

Overview

In line with the Government’s Greening Government Commitments (GGC), the Department for Environment, Food & Rural Affairs (Defra) is aiming to achieve savings, reduce carbon emissions and improve the operational performance of its sites.

Defra has responsibility for policy and regulations on environmental, food and rural issues and as a result its estate includes a mix of around 150 offices and laboratories located across the country.

Across central government, Defra has a reputation of leading the way in terms of sustainability. Since 2006 Defra has implemented a programme to reduce the environmental impact of its estate. In 2008 it promoted the use of biomass boilers and was also the first department to use wind turbines at two of its sites. Despite these successes, Defra’s energy bills currently cost in the region of £12 million per year, plus £500,000 in annual Carbon Reduction Commitment (CRC) cost.

Building on the strength of its sustainability and environmental credentials, the Re:fit programme offered a unique opportunity to help provide further cost and carbon efficiencies across the Defra estate. Re:fit, which has internal sponsorship from the Chief Operating Officer, was chosen as the vehicle to deliver these objectives in spring 2015 and the Department, supported by Local Partnerships, ran a mini-competition in August 2015. Breathe Energy was identified as preferred bidder in November 2015. Following the appointment, initial feasibility studies were completed for a pilot phase of 14 selected sites in March 2016. These sites include Nobel House, Defra’s HQ in London, plus a mix of offices, laboratories and research facilities dealing with a range of fields from fisheries to livestock.

Defra is currently in the detailed design phase, finalising Investment Grade Proposals (IGPs) before contract sign off with a view to starting works in summer 2017. Following on from the pilot phase, Defra is now working with Breathe to roll out the programme and has undertaken initial feasibility studies at an additional 20 sites owned by the Environment Agency.

Project:	Defra Selected Estate Buildings	
Savings:	£461,749 energy spend reduction per annum (inc VAT) Energy savings of 5,053,022kWh	1,215 tonnes of CO ₂ per annum saved
Value:	£5,254,323 investment in retrofit works (inc VAT)	Simple payback of 7.6 years
Timescale:	Installation to commence summer 2017	



“The advantages for Defra of using the framework were identified in the early meetings with Local Partnerships and these were of great importance in the way forward. For over 6 years Defra had undertaken sustainability and energy savings measures but failed to follow their performance and by using the RE:FIT framework the savings are followed over a number of years and guaranteed. The framework also allowed Defra to follow the option of seeking an ESCo partner with the expertise to identify the measures per site that will deliver the necessary savings”.

Carolina Butler, Senior Programme and Project Manager, Defra.

Summary of Energy Conservation Measures (ECMs)

The Defra project encompassed a number of energy-efficiency and renewable-energy measures, some of which are listed below.

Lighting retrofit and redesign

The replacement of CFL, PL and incandescent lamps with new LED downlights and surface-mounted fixtures, plus new PIR controls where appropriate.

Renewable energy generation – wind

Two new horizontal-axis wind turbines (HAWTs) proposed, both fitted with controls to turn the blades to face the wind. Sizes range from 50kWp to 250kWp, with the large one complete with battery storage for electricity generated.

Building Energy Management System (BEMS) optimisation and upgrade

Updating and optimising BMS outstations, controllers and software, as well as providing an external communication link for remote access and monitoring.

Gas-fired CHP

The replacement of outdated boiler plant by 200kW gas-fired CHP has been proposed for both Lowestoft and Weymouth, where both the electricity and heat load can be used.

Demand side response

Changes to existing standby generators to enable participation in Demand Supply Response (DSR) schemes for Triad Management, Capacity Market and Firm Frequency Response revenue streams.

Solar PV

A roof-mounted solar PV array of 20kWp has been proposed for Defra's HQ in Nobel House, central London, with solar also being proposed in seven of the other sites involved in the programme.

Solar thermal repair and upgrade

An existing solar thermal system in Kings Pool, installed in 2008, will be refurbished and tested so that the installation is compliant with RHI requirements, allowing Defra to benefit from an upgraded system and income.

EC/DC motor retrofit to fan coil units

Fan-motor retrofit with new brushless type EC/DC motors and fan decks has been considered for several sites and is going ahead for two of them. This will generate savings of around 30 per cent a year.

Energy efficiency and financial savings through Re:fit

Re:fit is a procurement framework and support service available to all public sector organisations in the UK. Since 2009 it has been helping organisations to deliver "spend-to-save" environmental retrofit projects that both improve their buildings and, importantly, make substantial guaranteed financial savings.

For more information about the National Re:fit Programme, contact robert.mckinnon@local.gov.uk or phone 07920 702 297.