Overview

Modern Energy Partners (MEP) is a cross government collaboration project delivered by the Energy Systems Catapult. The MEP programme was driven and funded by BEIS Energy Innovation Programme and overseen alongside the Cabinet Office, Treasury and the BEIS Public Sector Decarbonisation team.

The programme received £22 million of funding to deliver decarbonisation to 42 testbed sites, of which Collingwood was a one of four pathfinders.

MEP Case Study – HMS Collingwood

HMS Collingwood takes the first steps towards decarbonisation

Pictured (from left to right): Will Maunders - Amey Project Manager, Mark Powell - Energy & Environmental Protection Advisor RN, Helen McColm - BEIS, Paul Gillie – MEP, Commander Penelope Freeman, Lieutenant Commander Sarah Scales, Charlie Hudson - DIO AUM and Christine St John Cox - Head of MEP.

Key facts

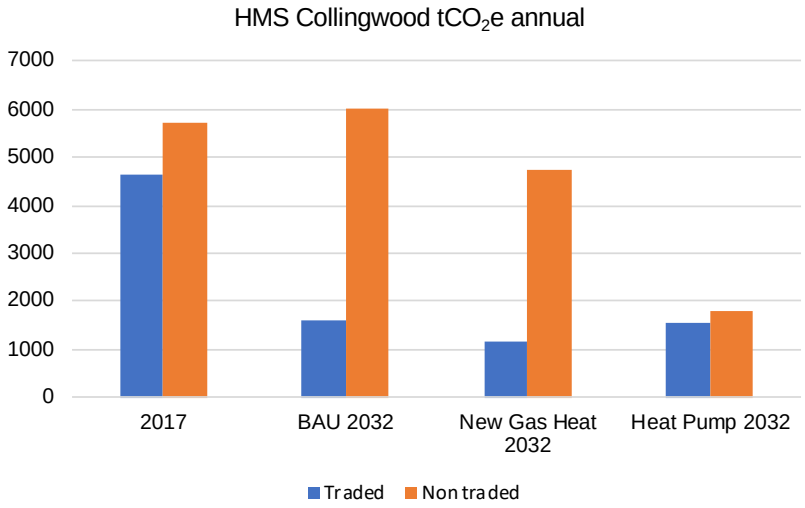
- Timeframe: 6 months.
- Energy efficient internal LED lighting installed in 50 buildings on campus.
- Building Management System installed to optimise heating performance.
- £530,000 and 560 tCO_2e saved per annum for the campus.
- A reduction in energy usage of 3.8 Gigawatt hours on site (9% of sites annual usage).

The challenge

HMS Collingwood is the Royal Navy's largest training establishment and headquarters to the Maritime Warfare School. The site was built in 1940 and has 2,500 personnel on site on any given day. The campus-style site is located on the edge of Fareham in Hampshire.

The ambitious MEP innovation programme set out to reduce the site's emissions and achieve at least 50% carbon emission reduction by 2032 (against a 2017 baseline) in line with the governments' decarbonisation targets.

Fig 1. Traded and non-traded emissions impacts as a result of recommended decarbonisation pathway



Over the years, the site has been maintained within the constraints of limited funding for infrastructure projects. Estate management has primarily focused on energy-saving schemes and maintenance contracts that are based solely on reactive 'fail then fix' measures.

In 2017, the site had an annual energy consumption of 45,402,057 kW and an estimated energy bill of £2,832,000.

The solution

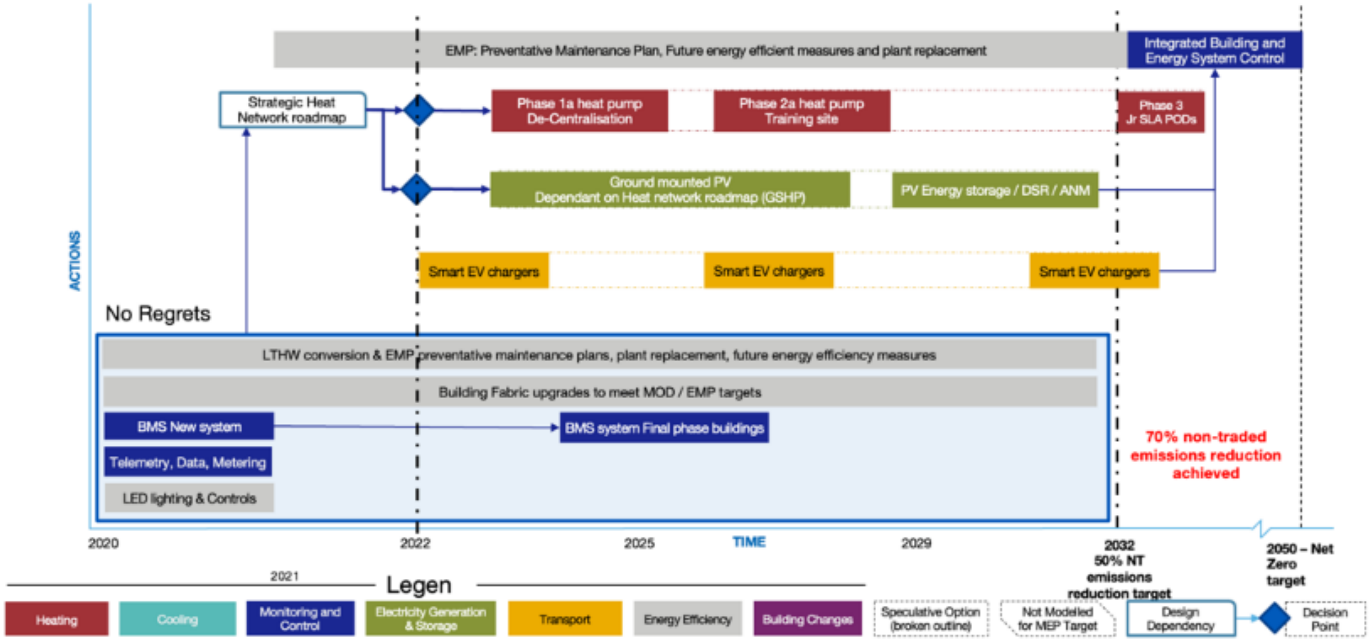
MEP developed a decarbonisation plan for the site that demonstrated how a £20m investment could decarbonise the site by 68%. Additionally, the findings also recommended that the heating system was adapted to provide improved reliability.

As part of the plan, the first no regret measures were implemented between September 2020 and March 2021. The measures included the following site-wide improvements, delivered In accordance with safety guidance during the COVID-19 pandemic:

- 41 Building Management System (BMS) buildings controlled.
- 14,496 lights upgraded to LED across 50 buildings (119,325m^2).
- LED lighting replacements delivered brighter lighting, improving safety in several areas.
- Submetering installation of 58 electric meters across 40 buildings.
- 13 gas submeters monitored, all linked to the BMS to allow monitoring and reaction to reduce the heat load for the site.

The pathway

A multi-year pathway for implementation of the decarbonisation plan was developed for the site, highlighting the timing for required interventions to meet the 2032 reduction target. This formed the basis for finanicial modelling and development of supporting documentation.



The no regrets measures works cost came in at £2,375,560, with the funding split between BEIS and the Royal Navy. The project will deliver an estimated saving of £530,000 per annum, based on yearly energy savings of 3,744,856 kWh. The lighting upgrade also provides better light in some spaces improving safety.

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Further information required: Please email Energy Systems Catapult - mep@es.catapult.org.uk

Version Number	Date Produced	Owner Initials	Key Changes
V1.0	09/12/2021	DT	