

Committee: Environment Committee

Agenda Item

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Title: Background information on CO₂ emissions scenarios for UDC

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Item for information

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Summary

The committee report 'Options for progressing carbon management at UDC' presented at Full Council on 15 December 2009 contained a forecast of the Council's carbon dioxide emissions under various scenarios. At members' request, here are details of how those forecasts were produced.

Background Papers

None

Impact

Communication/Consultation	
Community Safety	
Equalities	
Finance	Reduced consumption of energy may potentially result in budget savings, however the pay back period for capital investment needs to be taken into account.
Human Rights	
Legal implications	
Sustainability	This is the main driver for reducing consumption of energy.
Ward-specific impacts	
Workforce/Workplace	

Situation

Carbon reduction scenario presented on 15-12-09 (with correction)

- 1 This is shown in Figure 1. Note there is one correction that is needed – progress in 2007/08 was actually -1%, i.e. an increase. However this had been totally

counteracted by 2008/09, putting total progress against baseline at an 8% reduction, as the table shows. The cause of this variation is largely due to an increase in diesel use in 2007/08 that was matched by a similar decrease in 2008/09, putting total emissions of that fuel back approximately where they were in 2006/07. This allowed the effect of reductions in other areas to become evident but there is also an ongoing effect on cumulative emissions.

	2007/08	2008/09	2009/10	2010/11	2011/12
Target	5%	10%	15%	20%	25%
Actual	-1%	8%	10%*	12%*	15%*
Shortfall	6%	2%	5%	8%	10%
In-year shortfall (Tons of CO ₂)	210	69	167	280	350
Cumulative shortfall (Tons of CO ₂)	210	269	436	736	1076

*estimated based on current programme

Figure 1. Emissions trajectory under business as usual scenario (corrected)

Note that all gas and oil consumption is corrected for variations in outdoor temperature using the 'degree day' method. All forecasts assume perfectly average outdoor temperatures (that is, the annual number of degree days in future years is the 20-year average for East Anglia)

Detail of forecast out-turn for 2009-10

(Tonnes CO ₂)	2008-09	expected % change	2009-10 projected out-turn
Electricity	753	-2.8%	732
Gas	1051	-4.6%	1003
Oil	158	24.0%	196
Fleet diesel	1137	-3.0%	1103
Business travel	117	-9.3%	106
Total	3216	-2.4%	3139
Target	3147		2972
Total progress against baseline	8.0%		10.2%
Target progress	10.0%		15.0%

Figure 2. 2009-10 out-turn forecast

2. The basis for the expected percentage change for each emissions type is:
 - Electricity: consumption in 12 month period to end October-09, with some allowance for expected reductions from projects
 - Gas: consumption in 12 month period to end October-09, with some allowance for expected reductions from projects
 - Oil: oil deliveries in last 12 months.

- Fleet diesel: consumption in first 7 months of 2009-10 compared to same period 2008-09
 - Business travel: claimed mileage in first 7 months of 2009-10 compared to same period 2008-09
3. Please note this was the best information available at the time the original committee report was written for the meeting on 10 November. However there has not been sufficient time to collect the necessary information and process it to update the forecasted out-turn. This is a major undertaking and hence is only done twice per year. The original report benefitted from coinciding with one of these; mid year utility budget setting. The exercise will be carried out next in April 2010 for NI185. However, some checks for developments have been made on sites with high consumption and easily accessible data. The situation at Holloway Crescent has become less acute and good savings are being made at Walden Place and the London Road Office. Additionally, works at Hatherley Court that would have reduced gas use there have hit delays, partly due to the cold weather.

4 Forecasts for 2010-12

Business as usual (tonnes CO₂)

	%change	amount	2010-11 projected out-turn	%change	amount	2011-12. projected out-turn
Electricity	-3%	-22	710	1%	7	717
Gas	-5%	-50	952	-3%	-29	924
Oil	-20%	-38	158	-50%	-79	79
Fleet diesel	4%	44	1147	0%	0	1147
Business travel	0%	0	106	0%	0	106
Total	-2%	-66	3073	-3%	-100	2973
Target			2797			2622
Total progress against baseline			12.1%			15.0%
Target progress			20%			25%

Figure 3. Forecast of business as usual (incremental implementation) 2010 - 2012

Description of factors considered when forecasting percentage changes:

- Electricity: Reductions - further server room improvements in 2010-11, lighting projects 2011-12. Increases – Heritage Quest Centre in 2011-12.
- Gas: Reductions - disposal of Dunmow Office by start 2010-11, some new boilers both years. Increases - acquisition of village halls.
- Oil: Neutralisation of increase in 2010-11, redevelopment of the site in 2011-12 including new heating systems for general needs block and sheltered bungalows.
- Fleet diesel: Increase from moving Dunmow depot operations to Braintree in 2011-12.
- Business travel: Assumed no change, but could be an increase resulting from partnerships

Accelerated programme, (tonnes CO₂)

	%change	amount	2010-11 projected out-turn	%change	amount	2011-12. projected out-turn
Electricity	-9.3%	-68	664	-5.3%	-35	629
Gas	-11.3%	-113	890	-6.3%	-56	834
Oil	-50.0%	-98	98	-100.0%	-98	0
Fleet diesel	4.0%	44	1147	0.0%	0	1147
Business travel	0.0%	0	106	0.0%	0	106
Total	-7.6%	-235	2905	-6.5%	-189	2716
Target			2797			2622
Total progress against baseline			16.9%			22.3%
Target progress			20%			25%

Figure 4. Forecast of accelerated programme 2010-12

Description of factors considered when forecasting percentage changes:

- Electricity: Business as usual minus additional savings from carbon management project; 6.25% in 2010-11, 5.25% saving from Carbon Management (CM) project in 2011-12.
- Gas: Business as usual minus additional savings from carbon management project; 6.25% in 2010-11, 3.25% saving from CM project in 2011-12.
- Oil: Business as usual plus total neutralisation from moving general needs block to biomass heating.
- As for business as usual
- As for business as usual

- Please note the savings figures from the Carbon Management project are approximate, based on the results of the pre-study. The actual level of savings depends on project development and negotiation. However the out-turn falls short of the 25% target by this estimate.
- Consideration has been given to whether a further contribution could be made by reducing use fleet diesel fuel. However, fuel efficient driving has already been implemented and any emerging benefits have already been realised. A trial of fuel additives was previously undertaken to no apparent effect. Industry reports varied results, so a further trial is planned. The Council's next big purchase of fleet vehicles is due in 2013, and fuel/ cost efficiency will researched and assessed to enable an informed, timely purchase.

Risk Analysis

Risk	Likelihood	Impact	Mitigating actions
Key inputs to Forecasts include assumptions that are not realised	2 Forecasts are based on pre-study. Actual savings will depend on project development	2 The Council is not a high user of energy compared to other councils, as it has a small property portfolio and vehicle fleet	Carbon management programme