

# Combined Heat and Power (CHP) Strategy

February 2022

## Context

Freeman Energy Centre combined heat and power (CHP) engines burn fossil fuel gas to generate electricity on site. These engines were previously programmed to maximise electricity generation between the hours of 7am-7pm on weekdays (exporting excess to grid) and to match generation to site demand at other times. All carbon emissions associated with the electricity being exported to national grid are included within our carbon footprint and therefore impact on progress towards achieving our Net Zero carbon target.

A change to the Freeman Energy Centre electricity generation strategy from the one described above to a 'load follow' strategy (i.e. matching generation to site demand at all times) at a net financial cost of £115,000 a year for an annual saving of 1,600 tonnes of carbon was proposed.

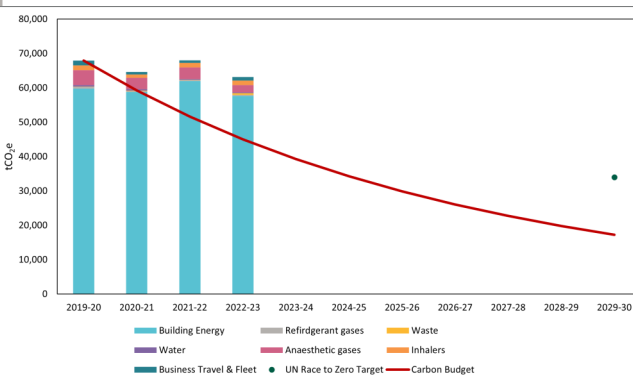
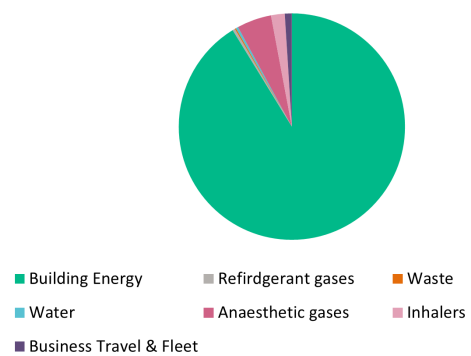
The cost of this carbon reduction equates to only £70 per tCO<sub>2</sub>e in comparison to typical energy saving projects which cost approximately £2,500 per tCO<sub>2</sub>e.

So although there would be an increase in the utilities budget it was a very cost effective carbon saving initiative. The new strategy would deliver a significant, immediate, and ongoing reduction in Trust carbon emissions from energy – estimated at a 3.5% reduction (27% of our annual target).

Freeman Energy Centre houses three CHP engines that burn fossil fuel gas to generate electricity on site. Following the previous strategy the Trust was exporting 3,000 MWh of excess electricity generation to national grid per year.

All carbon emissions from fossil fuels burned by Trust operational assets are included within our carbon footprint, even if the outputs generated aren't used for Trust activities. This meant the emissions associated with electricity exported to national grid were included within Newcastle Hospitals Carbon Footprint and impacted on progress towards achieving our 12.8% annual carbon reduction target.

Newcastle Hospitals Carbon Footprint 2021-22



Trust carbon emissions from energy required urgent intervention to bring emissions back in line with the science-aligned carbon budgets set in our Board-approved Climate Emergency Strategy.

This proposal was approved and the changes have contributed to a reported 7% reduction in carbon emissions from building energy use in 2022-23.

Shine Case Study