

## Baseline, Targets and Calculating Carbon

### Introduction

Planning has an important role to play in minimising CO<sub>2</sub> from new developments, refurbishment of the established built environment and integration of new energy infrastructure between new and existing development.

An important issue to consider when understanding the role of planning in developing a sustainable energy system is that new development will only result in a reduction of CO<sub>2</sub> if this replaces buildings that are less energy efficient through their demolition or disuse. If new development results in a net increase of buildings in use then it will not lead to any reductions in CO<sub>2</sub>. It is therefore important that local authorities understand their own energy system in terms of the energy sources that are consumed by different sectors, the amount of consumption and what this means in terms of emissions.

This handout provides an overview of issues and useful information and guidance on baseline and target development. The handout also provides a basic overview of Sustainable Energy Action Plans (SEAP) and how this can be used to support and enhance energy and climate change policies in Local Development Frameworks.

### Creating a Baseline

There are several options that local authorities can adopt when developing an energy consumption and carbon emissions baseline. This includes the use of national indicators or carbon footprinting models to develop baselines.

Figure 1 provides a summary of subnational energy consumption and carbon emissions data produced by DECC that can be used to develop baselines for local authorities.

The data covers domestic, transport, industrial and commercial sectors for electricity, natural gas, coal, manufactured fuels, petroleum products, renewable and waste energy sources. This data can be used to produce comprehensive baselines data from which LDFs can bring forward.

Data Set	Web Link
Sub national gas consumption 2005 - 2009	<a href="http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/gas/gas.aspx">http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/gas/gas.aspx</a>
Sub national electricity consumption 2005 - 2009	<a href="http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/electricity/electricity.aspx">http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/electricity/electricity.aspx</a>
Sub national transport energy consumption 2005 - 2009	<a href="http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/road_transport/road_transport.aspx">http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/road_transport/road_transport.aspx</a>
Sub national consumption of other fuels 2005 - 2009	<a href="http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/other/other.aspx">http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/other/other.aspx</a>
Total final energy consumption 2005 - 2009	<a href="http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/total_final/total_final.aspx">http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/total_final/total_final.aspx</a>
Local and regional CO <sub>2</sub> emissions estimates for 2005-2009 – Full dataset	<a href="http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/2009_laco2/2009_laco2.aspx">http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/2009_laco2/2009_laco2.aspx</a>
Emissions within the scope of influence of Local Authorities for 2005 - 2009	<a href="http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/2009_laco2/2009_laco2.aspx">http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/2009_laco2/2009_laco2.aspx</a>

Figure 1: Sub national / local authority data sources for creating energy consumption and carbon emission baselines

## Setting targets

The main objective in mitigating climate change is to reduce the total greenhouse gas emissions up to 2050. This handout outlines key issues to consider when setting 'bottom up' targets at strategic and local level, provides a summary of important national targets that provide a 'top down' framework for plans and policies.

## National targets

The **UK Climate Change Act** requires that the UK reduces its greenhouse gas emissions by 80 % by 2050 (over a 1990 baseline). This equates to a 77 % reduction compared to 2005 levels. In 2008, interim carbon budgets were set to ensure the UK meets the 2050 target. This included a target for a 34 % reduction in greenhouse gases by 2020 (over 1990 baseline), which has been increased to 37% by 2020 (over 1990 baseline), which equates to 34 % relative to 2005 levels.

The **UK Low Carbon Transition Plan** requires that by 2020 there is an 18% reduction in emissions compared to 2008 levels, 40% of the UK's electricity is from low carbon sources and there is a 29% reduction in emissions from homes increasing to 100% by 2050.

The **UK Renewable Energy Strategy (RES)**, signalled the UK's intention to meet its European commitment to reducing CO<sub>2</sub> by securing 15 % of all its energy (30% of electricity, 12% of heat and 10% of transport) from renewables by 2020.

## Energy and Carbon Profiling

A Development Plan Document (DPD) / Supplementary Plan Document (SPD) should be prepared with an understanding of the energy demand and consumption implications of new development and its capacity and suitability to integrate energy infrastructure to meet that energy need.

It will therefore be increasingly important that LDFs are informed by baseline information on energy matters. This includes information on building types, infrastructure capacity, energy consumption and CO<sub>2</sub> emissions that should be combined to develop a development profile for an area. An example of types of information a development profile should cover includes:

- Descriptions of the established built environment.
- Identify 'areas of change' in terms of areas to be retained / demolished and new build.
- A schedule that sets out:
- The development mix and phasing of new development and retrofitting of existing buildings.
- Floor space and roof space for each use.
- Proposed phasing and anticipated timescale for the completed development including a risk assessment of phases.
- An energy profile setting out the total energy demand of the completed development(s).
- A CO<sub>2</sub> profile that is informed by an energy profile. This should present the equivalent annual CO<sub>2</sub> emissions from the completed development in terms of a whole development and individual plots, where the development is on a large scale / phased. Where appropriate, CO<sub>2</sub> profiles should also include the CO<sub>2</sub> emissions of established / retained development.

## Local targets

Core City	CO <sub>2</sub> Target	From	By
Manchester	48%	2005	2020
Bristol	40%	2005	2020
Birmingham	60%	1990	2026
Liverpool	35%	1990	2024
Nottingham	30%	1990	2020
Leeds	80%	2005	2050
Sheffield	60%	1990	2050
Newcastle	60%	1990	2050

Figure 2 Overview of Core City CO<sub>2</sub> Targets

Any local authority can set its own target for reducing CO<sub>2</sub>. Progress in setting CO<sub>2</sub> emission targets has been relatively slow nationally. As at April 2011, 28% of English Council<sup>1</sup>, had medium-term (2015 – 2035) CO<sub>2</sub> reduction target for their local areas, of which 25% of councils had targets that went to 2020 and beyond. Of these Council's, the average equivalent target for the year 2020 was a 29.6% reduction in CO<sub>2</sub>, with just over 6% of councils having a target that is equivalent to a 40% cut by 2020<sup>2</sup>.

Figure 2 provides a summary of CO<sub>2</sub> targets for England's Core Cities. The table shows that targets vary based on the type of evidence prepared to inform targets, the capability of cities to deliver actions to reduce CO<sub>2</sub> and the ambition of those cities. The table also demonstrates the inconsistency between baseline, with 1990 and 2005 baselines used. A potential driver for targets is the Covenant of Mayors initiative and mechanisms for developing a target for local areas that is consistent with other areas across the UK and Europe. Covenant signatories need to achieve a minimum of a 20%

<sup>1</sup> There are 354 councils in England

<sup>2</sup> Friends of the Earth, Survey of carbon reduction targets of councils in England, April 2011

### Climate Change Skills Work

Module 1: LDF plan making, evidence base and implementation of the Yorkshire and Humber Renewable and Low Carbon Energy Study 2011

## Handout 2: Baseline, Targets and Calculating Carbon

reduction in CO<sub>2</sub> emissions by 2020 against a 1990 baseline.

## Calculating Carbon

Calculating CO<sub>2</sub> is also likely to be a future requirement for planning applications and could be included as a requirements of an energy statement. CO<sub>2</sub> emissions factors are used to calculate CO<sub>2</sub>. In the UK there are two carbon emissions factors commonly used. These include:



Carbon Emission Factors used for the National Calculation Methodology which is the Standard Assessment Procedure (SAP). These factors are used to support planning applications.

For other forms of carbon reporting, DEFRA Carbon Conversion Factors are used. There are several forms of guidance for reporting greenhouse gas emissions that are used to develop the baseline. These include:

- Guidance on how to measure and report your greenhouse gas emissions (DECC/Defra, September 2009)
- 2011 Guidelines to Defra/DECC's greenhouse gas conversion factors for company reporting (AEA for DECC/Defra, October 2011)
- Sharing information on greenhouse gas emissions from council own estate and operations: frequently asked questions (DECC, April 2011)