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 CO₂ emissions (42% against 09/10)

UH Carbon Emissions vs HEFCE Target Reduction of 43% by 2020 against 2005/06 Baseline

- 2015/16: 16% Reduction
- 2009/10: 42% Reduction
- 2011/12: 43% Reduction
- 2014/15: 60% Reduction
- 2016/17: 32% Reduction
- 2019/20: Target
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. CO₂ saved)
  - Mercer, Lindop, Todd & Art & Design
- College Lane LRC (400 - 500 tonnes p.a. CO₂ 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.
Projected to reduce annual emissions to 17,024 tonnes p.a., a 27% reduction vs 05/06
CMP – Potential Further Projects

A further reduction of 3740 tonnes CO\textsubscript{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
• 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
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 CO₂ p.a. reduction
- Simple payback within 13 years
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.