

North West Energy Forum
- Annual Conference 2010



**Our Energy & Carbon Reduction
Challenge**

at

Manchester United Football Club

Keith McIntosh

Patrick Grange – Economic Energy Ltd



United to Save Energy



Our Carbon & Energy Challenge:

Contents:

- Introduction
- Background behind the Carbon & Energy Challenge
- Targets and Objectives
- Reduction Plan
- Achievements





Our Environmental Impacts



When you consider that over 76,000 people visit Manchester United on a match day, plus **over 270,000** people visit the museum each year and thousands of people attend functions, events, conferences and exhibitions, the potential environmental impacts are suddenly put into perspective. Therefore the management has embarked on a continuous programme of environmental improvements over recent years.



Manchester United

Old Trafford Stadium:

- Celebrated 100 years in February 2010
- 35 stadium events (09/10)
- 75 Major Conference & Banquets (09/10)
- Museum & Retail outlet
- 26 Commercial Kitchens





Manchester United: Energy Consumption

Old Trafford Stadium:

- Electricity Use >12 .5 MWh
- Equates to 87.1% of total electricity use.
- Gas Use >4.4 MWh
- Equates to 55% of total gas use.





Manchester United: Energy Consumption

Training Sites:

- Electricity Use >1.91 MWh
- Equates to 12.9% of total electricity use.
- Gas Use >2.79 MWh
- Equates to 45% of total gas use.



Manchester United



Our Energy & Carbon Reduction Challenge.

Manchester United:

- Environmental leaders in their field
- Pathfinders in waste, recycling, supplier engagement
- Energy Efficiency Accreditation
- Wanted to build upon a fresh approach & challenging targets



Our Energy & Carbon Challenge



Keith Maloney was invited onto the team



Our Carbon & Energy Challenge:

Profit with a purpose: United saves energy and money!

United builds on green credentials

United Co-operatives' energy and environmental programme continues to go from strength to strength, from testing bio-diesel in their delivery fleet to the development of energy efficient food stores.

The focus for much of United's programme, led by United Co-operatives General Manager for Environment and Technical Services, Keith Maloney, has been on the Food Group which accounts for three quarters of the Society's energy usage.

United undertook a study of store energy use to discover how it might be reduced. The result was the Sandbach Model Convenience Store in Cheshire which was designed to save 25% of normal energy use by employing cutting edge technology such as 'synergy' refrigeration - which uses reclaimed heat to provide the energy source for the air conditioning - and energy efficient lighting.

United developed an electronic utility meter reading system used through its intranet which allows store managers to submit readings which can be monitored and assessed. This led to improved billing by energy suppliers and savings of £3.48-million a year.

United also took a hard look at its own operations and now the amount of waste, cardboard and plastic it recycles from across its stores and properties tips the scales at almost 6,000 tonnes a year - a 76% increase on its 2003 baseline figure. The recycling secured savings of £190,000 a year on waste removal costs and generated revenue of more than £350,000 a year from the reselling of cardboard and plastic.



Keith Maloney, General Manager of Environment and Technical Services has spearheaded the energy policy developed since 1999 by United Co-operatives.





Achievements:

- Energy savings of over £3.9m per year
- Introduction of a Society wide Environmental Programme
- Total financial saving of over £19.5m
- Featured in Best Practice case studies and guides.
- Received 20 Energy & Environmental Awards





United Co-op: First Business Case

- In 1999 a business case was submitted to the Management Executive and Board.
- The basic proposal was to undertake an energy management programme requiring:
- Top level management commitment.
- A capital investment of only £58,000.
- The target saving was £580,000 within 12 months.
- The actual saving was £980,000 within 12 months.



Economic Energy Ltd What we do:

We are an energy & environmental consultancy that has been established for over 15 years.

We specialise in energy saving & carbon reduction solutions designed for the business sector.

We deal with all sizes and types of business and have a growing reputation for delivering big savings.



LOW | **CARBON**CONSULTANTS





Energy & Carbon Challenge

The Gauntlet was laid down!

The Challenge to reduce energy usage & carbon emissions by 10% within 12 months was approved by the MU Executive.





Energy & Carbon Challenge

Getting the message
across about the
Carbon Challenge!

United to Save Energy – Switch Off & Save
Boardroom to Boot Room



Help us make
a **difference.**

We need your views and suggestions on how we can meet our Energy and Carbon Challenge, which is to "Save 10% of our Energy & Water use within twelve months."

Your Departmental Energy Champions will be asking you to complete a "United to Save Energy" Questionnaire.

Please play your part – All completed questionnaires will be entered into a draw and four people will win prizes of £25 in shopping vouchers.

Energy does cost the Earth.



UNITED TO SAVE ENERGY
SWITCH OFF & SAVE



Energy & Carbon Challenge

Our Goals are realistic if we all play a part!

The savings can be achieved through a change in our working ethos relating to energy use.

Being energy conscious is good for our business and the environment!

We will be launching an energy awareness & saving campaign.

Our aim is to:

- **Involve:** you and all staff from Boardroom to Boot room.
- **Learn together:** we will be holding workshops, training sessions, seeking suggestions and feedback.
- **Act together:** Looking to identify and act upon energy waste.
- **Letting you know:** report on our progress.



United to Save Energy – Switch Off & Save



Energy & Carbon Challenge

Energy Saving Measures and Action Taken



Engagement: Questionnaire


- Launched staff energy engagement & questionnaire
- Gauged knowledge & understanding
- Scored rating
- Received a 96% staff return
- Energy saving suggestions/ideas launched
- Launched by Champions
- Used as a KPI for following years

United to Save Energy Questionnaire 

Name: _____ Dept: _____

1. Are you aware of the energy saving action taken by the Club over the past year?	Yes / No
2. Do you feel you have become more aware and involved in energy saving?	Please tick
<i>I have become more aware and involved in energy saving in the past year.</i>	
<i>I do not feel as though my responsibilities have changed.</i>	
3. How is your general attitude towards energy saving?	
<i>Very positive - I actively save energy and believe I can make a difference.</i>	
<i>Aware and positive, but it is not part of my current work day.</i>	
<i>Partly energy aware, I take some action.</i>	
<i>Neutral, I may occasionally try to save energy.</i>	
<i>Never thought I could save energy in the work place.</i>	
4. How do you feel about the environmental impact of energy use?	
<i>I am very aware.</i>	
<i>Mostly aware of the environmental impact through the media.</i>	
<i>I am aware of some of the environmental issues.</i>	
<i>I am not aware of the environmental impact.</i>	
5. How is your level of awareness of energy costs and where it is wasted?	
<i>I am aware of the costs and aware of where it is mostly wasted.</i>	
<i>I am aware of the costs but not aware of where it is wasted.</i>	
<i>I do not know what the energy costs are or where it is wasted.</i>	
6. Are you aware of ways in which you can save energy?	
<i>I am conversant with many ways of saving energy.</i>	
<i>I am aware of some basic energy saving measures.</i>	
<i>I am not aware of any energy saving measures.</i>	
7. How motivated are you to save energy?	
<i>I am motivated and try to influence others.</i>	
<i>I am motivated and do what I can to save energy.</i>	
<i>I feel there is little I can do in my work place.</i>	
8. Do you know where you can get more information?	
<i>Are you aware of the Club's Environmental Policy?</i>	Yes / No
<i>Are you aware of the Club's Energy Policy?</i>	Yes / No
<i>Do you feel the Club is doing enough to maintain its energy and water saving commitments?</i>	Yes / No
<i>Do you think more could be done to encourage energy and water saving at the Club?</i>	Yes / No
<i>If 'yes' do you have any ideas on how to make further energy & water savings?</i>	

We would like to thank you for your time filling in this questionnaire, your comments, views and suggestions are invaluable for our Energy & Carbon Challenge

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Energy Policy

- An Energy Policy was developed following an energy review, staff engagement questionnaire and workshops (implemented by the two Keiths)
- Compliments the Environmental Policy
- It is a “working policy” that focuses the business to adopt energy and carbon aspects into main stream working practice
- “Manchester United have developed a model Energy Policy” Carbon Trust Standard.



Manchester United Ltd

Energy Policy Statement

- 1) Manchester United recognises the importance of minimising its environmental footprint and has designated energy conservation as a key organisational objective
- 2) Reflecting its importance, responsibility for the development of an energy policy and programme has been designated to a Board member, Michael Bolingbroke Chief Operating Officer.
- 3) Manchester United has set a 10% reduction target on energy and carbon emissions by end of June 2009.
- 4) Through an Energy Management Group, chaired by the Group Property Manager, Manchester United will assign the responsibilities for implementing the energy policy & delivering objectives to designated management and staff.
- 5) Again, through the Energy Management Group, Manchester United will instigate energy conservation within working procedures and staff duties.
- 6) Manchester United will implement a staff awareness campaign and promote positive involvement. The Manchester United Carbon Challenge has been launched and reports back to Energy Management Group
- 7) Manchester United will include energy management awareness within staff inductions & training programmes.
- 8) Manchester United will include energy full life-cycle costing, including energy costs, within equipment procurement procedures.
- 9) Manchester United will monitor energy performance and publish information on progress towards achieving the 10% reduction target.
- 10) Manchester United will review performance and objectives regularly at executive level.
- 11) This policy will be reviewed annually and be brought to the attention of employees and other interested stakeholders including the general public via our website.

Authorised by Michael Bolingbroke Chief Operating Officer

Director Responsible for Environmental Matters

Date.....2009



Energy Champions

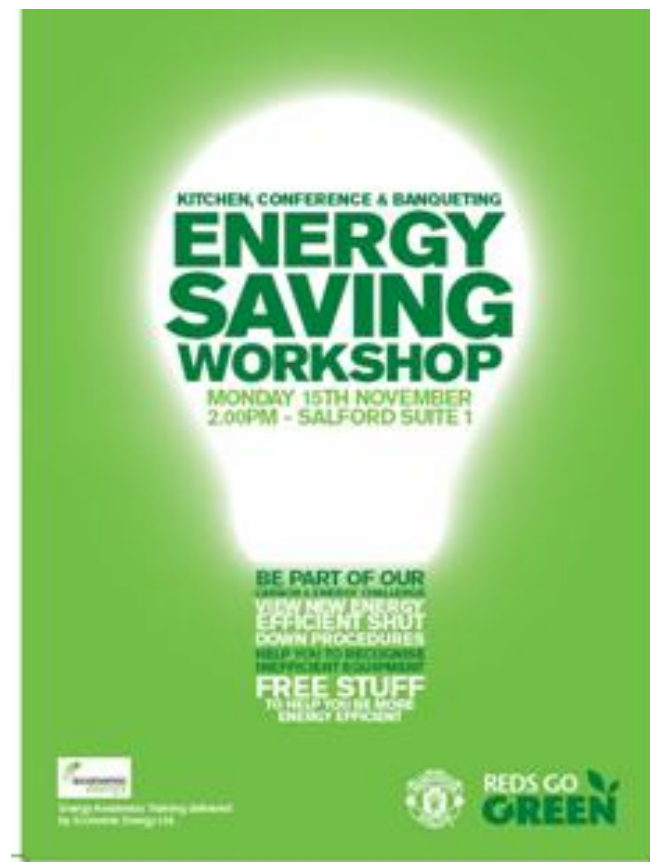
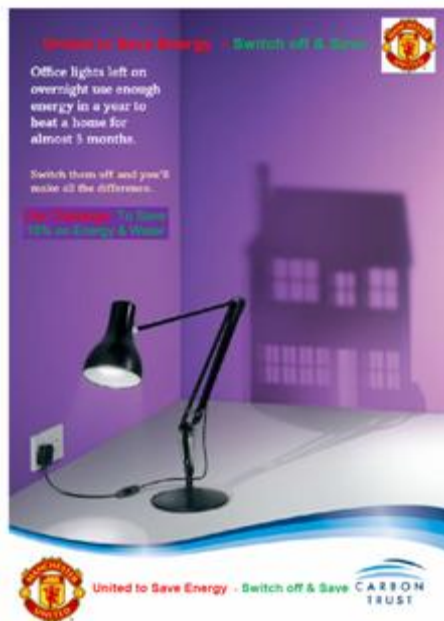
- Energy Champions Team Formed
- Highly trained
- Represent every department across the full company
- Monthly review meetings and workshop
- Nominated Finalist for Team of the Year





Awareness Programmes & Training

- High Level Training & workshops integrated throughout the business





Meters, Monitoring & Targeting

- Developed Smart meter strategy and a customised energy monitoring & targeting reporting system



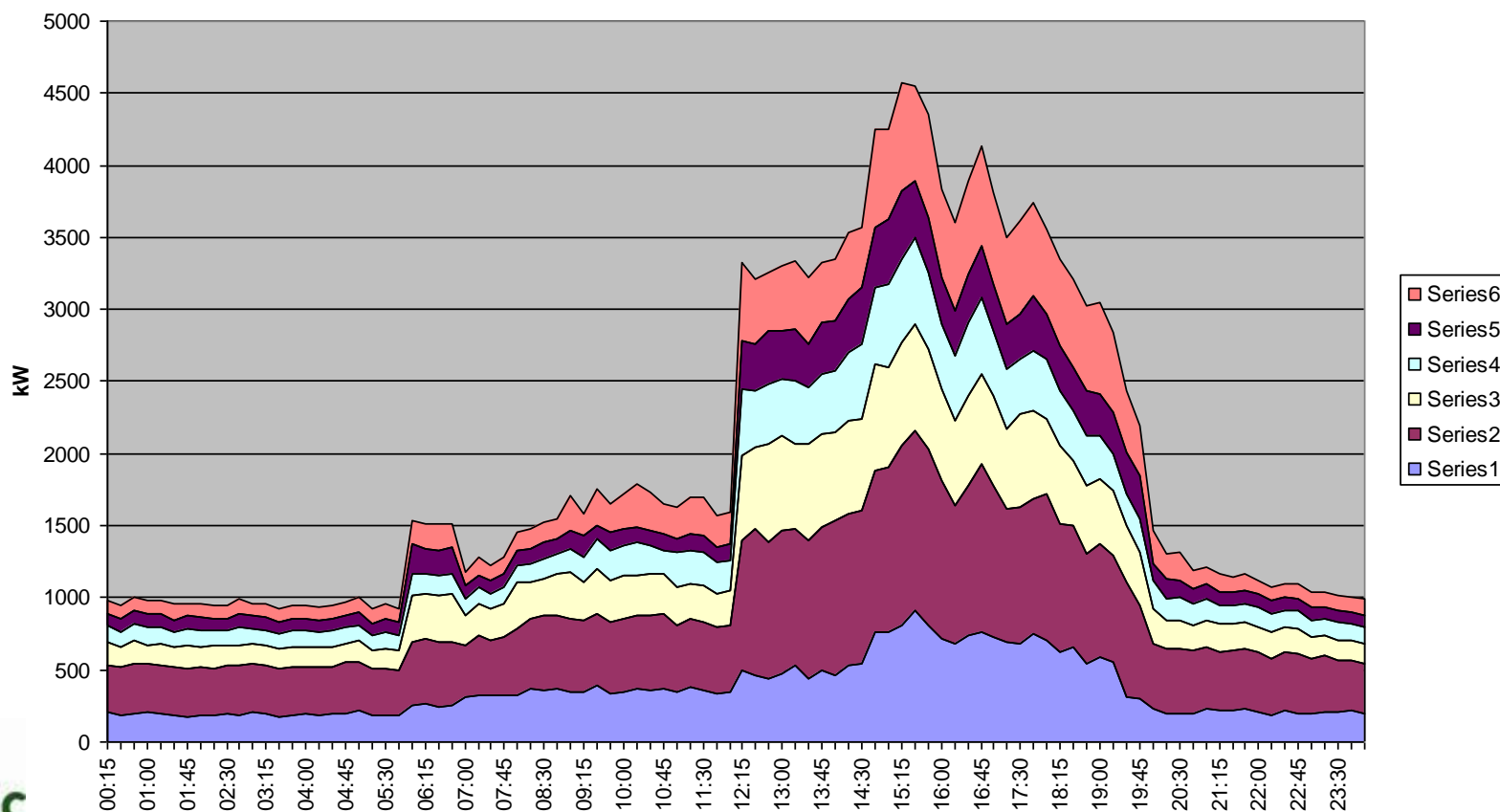
DATE	Day Total		
Monday, July 26, 2009	11,220 kWh		
Tuesday, July 27, 2009	11,220 kWh		
Wednesday, July 01, 2009	11,220 kWh	Weekly Total: 76,179 kWh	Carbon: 41.8 tonnes
Thursday, July 02, 2009	11,416 kWh	Day Units: 60,734 kWh	Maximum Demand: 768 kW
Friday, July 03, 2009	10,910 kWh	Night Units: 15,644 kWh	Average Demand: 453 kW
Saturday, July 04, 2009	10,360 kWh	Day unit cost: £ 0.0982	Minimum Demand: 14 kW
Sunday, July 05, 2009	8,553 kWh	Night unit cost: £ 0.0759	
Monday, July 06, 2009	11,481 kWh	Cost: £ 7,166.68	
Tuesday, July 07, 2009	11,860 kWh		
Wednesday, July 08, 2009	11,160 kWh	Weekly Total: 85,320 kWh	Carbon: 38.8 tonnes
Thursday, July 09, 2009	11,782 kWh	Day Units: 52,273 kWh	Maximum Demand: 776 kW
Friday, July 10, 2009	11,562 kWh	Night Units: 12,943 kWh	Average Demand: 389 kW
Saturday, July 11, 2009	8,390 kWh	Day unit cost: £ 0.0982	Minimum Demand: 0 kW
Sunday, July 12, 2009	7,984 kWh	Night unit cost: £ 0.0759	
Monday, July 13, 2009	10,461 kWh	Cost: £ 6,151.43	
Tuesday, July 14, 2009	10,216 kWh		
Wednesday, July 15, 2009	11,200 kWh	Weekly Total: 70,340 kWh	Carbon: 36.3 tonnes
Thursday, July 16, 2009	10,500 kWh	Day Units: 55,106 kWh	Maximum Demand: 730 kW
Friday, July 17, 2009	10,630 kWh	Night Units: 14,234 kWh	Average Demand: 419 kW
Saturday, July 18, 2009	8,437 kWh	Day unit cost: £ 0.0982	Minimum Demand: 266 kW
Sunday, July 19, 2009	8,175 kWh	Night unit cost: £ 0.0759	
Monday, July 20, 2009	10,140 kWh	Cost: £ 6,817.36	





Understanding Energy Use

MU v Chelsea Total Energy Consumption





Lighting

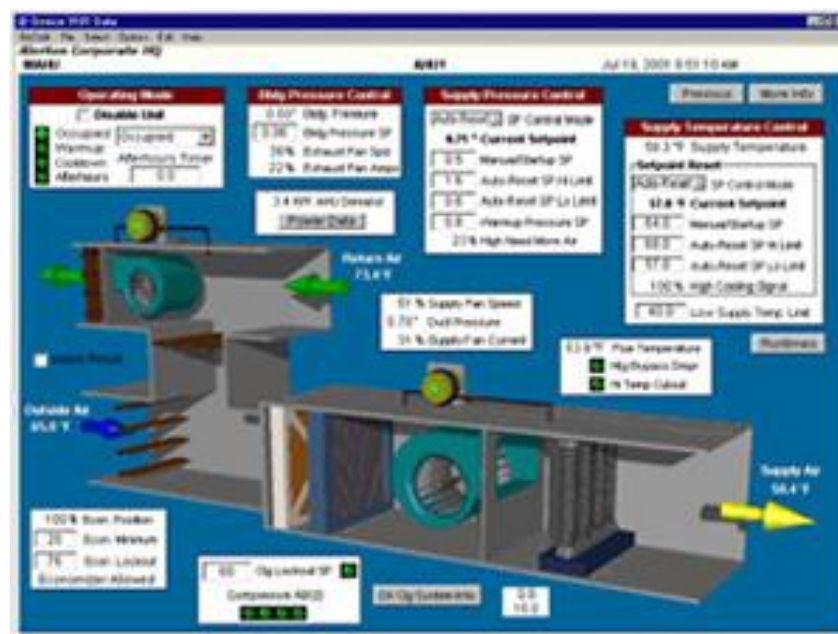
- Programme of lighting improvements is being implemented throughout all sites (4 year plan).
- Lighting Controls and sensors installed using in-house maintenance team.
- LED lighting has been trialled, tested and installed in new refurbishments.
- Lighting specifications upgraded to take into account Energy Policy and low energy targets
- Conference area lighting upgraded to Building Management System (BMS) control.





Building Management System (BMS)

- Rationalisation and improvement programme for BMS systems within Carrington Training Facilities and Old Trafford Stadium has been implemented.
- This has resulted in major savings over 22% gas savings at Old Trafford
- Most heating, ventilation & air conditioning plant is now controlled centrally by BMS



Goals at the Training Centre



Old water to new

The training centre also features a lagoon with reed bed technology, where dirty water is cleaned and recycled in order to provide water for the pitches.

Recently a bore hole has been introduced to assist with water self-sufficiency.

Water is included within the future programme



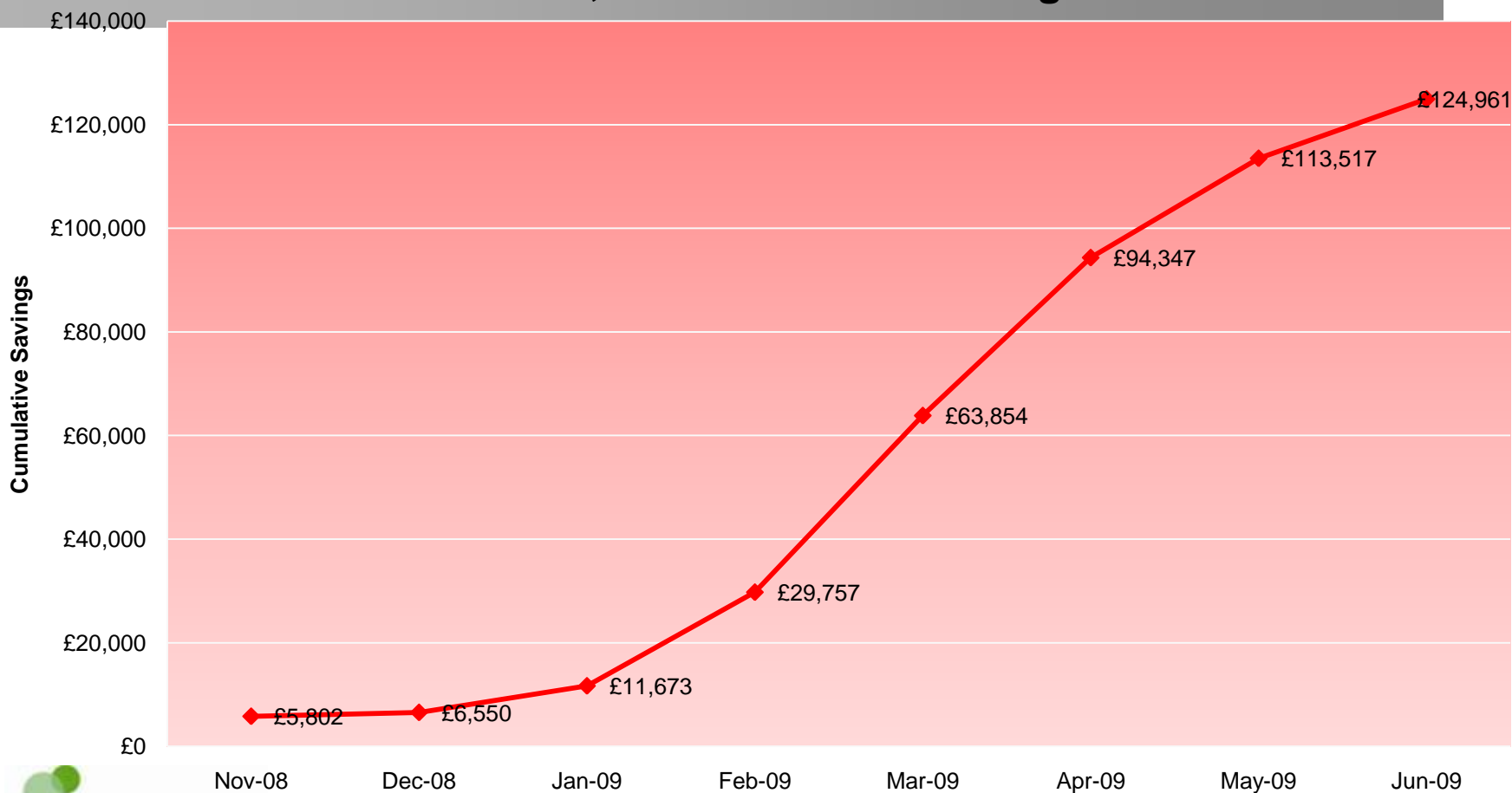


Our Energy & Carbon Challenge

Review of Energy & Carbon Reduction Challenge progress

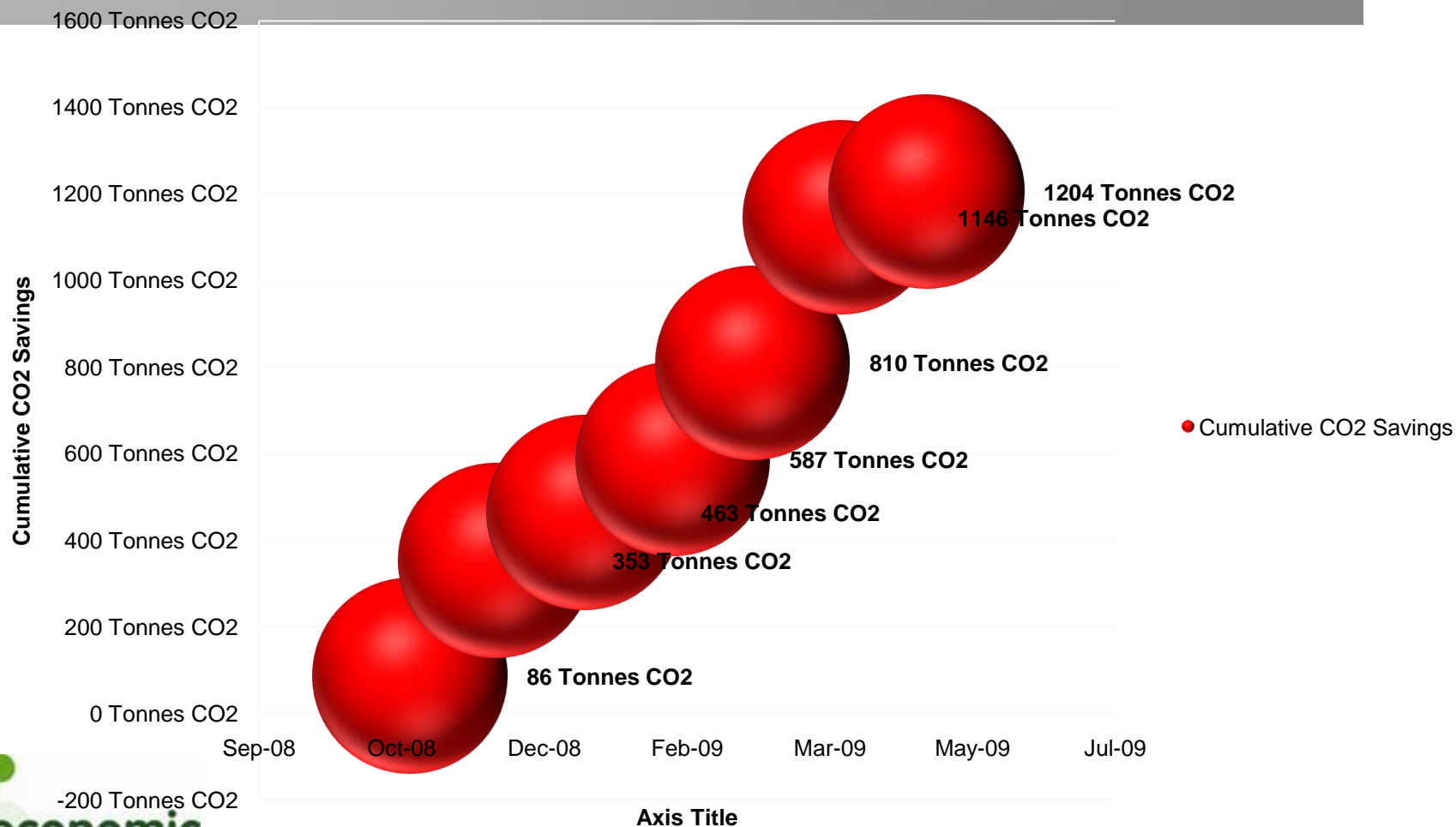


Cumulative Financial Savings Main Electricity Supplies Old Trafford, Ticket Office & Carrington





Total CO₂ Savings: September 2008 to July 2009



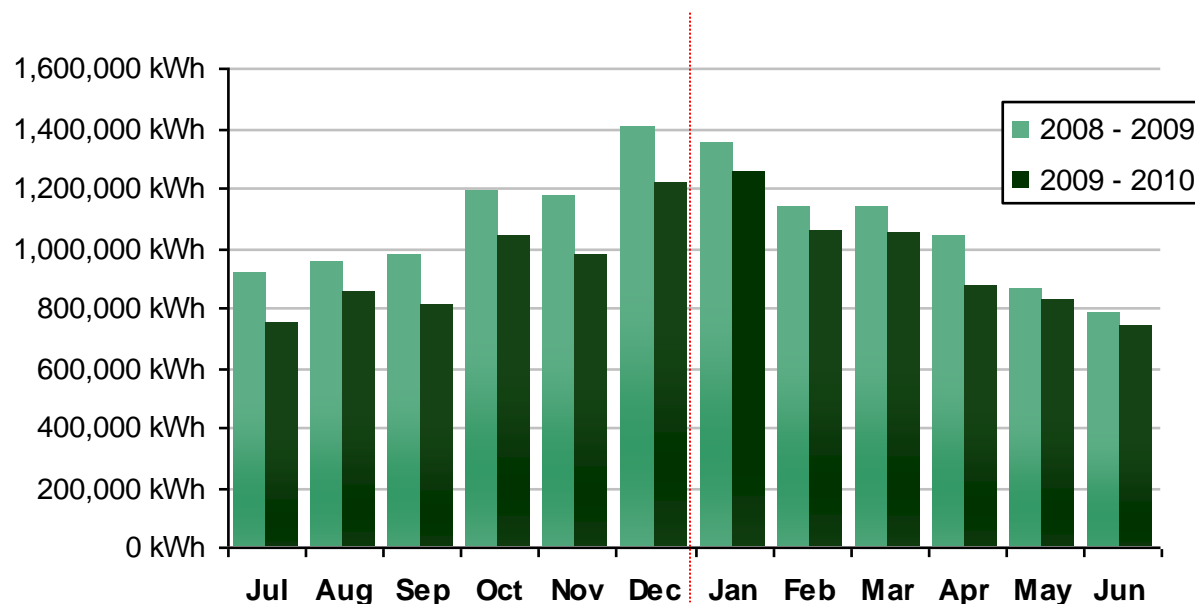


Old Trafford Stadium Site

Electricity Consumption: 2009 to 2010



Year on year comparison graph to show electricity consumption for 2008 – '09 vs. 2009 – '10 at the Old Trafford Stadium Site (including the Ticket Office).



2008 - 2009

12,915,858 kWh

2009 - 2010

11,445,846 kWh

11.4% Overall Reduction



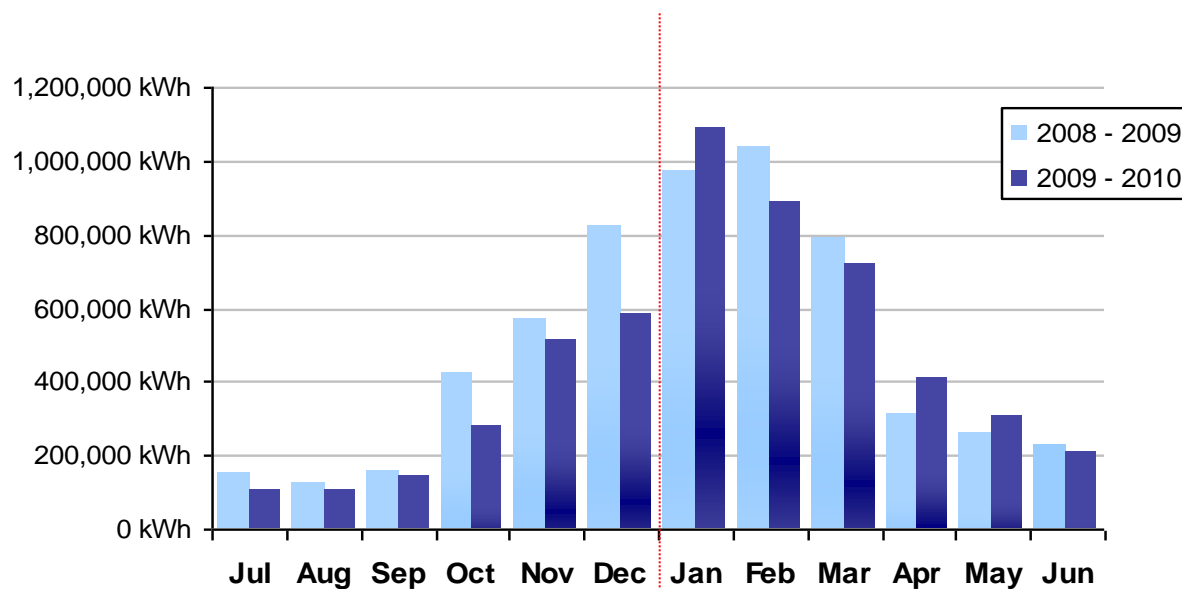


Old Trafford Stadium Site

Gas Consumption: 2009 to 2010



Year on year comparison graph to show gas consumption for 2008 - '09 vs. 2009 - '10 at the Old Trafford Stadium Site.



2008 - 2009

5,845,432 kWh

2009 - 2010

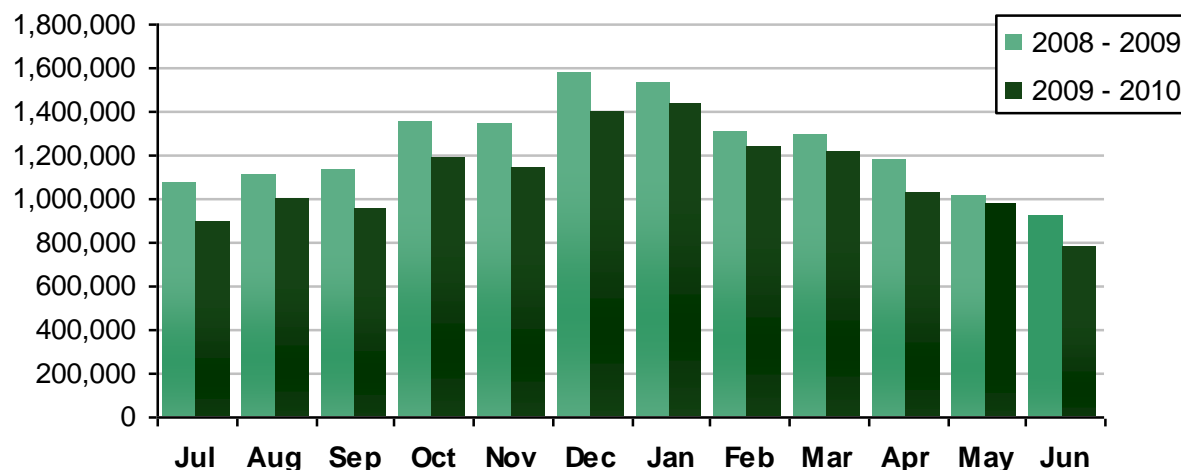
5,348,851 kWh

8.5% Overall Reduction



Total Electricity Year End Comparison

Total Electricity Consumption: 2009 to 2010



Year on year comparison graph to shows consistent overall reduction compared to previous year, 2008 to 2009.

2008 - 2009

14,825,681 kWh

2009 - 2010

13,348,950 kWh

10.0% Overall Reduction

£128,160 Estimated Cost Savings

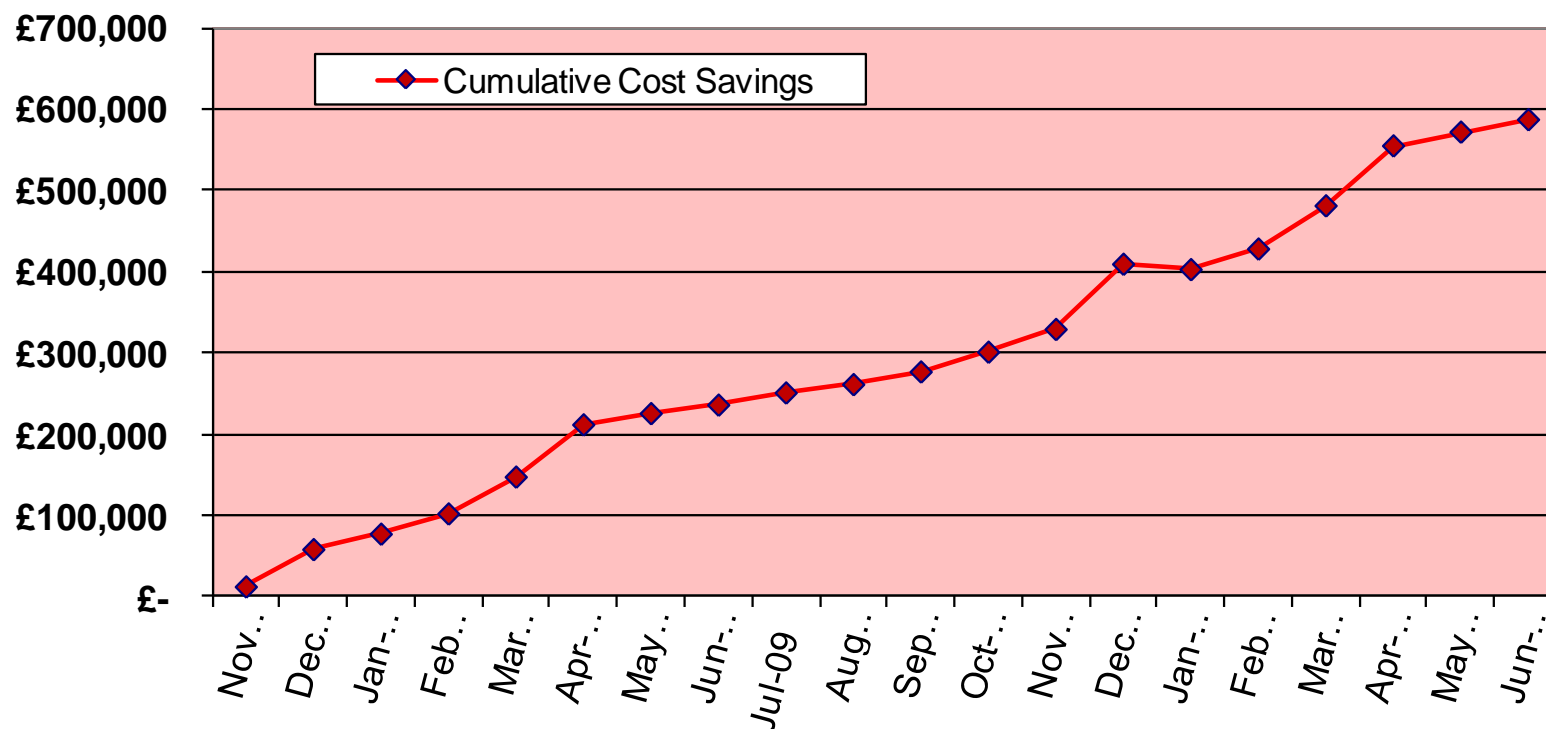
803.6 Tonnes CO₂ saved

Approximately equal to the CO₂ emissions from 161 family dwellings



Financial Savings: Cumulative against Baseline

Cumulative Estimated Cost Savings Achieved Since November 2008 Against Baseline

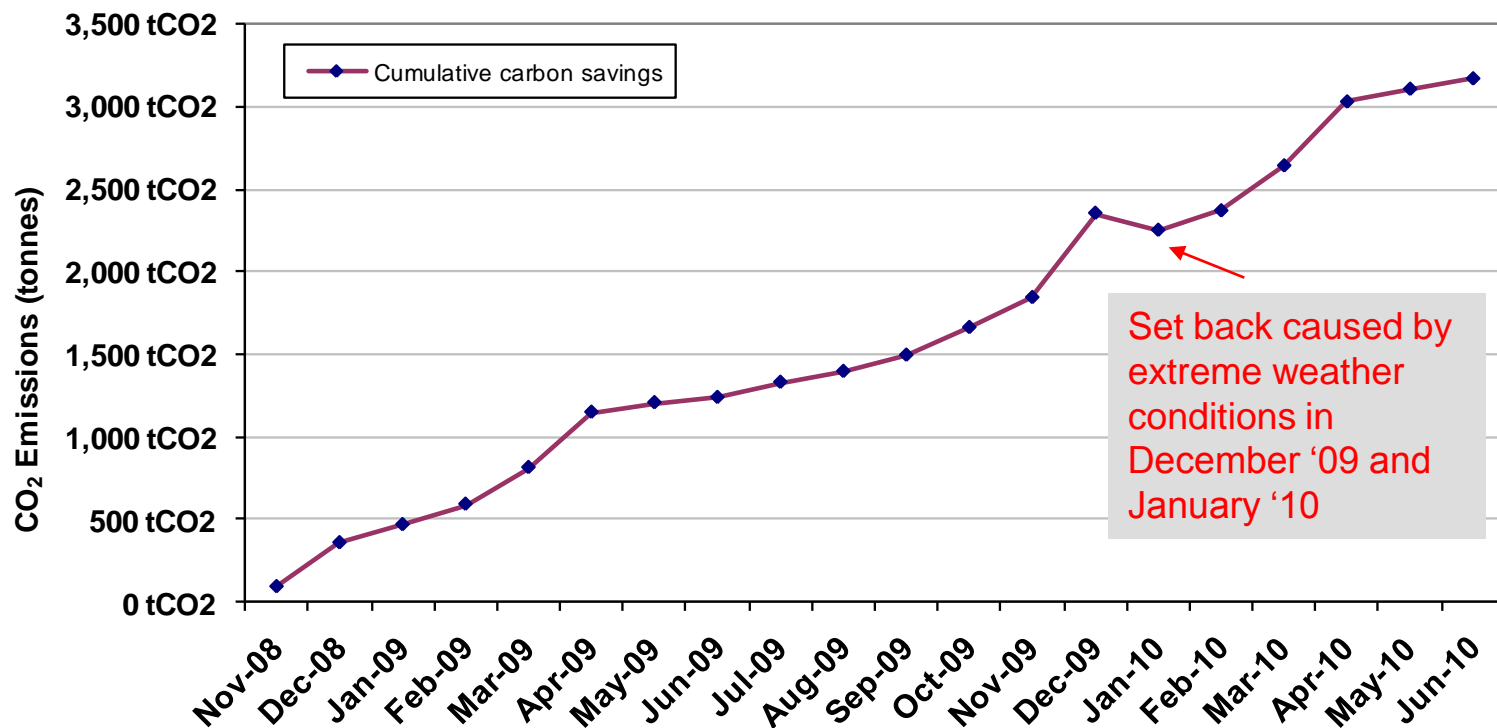


Estimated cost savings from November 2008 onwards: **£586,749**



Cumulative Carbon Savings Since 2008

Cumulative CO₂ Savings Month on Month from November 2008 Onwards Against Baseline.



← Total CO₂ saved since November 2008:

3171.7 tonnes CO₂



Our Carbon & Energy Challenge: Summary Savings



- Over 1,200 tonnes of CO₂ emissions were saved in 2008/09
- A further 11.4% electricity savings were achieved at Old Trafford Stadium during the period 2009 to 2010
- Together with a 8.5% average gas saving at Old Trafford during the period 2009 to 2010
- Total cumulative CO₂ emission reduction of **3,171tonnes** since November 2008
- This saving is the equivalent to the annual emissions of **634** homes



Achievements: Carbon Trust Standard

- 250th Company to gain Carbon Trust Standard
- Received maximum marks for strategy, policy, implementation plan and engagement
- Early adoption metrics for the Carbon Reduction Commitment





Carbon Trust Standard

“ Manchester United’s Accreditation portfolio was the best I have ever received from any client”

***Alan Williams - Carbon Trust Standard Assessor
(and standard co-founder)***



**REDUCING CO2
YEAR ON YEAR**



Recognition:



Presentation of certificates by Sir Alex to
Energy Champions and Economic Energy Ltd.

September 2010





Future Challenges

Strand Three of The Energy & Carbon Strategy



Strand Three:

- Includes renewable energy review and viabilities for employment
- This includes assessments for Wind Turbines & Biomass CHP at Training Facilities and PV generation.
- EE and the Team are also working with Envirolink on the renewable assessments.
- Further high capital carbon investment plans are being developed.





The Challenge Going Forward

Key Items for 2010/2011:

- The challenge:
- Include the launch of the new Carbon Challenge Ambassador.
- Widen staff training to more departments with Heads' involvement.
- Strengthen the Energy Champions Network and role.
- Focus on high base load & training grounds.
- Implement procedures & actions for CRC.
- Appraise renewable energy options.
- Align energy strategy Action Plan of implementation measures.
- Provide a focus on water saving within the campaign.
- Review Carbon abatement, investment & technology strategy.





Final Thought

- For every one of the 2.6 millions fans who attended Old Trafford last year - Manchester United saved **1.3** kg of carbon dioxide emissions!



United to Save Energy

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