

**THE HIGHLAND COUNCIL
RESOURCES COMMITTEE**

18th February 2009

Agenda Item	
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**PROGRESS REPORT ON IMPLEMENTING THE
ENERGY MANAGEMENT PERFORMANCE PLAN**

Report by Head of Policy and Performance

Summary

This paper reports the progress being made in meeting the targets set out in the Energy Management Performance Plan up to the end of Quarter 2, 2008/09. It highlights the issues faced with current monitoring mechanisms and recommends the monitoring of trends over time and total progress to date, in place of comparing performance across the same quarters in two separate years.

1 INTRODUCTION

1.1 In August 2008 the annual report of performance against the Council's Energy Management Performance Plan for 2007-8 highlighted that against targets to reduce energy use and CO2 emissions by 12% against the base-line year of 2004-5:

- an overall decrease in energy consumption by almost 12.5% was achieved
- carbon emissions reduced by 5,519 tonnes, a reduction of 11.13% and slightly short of the 12% target
- a total of £1.093m of cost avoided as energy prices escalated from 2004-5.

1.2 This paper reports on outline performance in relation to gas and electricity consumption for Quarters 1 and 2 of this financial year (April-September 2008). Oil reporting takes place annually to provide a better analysis of use. Data sets from Qtr 1, 2008/09 show an increase in energy usage of 2.22% and carbon emissions of 2.7% compared with Qtr 1 in 2007/08. Data from Qtr 2 shows a further increase of 5.36% in energy use and 8.7% in carbon emissions compared with the same quarter the previous year. Analysis of costs and reasons is provided below.

2 SUMMARY OF ENERGY COSTS

2.1 **Appendix 1** outlines the cost of electricity and gas use by Service for Quarters 1 and 2 in 2008/09 compared with the same Quarters in 2007/08. Electricity consumption increased in both quarters and gas consumption decreased, but gas prices increased by 46% in this time from 1.8p per kWh to 2.64p per kWh. Consequently total electricity costs were £74,943 higher and gas costs were £142,055 higher in Quarters 1 and 2 respectively than in 2007-8.

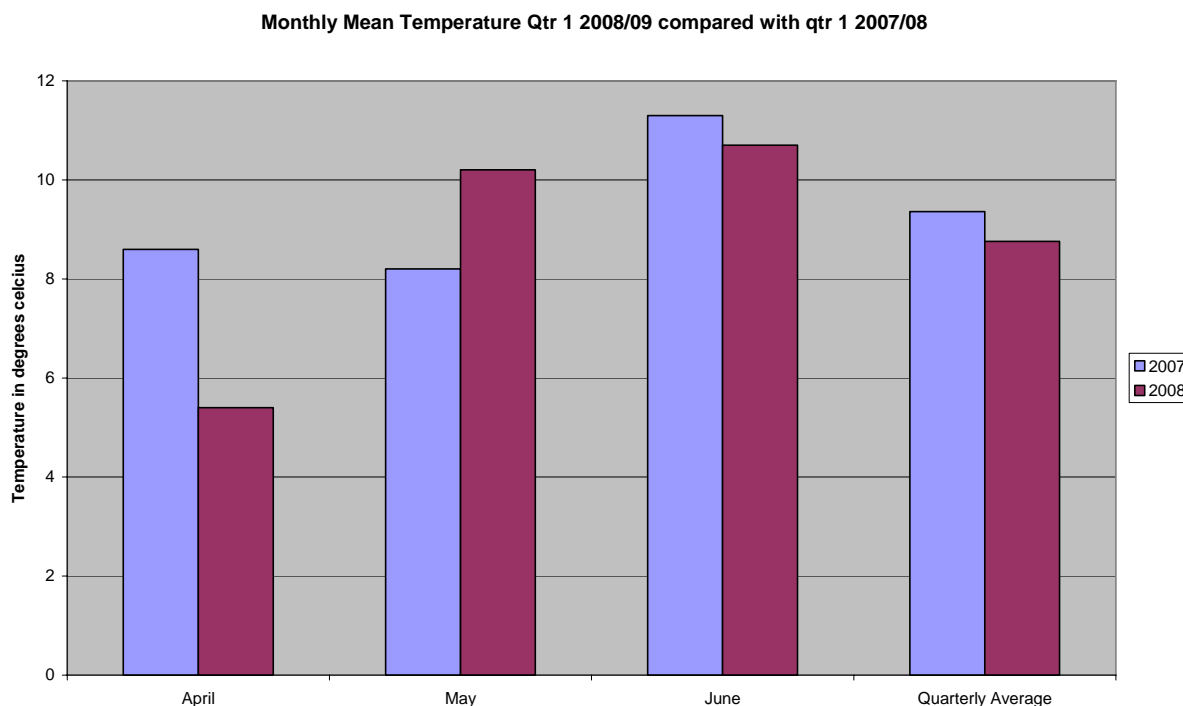
2.2 Members should note that the Council's gas supply contract was renewed at the end of March 2008 with new arrangements in place for April 1st 2008. The Council has joined a public body consortium, Scotland Excel, for the purchase of gas.

2.3 The Highland Council has recently signed up to a National Procurement programme

for energy. The unit price of energy is set to vary throughout the year and from one year to the next. This makes analysis of cost comparisons more complicated on a quarterly basis. Reporting of an overall trend in energy cost would help to demonstrate progress better.

3 EXPLANATIONS FOR RISE IN ENERGY USE

3.1 MET office reports show that the mean average temperature in North Scotland was 8.76°C for Quarter 1 in 2008/09 and cooler than in 2007/8 at 9.36°C. A particular cold spell could increase energy use and as the chart below demonstrates the month of April, was considerably colder than the previous year.



At the time of preparing this report weather data was not available from the Met Office for Qtr2 2008/09.

3.2 School closure dates over the Easter holiday period vary from one year to the other. The Easter holidays in 2007/08 fell in Qtr1 of that year and as a result schools were closed for two weeks during this period. In 2008/09 the Easter Holidays were earlier and fell in Qtr4 of the previous year, resulting in increased energy usage amongst schools in Qtr1 2008/09 compared with the previous year. This, combined with the fact that April 2008 was significantly colder would account for the increased energy usage in schools at this time.

3.3 A switch to a new gas supply contract could have resulted in previous estimated billing being brought up to date accounting for the rise in gas use in Qtr 2. School summer holidays and milder weather account for the lower energy use in schools in Qtr 2 compared with Qtr 1.

3.4 Increases in the consumption figures are partly due to variations in the billing data, with some sites having corrections made over the period indicated as a rise on the year on year quarter figures.

4 MONITORING TRENDS

4.1 National Procurement and forthcoming legislation on the Carbon Reduction

Commitment will result in metered energy use becoming available on a monthly basis for each Council building and available in real time. This will remove the risks associated with reporting estimated billing information and remove the need for a time delay in reporting as we wait for billing information to come in to the Council. In addition trend graphs can be developed for all buildings and it is proposed that graphs will be provided for each building on a monthly basis available on the Council intranet.

- 4.2 In addition targets can be set for each site and these will be indicated on building profiles and users and officers will be able to monitor performance and identify major variations and changes at an early stage.
- 4.3 To improve performance reporting for the Council as a whole it is proposed that future reporting considers trends over time throughout each year rather than by comparing performance between specific quarters in different years. This can be presented by Service or by Area and linked to overall targets and legislation such as the Climate Change Bill and the Carbon Reduction Commitment.
- 4.4 Heating degree days (HDD) can also be added to the information to help justify any apparent increase or drop in energy use. Heating degree day (HDD) and cooling degree day (CDD) are quantitative indices designed to reflect the demand for energy needed to heat or cool a home or business. These indices are derived from daily temperature observations, and the heating (or cooling) requirements for a given structure at a specific location are considered to be directly proportional to the number of heating degree days at that location. The number of heating degrees in a day is defined as the difference between a reference value of 15.5°C and the average outside temperature for that day. The value 15.5°C is taken as a reference point because experience shows that if the outside temperature is this value then no heating or cooling is normally required.
- 4.5 **Appendix 2** shows the overall trend in energy consumption from April 2005 to April 2008, and for gas and electricity up to the end of Qtr 2, 2008/09. This is based on actual billing data. The graph illustrates the seasonal fluctuation in energy use between summer and winter. Energy saving through behavioural change achieved a large reduction in energy use from the baseline 2004/05 in the first year. Over this period reductions in electricity and gas consumption have been sustained but oil use has risen. **Appendix 3** shows the overall trend in total energy consumption and the trends for electricity, gas and oil. It demonstrates that while there is an upward trend in energy use over the three years, this is due to increased oil use.
- 4.6 There remains an issue with oil supplies as the records are based on quantities of delivery instead of actual use and this gives large variations in consumption dependant on when and by how much tanks are re-filled. Meters for oil have been piloted at several sites and alternative methods of measuring building heat demand are being trialled. In addition, if increased consumption of oil continues to counter any decrease in electricity or gas use, the Council needs to consider alternatives to switching heating systems from oil to more renewable options in order to reduce costs and carbon emissions.
- 4.7 **Appendix 4** demonstrates the long-term emissions reductions targets that will need to be achieved by the Highland Council in line with Scotland's Climate Change Bill. It should be noted that this graph represents the minimum targets needed to reach emissions reduction of 50% by 2030. Secondary legislation could place tougher targets on Local Authorities to reduce more emissions earlier. Clearly the Council's

current target of reducing carbon emissions by 15% from 2004-5 to 2010-11 is not sufficient. The target will need to be reviewed for the Council's statutory involvement in the Carbon Reduction Commitment, a new requirement which will be the subject of a report to a future Council meeting.

5. PROGRESS IN INSTALLING RENEWABLES

5.1 **Appendix 5** outlines the progress to date in installing renewable technologies at Highland Council sites. The Energy team in the Housing and Property Service is currently in the process of laying out a plan for renewables installations and Energy efficiency works to 2012. This work is hoped to be completed the end of March in line with the revised Carbon Management Plan under development.

6 ACQUISITION AND DISPOSAL OF BUILDINGS

6.1 All acquisitions and disposals need to be accounted for in the energy reporting and arrangements have been put in place for all transactions and alterations to buildings to be identified through the property databases so that they can be included.

7 OTHER PROGRESS IN IMPLEMENTING THE EMPP

7.1 Raising awareness amongst staff and Members

The EMPP assumed that a programme of behavioural change for staff will account for a 10% reduction in Council energy use, through training, incentives and improved data management and that this saving would be noticeable in the first year of implementation. A continued programme of awareness raising is required to maintain this reduction.

7.2 Green Ambassadors have been established as "Champions" to raise awareness and spread the word on the ground. Over 60 Green Ambassadors have volunteered to participate in the scheme and attended a Launch on the 3rd of November 2008. Posters and online resources have been distributed and a programme of events is being developed for 2009. Already Ambassadors have expressed interest in attending three separate training workshops, including the opportunity to undertake an SVQ in Energy Efficiency at Grantown Grammar School.

7.3 To promote energy saving and environmental awareness among pupils a photography competition is underway.

7.4 Energy labelling

The Council is participating in the Energy Cities *Display Campaign*, which provides local authorities across Europe with a labelling system that displays the energy performance of their buildings. Poster data has been updated for the original 180 sites to include figures for energy and water consumption and CO₂ emissions in these buildings for 2006 and 2008. Posters will be updated every two years.

7.5 Most sites included have witnessed improvement in rating classes for either energy consumption, CO₂ emissions or water consumption. An exemplar is Dornoch Primary School which has achieved rating improvements from Classes D, E and G for energy consumption, CO₂ emissions and water consumption respectively to Class A across the three categories.

7.6 Energy Performance of buildings Certificates

The EU Energy Performance of Buildings Directive came into effect in January 2009 and requires all public buildings over 1000m² to display an Energy Performance Certificate (EPC). Highland Council has currently identified 136 buildings that fall into

this category. EPC's are mandatory and must only be produced by an accredited trained professional. Many Local Authorities have experienced problems in accessing the appropriate training for the production of EPC's and this has led to delays in meeting the European requirement. Highland Council EPC's are set to be complete by the end of March 2009.

7.7 An EPC displays the building's energy potential while the Display Campaign poster demonstrates the building's actual energy consumption. All buildings requiring an EPC have now been issued with a display campaign poster bringing the total number of buildings with display posters to 383. It is a requirement that EPCs are renewed every ten years, however display campaign posters will be updated every two years.

7.8 Establishment of Ward Forum on Energy Efficiency

It was agreed at the meeting of the Climate Change Working group in December 2008 that energy efficiency be a theme for relevant ward forum meetings, presenting the opportunity to show case the Council's approach and to invite Changeworks the new advice provider to participate. This will be scheduled.

8 AUDIT SCOTLAND REPORT ON IMPROVING ENERGY EFFICIENCY

8.1 In December 2008 Audit Scotland published its assessment of how public bodies, NHS and central government were improving energy efficiency in relation to buildings and transport. Amongst the findings of the report it was shown that only ten Councils in Scotland have included energy efficiency targets in their Corporate Plans and few public bodies have an action plan outlining how objectives and targets to improve energy efficiency would be achieved. The report also identified that just over one third of public sector bodies had a specific local budget for investment in energy efficiency measures with Councils investing £9.3 million between 2004/05 and 2006/07. Overall energy consumption within public sector buildings has reduced by 4.8% in this time but spending on energy has risen by 46.7% due to the significant rise in energy prices over recent years.

8.2 From the findings summarised above it is clear that Highland Council is performing better than average in this respect. However the report also highlighted areas for improvement including the inclusion of energy efficiency in staff induction programmes, the need to incorporate energy efficiency when buying goods and services and the increased need for sustained staff awareness campaigns. The report also recognises the challenges facing public bodies in recruiting and retaining staff in energy management teams due to a shortage of experienced energy management professionals.

8.3 Some key recommendations include:

- The Scottish Government should demonstrate leadership by providing clear guidance for all and work with the public sector to disseminate good practice and establish appropriate energy efficiency benchmarks.
- The public sector should ensure senior staff play a key role in improving energy efficiency. Identify and implement a coordinated programme to raise awareness amongst staff and seek expert advice and input into the design of programmes that focus on encouraging changes in culture and staff behaviour.
- Ensure that energy efficiency is considered in the procurement of goods and services.

All of these are being pursued in the Council.

9 CARBON TRUST STANDARD ACCREDITATION AND ASSESSMENT

- 9.1 A formal accreditation scheme for organisations that are measuring, managing and reducing CO₂ emissions, has been developed by the Carbon Trust. In January 2009 Highland Council successfully achieved the “Carbon Trust Standard” and this can be formally used to demonstrate ‘early action’ towards the EU Carbon Reduction Commitment.
- 9.2 It has been acknowledged during the Carbon Trust Standard accreditation process that more needs to be done within Highland Council to benchmark against other public bodies and areas in the UK. Currently Highland Council is one of only three Local Authorities in Scotland to be accredited through the scheme.
- 9.3 It is hoped that following the Audit Scotland report, the Scottish Government will develop energy efficiency benchmarks and guidance in the near future. There are many variables to consider including the size of the authority area, its distribution, climate and quality of assets, staff numbers and services. At present it would seem sensible to benchmark against other Local Authorities with CTS Accreditation as they too will have demonstrated commitment towards carbon reductions. In Scotland these are currently Fife Council and Perth and Kinross.

10 TARGETS 2010-2012 IN LINE WITH CARBON MANAGEMENT PLAN

- 10.1 The Council is currently participating in Carbon Management Plus, a pilot programme being developed by the Carbon Trust, aimed at reviewing and updating the Carbon Management Strategy and Implementation Plan. The revised plan will run from 2009-2012. The Energy Management Performance Plan forms part of the overall Carbon Management Plan. Currently targets in the EMPP run to 2010. It is therefore necessary to establish new targets for carbon emissions reductions from energy use for 2010-2012. An officer based working group will be exploring the best options for emissions reductions beyond 2010, taking into consideration the Scottish Climate Change Bill, introduced to parliament in December 2008 and the Carbon Reduction Commitment. Further information will be provided to Committee on this matter.

11 CONCLUSIONS

- 11.1 While comparing Qtr 1 and 2 2008/09 against Qtr 1 and 2 2007/08 there appears to be an increase in energy use and carbon emissions. Such increases could be attributed to estimated billing, variations in school closure dates and prevailing weather conditions. Increased energy consumption and gas prices have led to increased energy costs compared to the same period in 2007-8. From 2009 onwards it will be complicated to make cost comparisons in this way due to the Council’s involvement in a national procurement scheme for energy.
- 11.2 On examining the overall trend in energy use it is clear that behavioural change has achieved the most savings early on in the EMPP implementation, with these being sustained for electricity and gas. Oil use appears to be on the increase and more needs to be done to explore how best to measure actual oil consumption rather than oil purchase. More focus on replacing heating systems with renewable options is needed in addition to energy efficiency measures. Without a switching of fuel type it is unlikely that the Council will meet its 15% reduction targets and the more stretching Government targets on carbon reduction.
- 11.3 In general, through the achievement of the Carbon Trust Standard and following the national Energy Audit, Highland Council can demonstrate progress in achieving emissions reduction from energy, and is out performing many other local authorities; however the pace of change is insufficient to meet our local and the national targets.

More stretching targets need to be set with supporting activity identified. This will be brought back to a future meeting of the Committee following consideration at the Climate Change Working Group.

12. RECOMMENDATION

Members are asked to note:

1. that while energy use and CO₂ emissions have reduced from the 2004-5 base-line, performance between April and September 2008 shows an increase in use and emissions compared to the same period in 2007. Explanations for the increase include estimated billing, variations in school closure dates and colder weather conditions.
2. the progress in installing renewable technologies in Council sites and in encouraging behavioural change through awareness raising, energy labelling and buildings certificates.
3. that the Council is one of three Councils in Scotland with Carbon Trust Standard Accreditation for measuring, managing and reducing CO₂ emissions and compares favourably with other Councils from the Audit Scotland energy audit.
4. that emissions reductions targets need to be re-set given Government targets and that further information will be brought to the Committee.

Members are asked to agree to:

1. reporting performance by trends through out the year from 2005, rather than comparing quarterly performance between years.

Signature:

Designation: Head of Policy and Performance

Date: 11.2.09

Authors: Ailsa Villegas, Sustainable Development Officer; Noel McAllister, Policy Assistant Sustainable Development; Eddie Boyd, Principal Engineer Energy & Engineering.

Electricity Cost	Comparison between Qtr 1 08/09 and Qtr1 07/08		
	Service	Usage %	£
Education, Culture & Sport	3.55%	29261	3.76%
Social Work	4.75%	5594	4.70%
TECs	5.46%	11563	6.49%
Other HC	-2.16%	-3121	-2.10%
Services Total	3.22%	43297	3.54%

Comparison between Qtr 2 08/09 and Qtr2 07/08		
Usage %	£	%
10.10%	64,784	10.17%
16.70%	16,083	15.53%
22.44%	32,119	22.17%
9.29%	12,580	8.72%
12.28%	125,566	12.19%

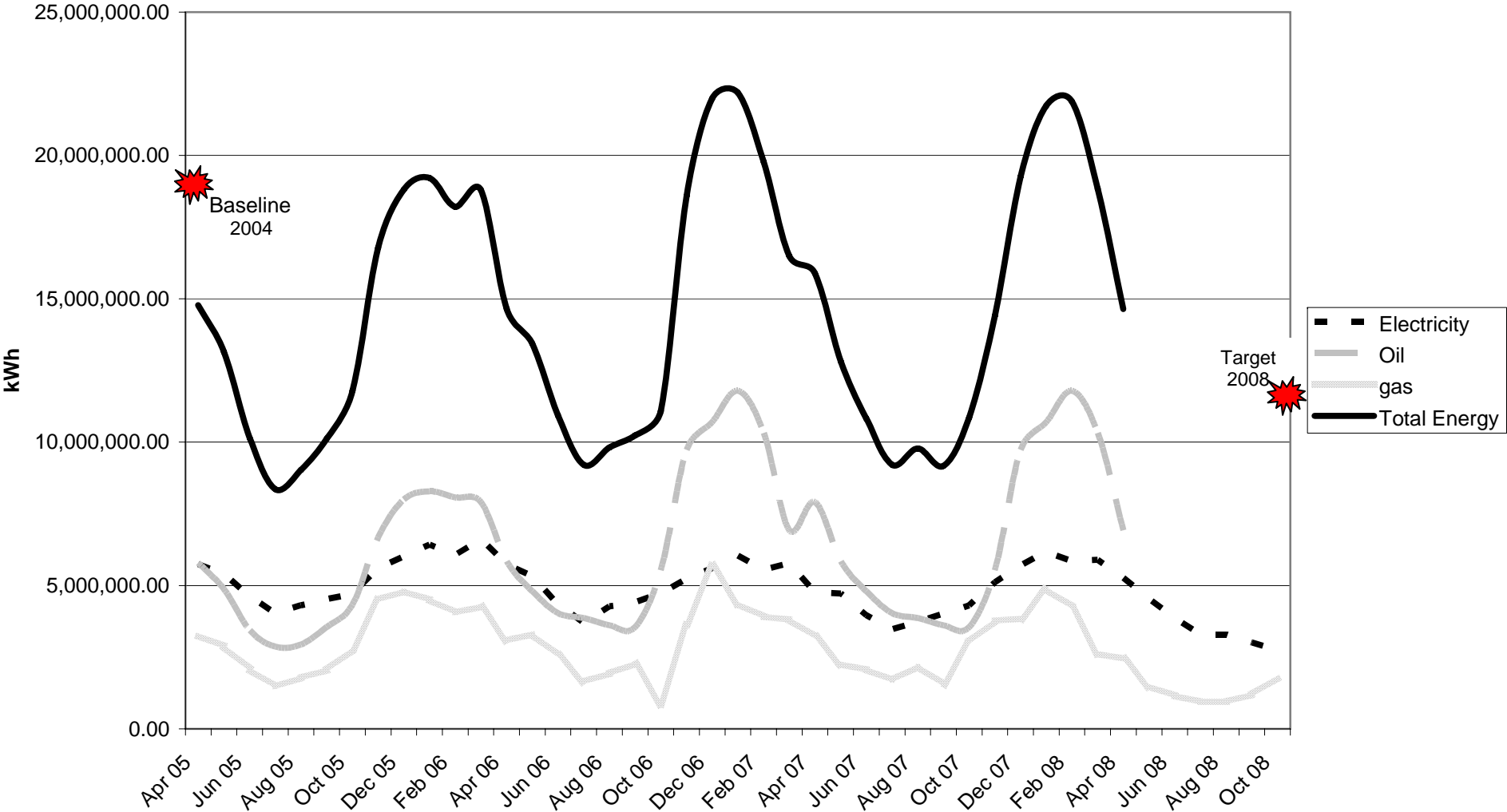
Gas Cost	Comparison between Qtr 1 08/09 and Qtr1 07/08		
	Service	Usage %	£
Education, Culture & Sport	4.53%	21708	0.40101973
Social Work	-41.06%	-1219	0.114761815
TECs	-21.06%	1150	0.866616428
Other HC	12.71%	10007	0.624461778
Services Total	-0.53%	31646	0.385428592

Comparison between Qtr 2 08/09 and Qtr2 07/08		
Usage %	£	%
-31.55%	-755	-1.56%
19.80%	8,190	88.16%
162.70%	2,301	191.11%
19.66%	6,753	71.57%
-14.32%	16,489	25.04%

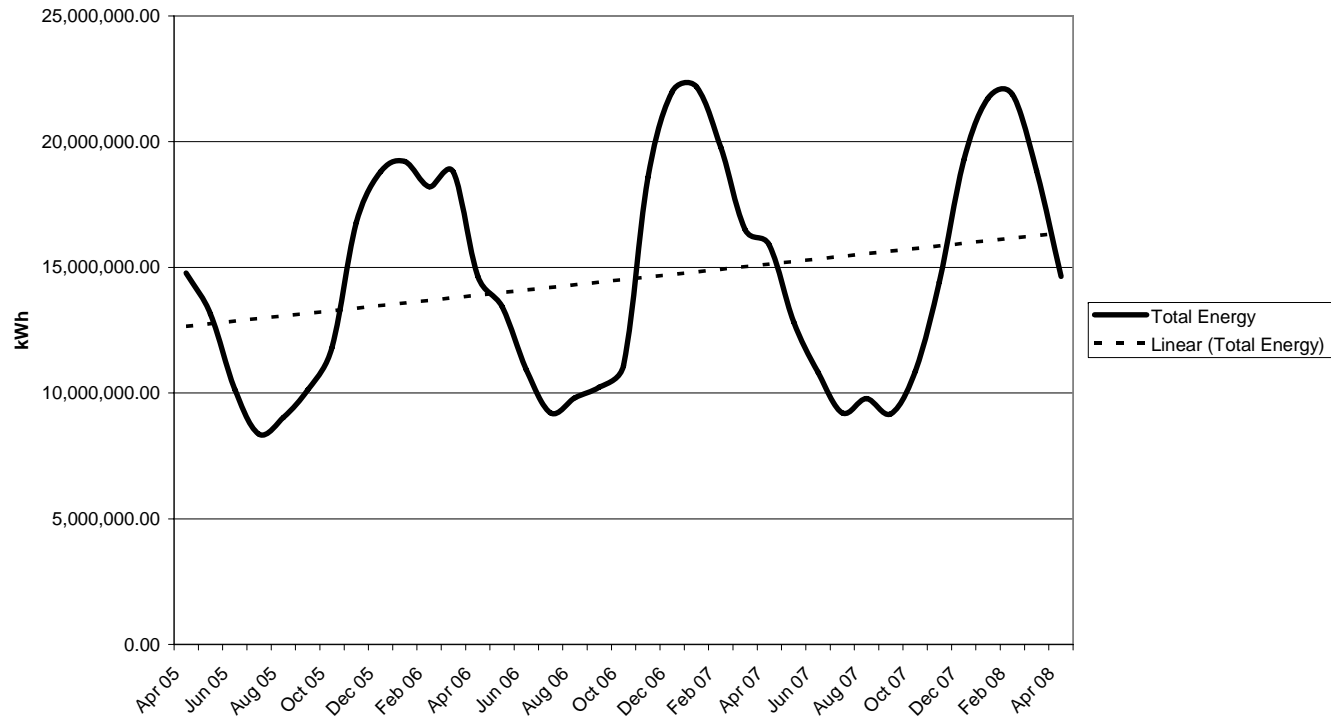
Total	2.22%	74,943	5.74%
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5.36%	142,055	12.97%
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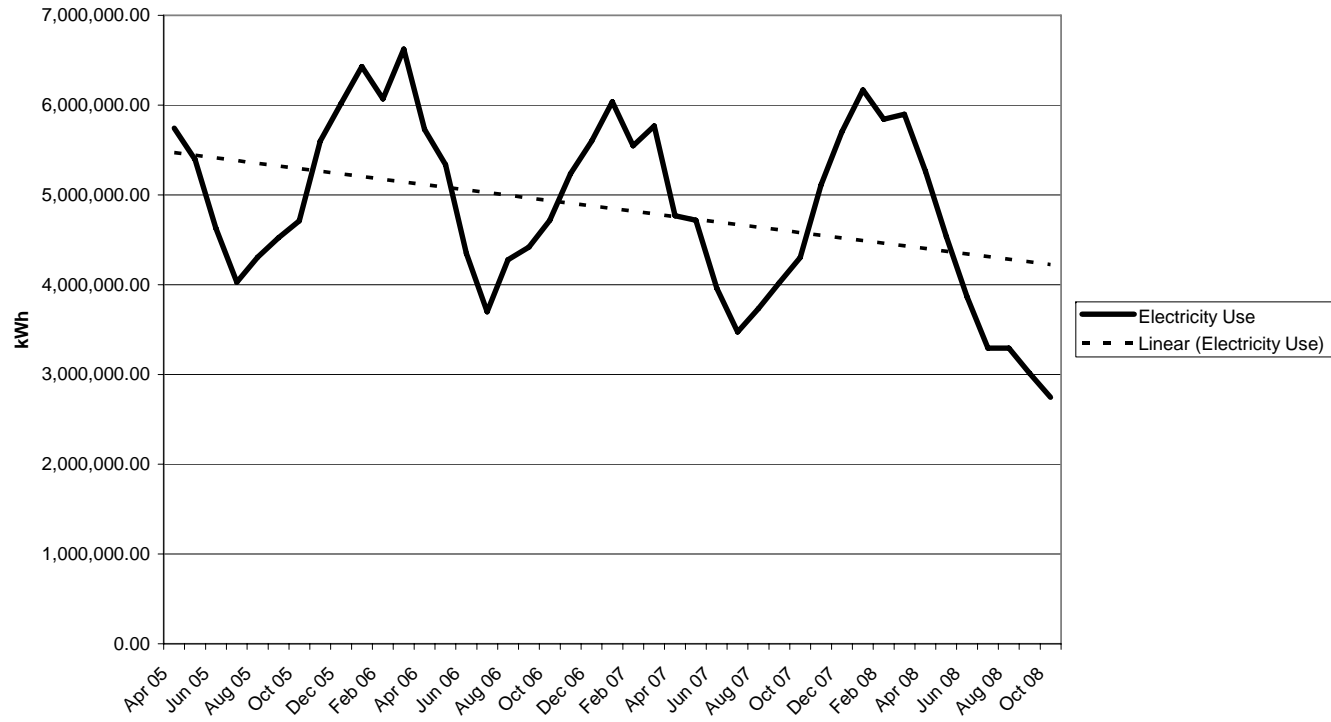
Total Consumption & Energy Mix



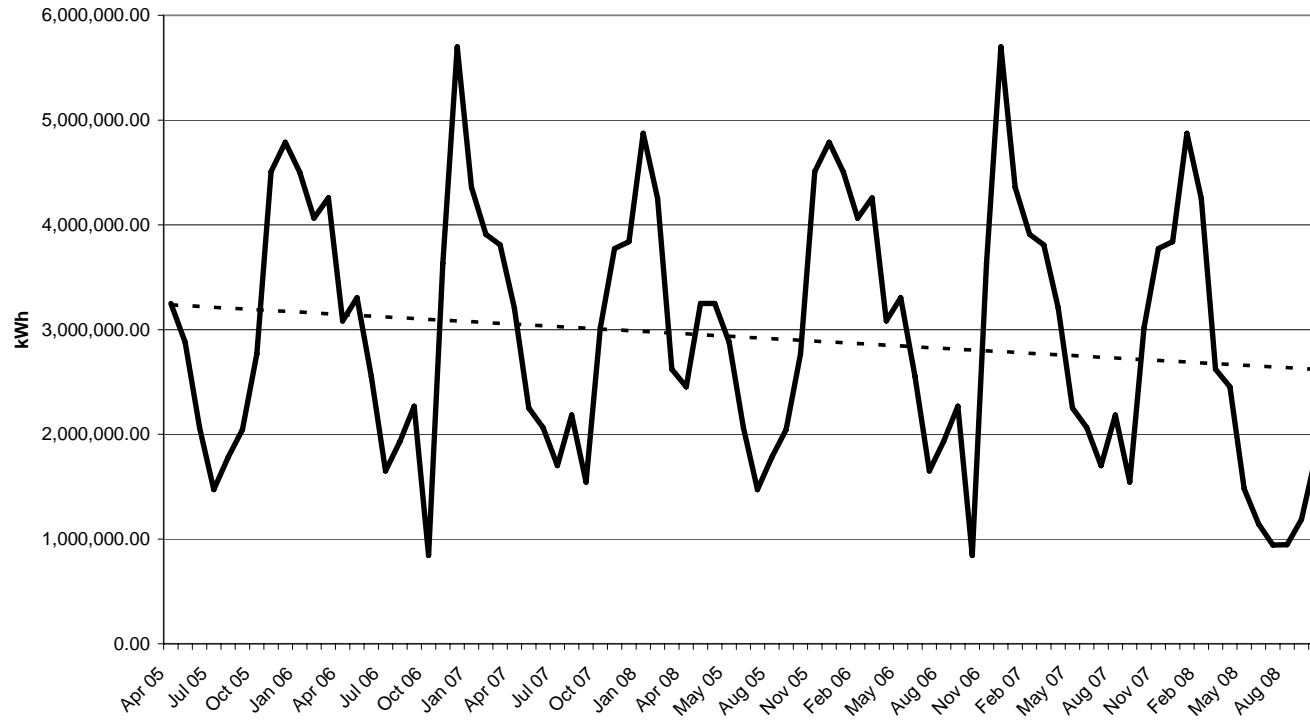
Total Consumption & Energy Mix



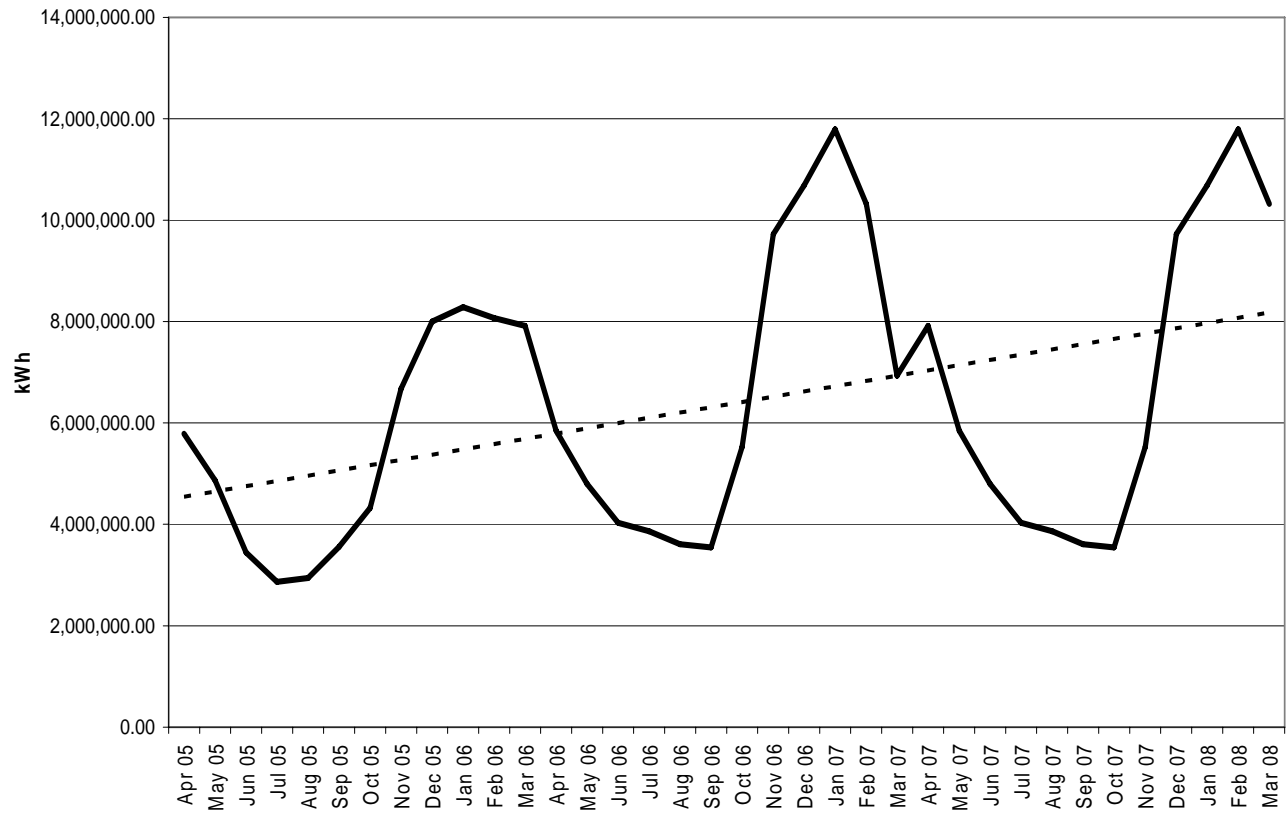
Total Site Electricity

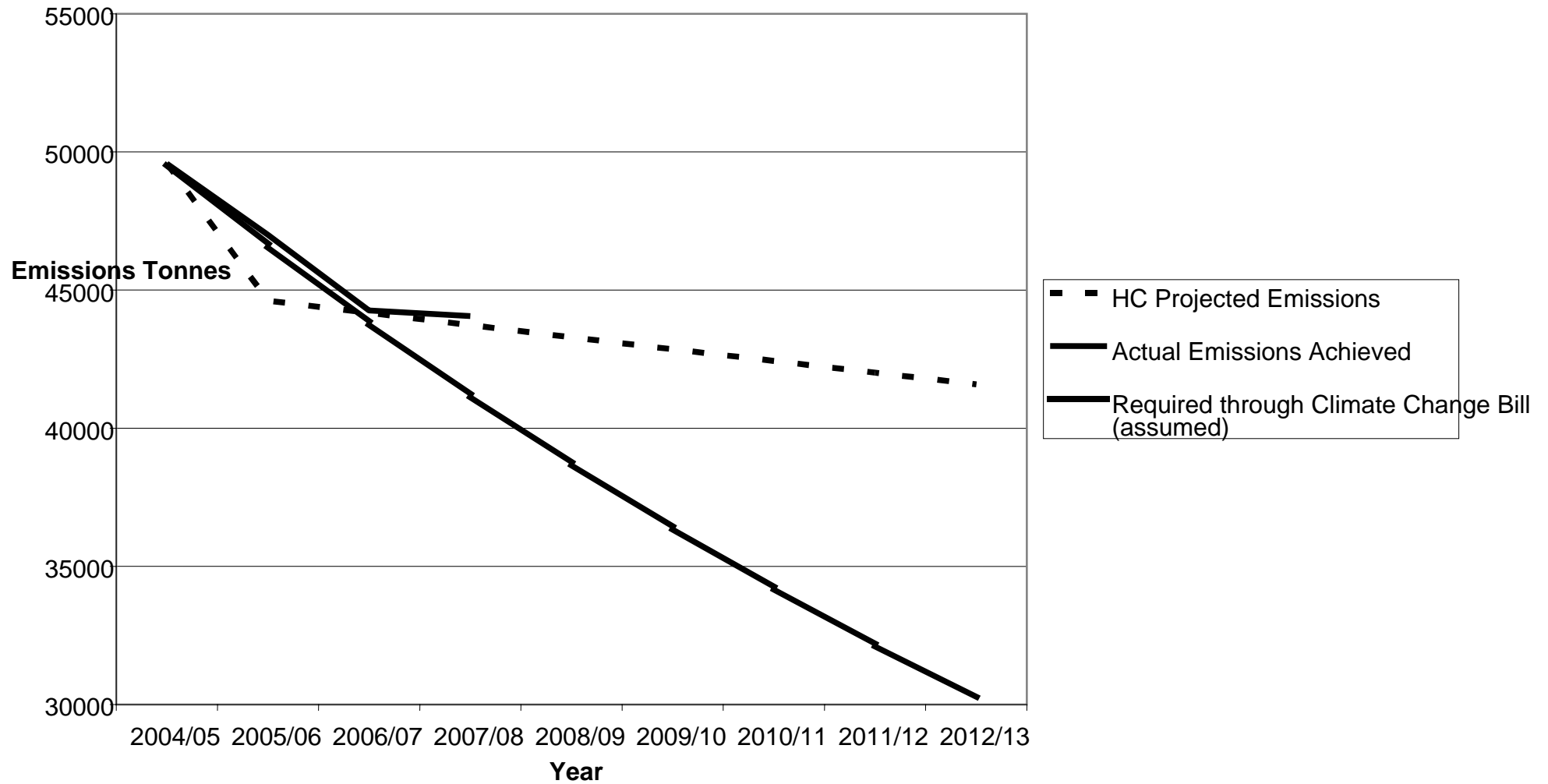


Total Gas Consumption



Total Oil Consumption





Based on HC projections of 10% saving in first year and 1% per annum thereafter. An assumed figure of 6% per annum emissions savings will be needed to meet National targets of 80% emissions savings by 2050 (over a baseline of 1990)

Increasing the Installed Capacity of Renewable Energy in Council Buildings

Appendix 5

COMPLETED INSTALLATIONS		
Property	Renewables Technology	Installed Capacity (kW)
Scoraig Primary (2003)	Wind Turbine	6
Eigg Primary (1994 + 2000)	Wind Turbine	10
Fortrose Academy (2002)	Solar Power	2.5
Eigg Primary (2007)	Ground Source Heat Pump	18
St Clements Special School (2006)	Air Source Heat Pumps	12
St Brides Primary (2007)	Ground Source Heat Pump	36
Grantown Grammar (2007)	Ground Source Heat Pump	150
Dingwall Primary (2007)	Biomass Boiler	150
Avoch Primary	Biomass Boiler	110
Gergask Primary	Air Source Heat Pumps	8
Sleat Primary	Air Source Heat Pumps	8
Kyle Primary	Air Source Heat Pumps	12
Dunvegan Primary	Air Source Heat Pumps	12
Fort William Fire Station	Solar Panel - 20m2	5.75
Broadford Primary	Air Source Heat Pumps	8
Raasay Primary	Air Source Heat Pumps	8
Dingwall Children's Centre	Ground Source Heat Pump	17
Dingwall Children's Centre - 8m2	Solar Panel - 8m2	2.3
Caithness Horizons	Ground Source Heat Pump	124
Wick Swimming Pool	Solar Panel - 14m2	10
Glenelg Primary	Solar Panel - 8m2	2.3
Newtonmore Primary	Solar Panel - 8m2	2.3
Keiss Primary	Solar Panel - 8m2	2.3
Edderton Primary	Solar Panel - 8m2	2.3
Watten Primary	Solar Panel - 8m2	2.3
Auchtertyre Primary	Solar Panel - 8m2	2.3
Bower Primary	Solar Panel - 8m2	2.3
Reay Primary	Solar Panel - 8m2	2.3
Gairloch Primary	Solar Panel - 8m2	2.3
Kinbrace Primary	Solar Panel - 8m2	2.3
Mallaig Primary	Solar Panel - 8m2	2.3
Nairn Academy SEN	Ground Source Heat Pump	18
Abernethy Primary School	Biomass Boiler	150
Hilton of Cadbol Primary School	Biomass Boiler	150
Lochyside Primary School	Biomass Boiler	150
Helmsdale Fire Station	Air Source Heat Pump	8
HQ	PV Array	10
Holm Primary	PV Array	4
Bridgend Primary	PV Array	4
Total		1228.85

completed
May-07
Mar-07
Apr-07
Apr-07
May-07
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Oct-07
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Aug-07
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Jan-09

INSTALLATIONS UNDER CONSTRUCTION			Target Completion
Property	Renewables Technology	Installed Capacity (kW)	
Telford Centre	Biomass Boiler	80	Jun-09
Lochbroom House	Biomass Boiler	80	May-09
Acharacle Primary School	Wind Turbine	6	Jul-09
Glenelg Primary	PV Array	6	Mar-09
Tomnacross Primary	Ground Source Heat Pump	60	Aug-09
Mallaig Children's Hostel	Ground Source Heat Pump	120	Aug-09
Grantown Grammar	PV Array	10	Mar-09
Invergordon Academy	PV Array	10	Mar-09
Portree Primary	PV Array	4	Mar-09
Kinmylies Primary	PV Array	4	Mar-09
Golspie High	PV Array	10	Mar-09
Kilchuimen Academy	PV Array	10	Mar-09
Nairn Pool	Solar Panel - 20m2	10	Mar-09
Thurso Pool	Solar Panel - 20m2	10	Mar-09
Invergordon Pool	Solar Panel - 20m2	10	Mar-09
Dingwall Pool	Solar Panel - 20m2	10	Mar-09
Culloden Pool	Solar Panel - 20m2	10	Mar-09
Tain Pool	Solar Panel - 20m2	10	Mar-09
Lochcarron Primary	Biomass Boiler	50	Mar-09
Pultneytown Primary	Biomass Boiler	150	Mar-09
Lairg Primary	Biomass Boiler	150	May-09
Tongue Fire Station	Air Source Heat Pump	8	Jul-09
Rousay Fire Station	Air Source Heat Pump	8	Jul-09
Total		2727	
INSTALLATIONS APPROVED BY SERVICES			Target Date
Property	Renewables Technology	Installed Capacity (kW)	
Raasay Primary	Wind Turbine**	6	Mar-09
Mallaig High School	Wind Turbine**	6	Aug-09
Travelling Peoples Site	Wind Turbine**	6	Mar-09
Fortrose Academy	Wind Turbine**	6	Mar-09
Tongue Primary	Wind Turbine**	6	Mar-09
Craighill Primary	Wind Turbine**	6	Mar-09
An Acarsaid Centre	Biomass Boiler	80	2009-10
Thurso High	Wind Turbine**	6	2009-10
Halkirk Primary	Biomass Boiler	300	Aug-09
Lochaber High School	Ground Source Heat Pump	150	2010-2011
Total		572	
INSTALLATIONS DUE TO BE APPROVED BY SERVICES			Target Date
Property	Renewables Technology	Installed Capacity (kW)	
Wick High	Biomass Boilers	500	2009-10
Lochaber High School	Biomass Boilers	500	2010-2011
Kiltearn Primary	Biomass Boilers	150	2009-10
Total		1150	

INSTALLATIONS UNDERGOING OPTIONS APPRAISAL			added
Property	Renewables Technology	Installed Capacity (kW)	
Grantown Grammar	Wind Turbine	10	EB - Jan 08
Golspie High	Wind Turbine	10	EB - Jan 08
Dornoch Academy	Wind Turbine	10	EB - Jan 08
Kingussie High	Wind Turbine	10	EB - Jan 08
Charleston Academy	Wind Turbine/PV Array	10	EB - Jan 08
Plockton High	Wind Turbine	10	EB - Jan 08
Lybster Primary	Wind Turbine	10	EB - Jan 08
Pennyland Primary	Wind Turbine	10	EB - Jan 08
Coulhill Primary	Wind Turbine	5	EB - Jan 08
Park Primary	PV Array	2.5	EB - Jan 08
Kinmylies Primary	Wind Turbine/PV Array	2.5	EB - Jan 08
Dingwall Offices	PV Array	5	EB - Jan 08
Hillhead Primary	Wind Turbine	10	EB - Jan 09
Strathpeffer Primary	PV Array	2.5	NC - Jan 09
Town House	PV Array	10	EB - May 08
Watten Primary	Wind Turbine	2.5	EB - Jan 08
Elgol Primary	Wind Turbine	2	EB - Oct 2007
Lybster Primary - Pool	Solar Panel	10	EB - May 2007
Crown Primary School	PV Array	5	EB - Jan 08
Various Buildings	PV Programme	100	EB - Jan 08
Various Buildings	Biomass Boiler Programme	450	EB - Jan 08
Lochaber Pool	Solar Water Heating	20	EB - Jan 08
Total		707	
TOTAL APPROVED TO INSTALL*		5678	

** Subject to Planning Consent

* excludes option appraisals