Energy Data

-balancing detail and complexity!

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Departmental Energy Manager

Introduction

Energy Efficiency – the Goal

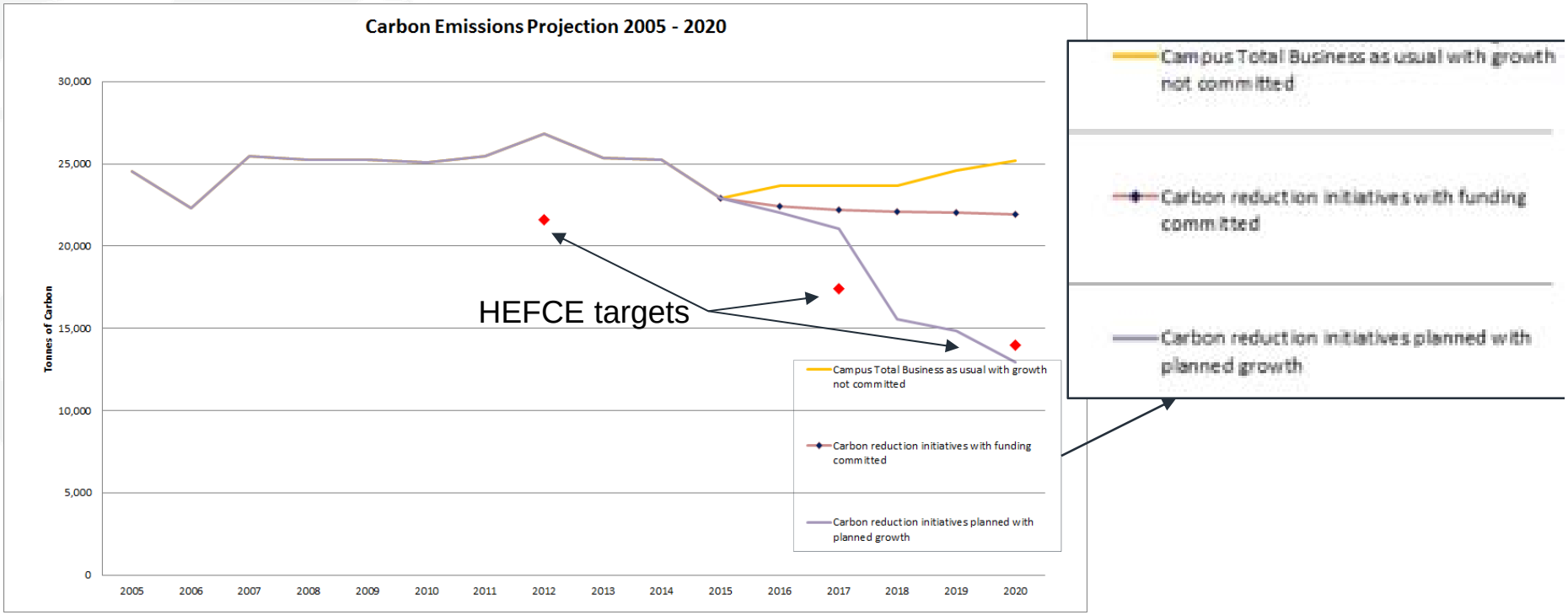
Energy Setup – the Issues

Energy Management System – the Method

Advertising Energy Use – the Practice

Implementing Energy Efficiency – the Results

Carbon Management targets



Energy Setup

Large Campus with 9 colleges

2 x1.5MW Gas fired CHPS – generating >60% electricity

Additional Gas & Biomass boilers

Mix of Utility Co supplies & internal network:

- Electricity – 23 sub stations – large no sub meters
- District Heating/Gas heating – restricted no sub meters

Water – limited no sub meters

Energy Setup example

Biology department

- Heavily sub-metered for electricity
- Not all meters are functioning correctly
- Supplied by 4 substations
- Difficult to get an accurate total electricity or utility use
- Part gas heated, part district heating
- Insufficient water meters

Electricity network for Biology

Energy Management System

- Data Coherent Data loggers
- SystemsLink Software
- Link to Building Management Software for heat meters
- Direct reads for Utility Co meters – aim for direct import of AMR data to SystemsLink
- >1000 meters on system – need to rationalise
- Aim to use minimum no. meters to track consumption by building & department

Advertising Energy Use

Recharge third parties (metering at Block level)
- –Extend to Departments 2017/8?

Student Switch Off Programme (2016-7) (Metering at Block level)
- –90,000kWh saved, 49 tonnes CO_2

Environmental Performance Groups (Metering at Dept level)
- –Termly meetings with big energy using Depts

Green impact Programme (2015-6) (Metering within Depts?)
- –21 Departmental GI teams -Saved ~228 t CO_2, £68K

Sustainability Guide

One Planet Week…

One Planet Week Feb 2017

Successful week of events on theme of Sustainable Food

Pledges made to save 418 tonnes CO_2 (479 responses ~2% population)

Facebook Events Page received 183 likes and reached 2,674 people.

Events were well attended

- the food fair almost selling out and around 70 people attending the quiz.
- Bike cinema
- Research talks

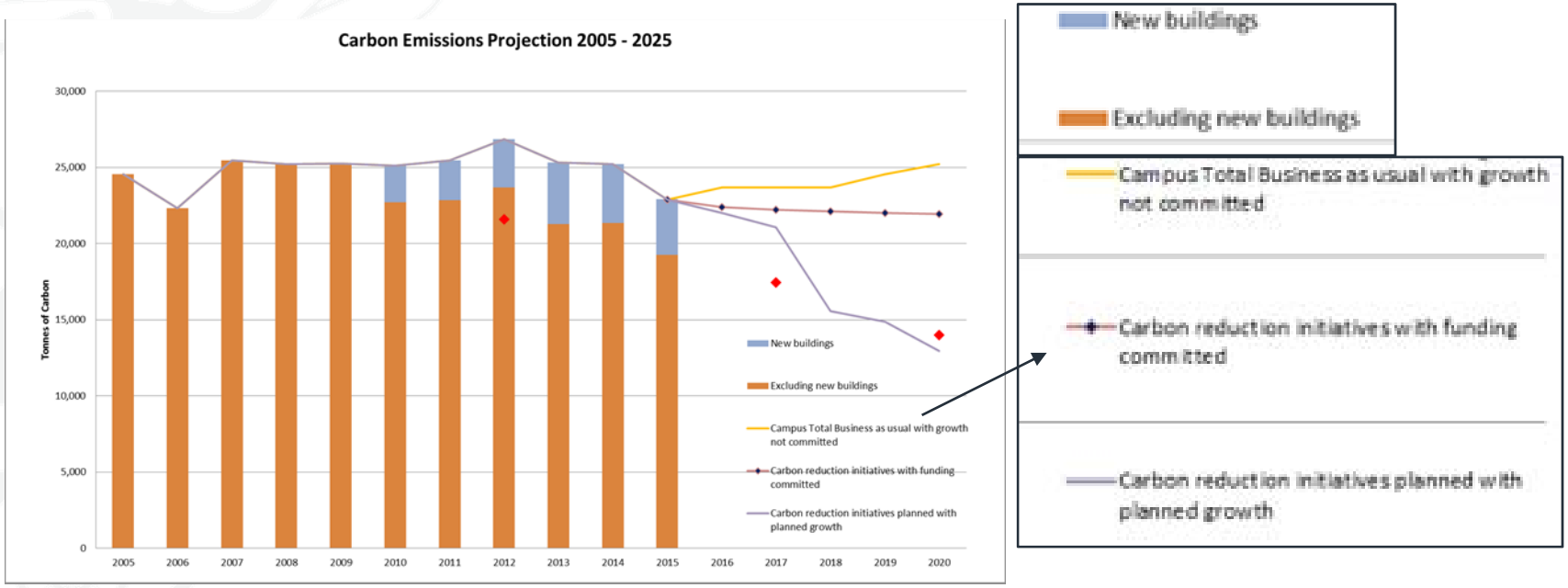
One Planet Week
Part of Sustainable York

Implementing Energy Efficiency

- Metering high use equipment
- Traffic light stickers
- Regular awareness raising messages
- Green Impact team actions
- Salix funding:
  - LED lighting & controls
  - Energy efficient lab equipment
  - Energy efficient servers

High resolution data to show effects

The Results


Carbon Emissions Projection 2005 - 2025
Tonnes of Carbon
30,000
25,000
20,000
15,000
10,000
5,000
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
New buildings
Excluding new buildings
Campus Total Business as usual with growth not committed
Carbon reduction initiatives with funding committed
Carbon reduction initiatives planned with planned growth
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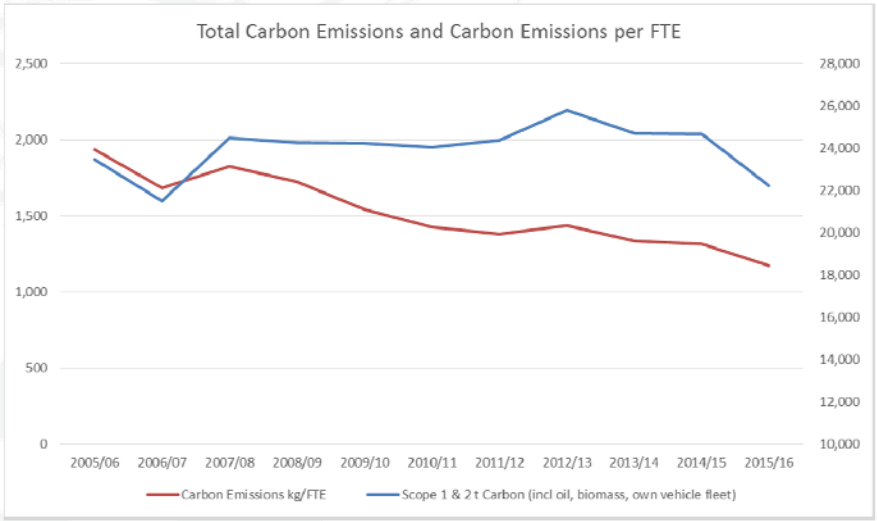
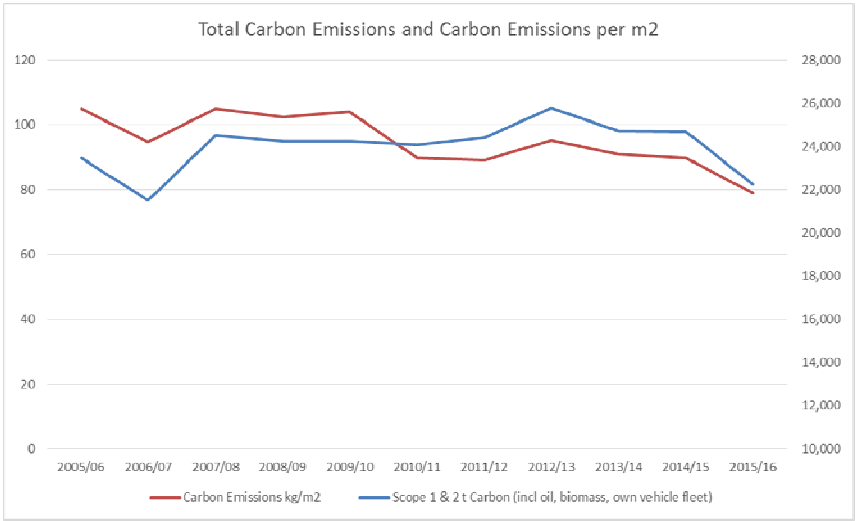
The Results


Total Carbon Emissions and Carbon Emissions per FTE
2,500
2,000
1,500
1,000
500
0
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
Carbon Emissions kg/FTE
Scope 1 & 2 t Carbon (incl oil, biomass, own vehicle fleet)


Total Carbon Emissions and Carbon Emissions per m2
120
100
80
60
40
20
0
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
Carbon Emissions kg/m2
Scope 1 & 2 t Carbon (incl oil, biomass, own vehicle fleet)

Conclusions

We are making progress -metrics are important

Effect of wide scale recharging unclear

- Need enough detail to show savings
- Cost of maintaining large metering network

Getting greater student buy in?

What is done elsewhere?

What Energy Management systems are used?