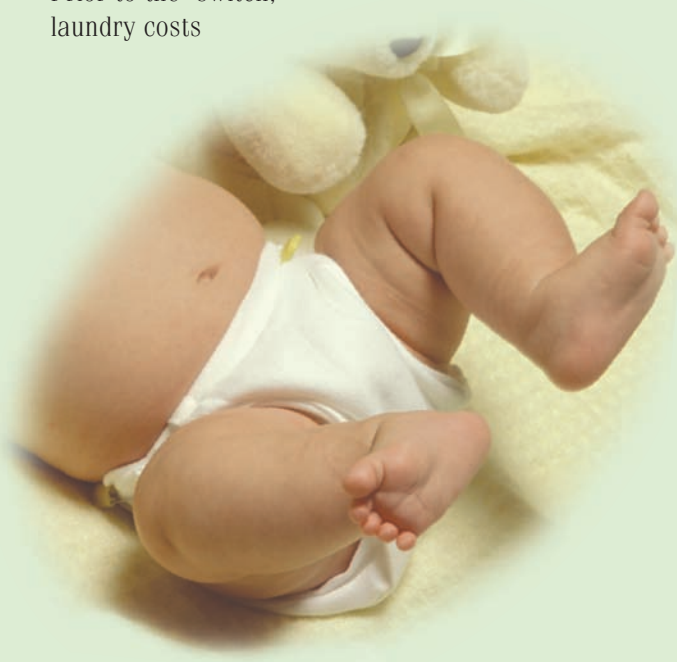
were calculated by numbers of items laundered at a fixed cost per item. The same cost was allocated to launder a bed sheet as a diaper, even though a diaper is considerably smaller. When laundry costs were calculated on the basis of weight, reusable diapers became the financially viable option.



The Royal Cornwall Hospitals Trust, in partnership with the Soil Association, established the Cornwall Food Program to bring increasing amounts of locally produced organic food to three Cornish hospitals. Over 80% of the food budget is now spent in the local economy, 40% of which goes to local growers. The annual distance of food delivery vehicles and the carbon emissions associated with them have been cut by two-thirds.

Climate Responsive Design

According to the UK Climate Impacts Program, warmer winter temperatures have reduced the energy required to heat UK buildings by about 5% since 1989, and will reduce it by about 40% in London and about 30% in Edinburgh by 2080. British architects are now beginning to think about building for future climate, one equivalent to that found in southern France and coastal Morocco, be able to withstand sea level rises of 1m – 2m, and represent at least a 60% cut in greenhouse gas emissions. Some are recommending that new hospital plans generally not exceed 12-15m in depth to allow natural ventilation and light to offset the energy required for mechanical delivery. Other recommended design elements include increased thermal heat storage, low-temperature heating systems, solar controls,



Where do carbon emissions come from in UK healthcare?

Broadgreen Hospital, a 409,554 ft² NHS facility in Liverpool, England, is estimated to have emitted slightly over 1 million tons of carbon in 2003, with the following activities contributing proportionately to its carbon footprint:

Percent of 60-year CO₂ footprint

*Building energy CO ₂	60.52%
*Transportation CO ₂	21.70%
*Waste CO ₂ equivalent	9.07%
*Food miles	6.58%
*Building embodied energy	1.73%
*Other greenhouse gas	0.37%
*Water	0.04%

Source: *Healthcare Buildings and Climate Change*,
Malcolm Stroud