
University of Hertfordshire

# Carbon Management Plan

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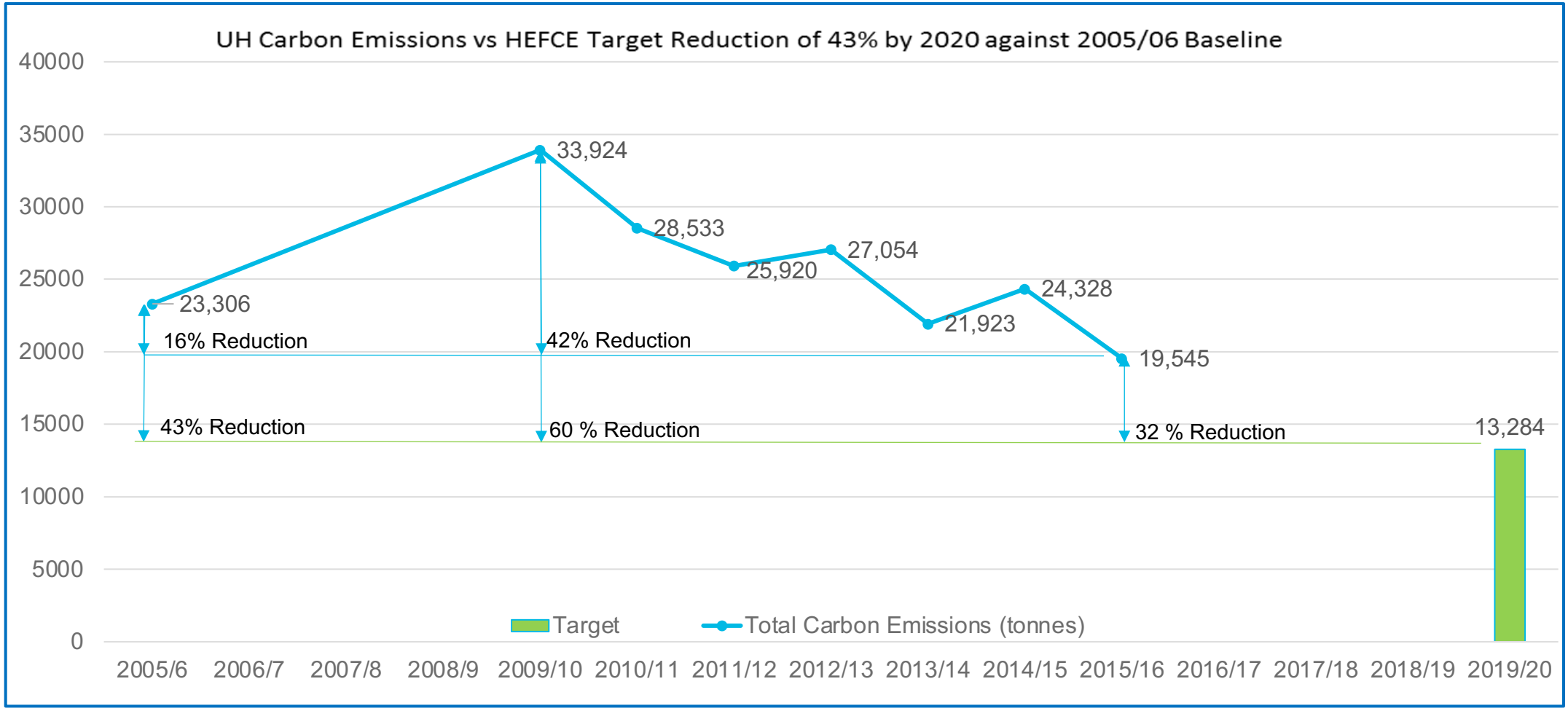
# Carbon Management Plan - Origins

- Hertfordshire University adopted the sector wide (HEFCE) target to reduce carbon emissions by 43% by 2020 against a 2005/06 baseline.
- The University's first Carbon Management Plan (CMP) was produced in 2007 and subsequently updated in 2011 and 2013
- The Plan provides a roadmap to achieving required carbon emission reductions through:-
  - Measures
  - Activities
- The CMP is undergoing a further update which will provide :-
  - Inclusion of the most recent years performance available
  - An updated programme for project implementation
  - Projections for potential achievements
  - Budget requirements

# CMP – Where are we now?

*2015/16 achieved a 16% reduction in $CO_2$ emissions (42% against 09/10)*

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# CMP – Recent Completions & Current Projects

*UH undertakes a range of measures that reduce carbon emissions*

- Window replacement programme
- Lighting improvements (LED installations)
  - Fielder Centre
  - Maclaurin
  - Titan
  - Campus – wide
- HVAC improvements (controls etc.)
  - Fielder
  - MacLaurin
- New Solar PV (50 tonnes p.a. $CO_2$ saved)
  - Mercer, Lindop, Todd & Art & Design
- College Lane LRC (400 - 500 tonnes p.a. $CO_2$ reduced)
  - Boilers & Combined Heat & Power (CHP)
  - Chillers
  - Lighting - LED
  - Solar reflective film (reduces cooling load)
- Residences CHP
  - Upgrading the CHP unit at the Energy Centre will potentially provide 50% of the electricity required for the main College Lane Campus
- Upgrading the boilers at the De Havilland M, N & R blocks

*Plus 'everyday' energy management activities – time and temperature optimisation etc.*

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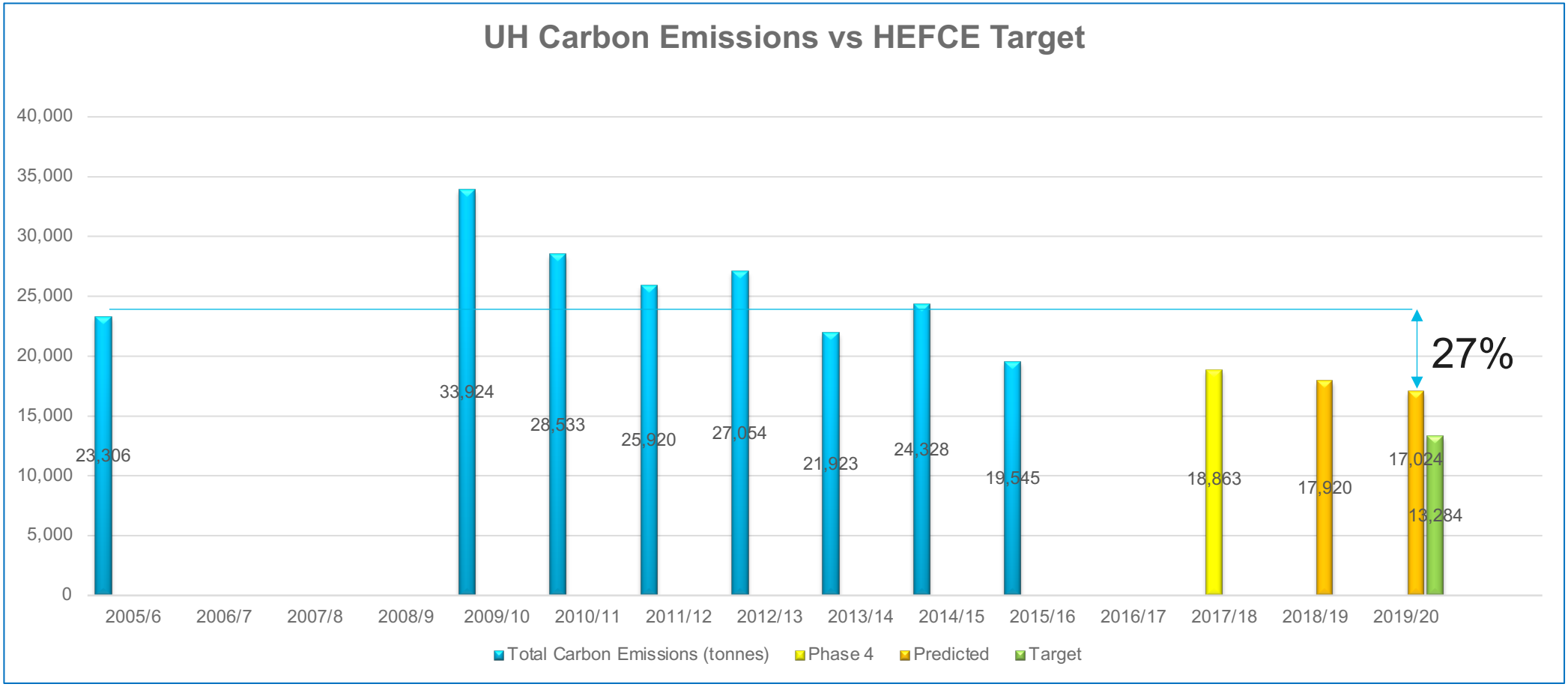
# CMP – Recent & Latest Projects

*Projected to reduce annual emissions to 17,024 tonnes p.a., a 27% reduction vs 05/06*

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# CMP – Potential Further Projects

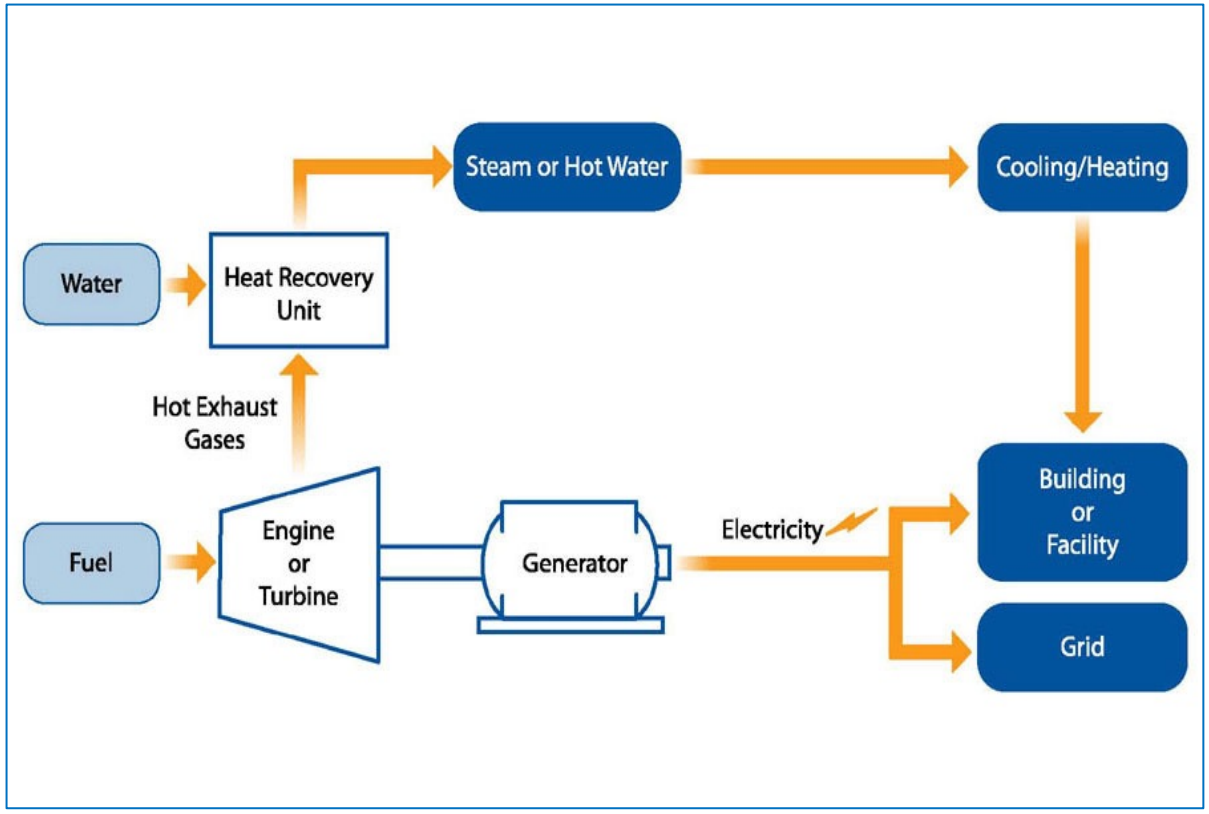
*A further reduction of 3740 tonnes $CO_2$ per annum will be required in order to meet the University's 2020 target for carbon emissions*

New projects could include:-

- Additional Combined Heat and Power installations
- Further solar photo-voltaic panel arrays
- Possible conversion of some diesel UnoBus vehicles to electric operation
- Possible use of B20 Biodiesel for UnoBus bus operation

# CMP – Potential Projects - CHP

*Additional Combined Heat and Power Projects*




- The concurrent generation of heat and electrical power from a single engine source can be more efficient than importing electricity and creating heat separately
- CHP is under consideration for the De Havilland Academic buildings and included in the College Lane LRC proposed refurbishment
- Potential for 750 tonnes $CO_2$ p.a. reduction at De Havilland
- Payback approaching 5 years

# CMP – Potential Projects – Solar PV

*There is substantial scope for further installation of solar PV arrays*


- UH already has more than 300kWp of solar panels installed
- Recent additions include:-
  - Mercer
  - Lindop
  - Todd
  - Art & Design
- There is substantial further scope to install solar PV on the roofs of the De Havilland Academic buildings
- 230 tonnes $CO_2$ p.a. reduction
- Simple payback within 13 years

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# CMP – Investigation – UnoBus Fleet

*Potential use of electric buses and B20 biodiesel fuel are under consideration*


- UnoBus fuel consumption is included in UH carbon reporting (5,000 t $CO_2$ p.a.)
- Converting from regular diesel to grid electricity reduces emissions by 70 to 80%
- Electric buses are relatively expensive, require additional charging infrastructure and have some limitations with respect to range / type of route they can provide
- UH will continue to assess this option with a view to possible future electric bus operation

*Converting to B20 biodiesel reduces $CO_2$ emissions by 20% but requires a cost premium. Confirmation is also required that engine longevity, performance and maintenance will be largely unaffected by any fuel change.*

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