

Scrutiny Committee – 12<sup>th</sup> June 2007

## 10. Scrutiny Commission CO<sub>2</sub> Carbon Emissions

*Overview Commission Chairman:* Councillor Martin Wale, Economic Vitality & Environment Overview Commission  
*Lead Officer:* Emily McGuinness, Scrutiny Manager  
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### Purpose of the Report

To present for consideration the report and recommendations of the Economic Vitality and Environment Overview Commission.

### Action Required

- That the Scrutiny Committee considers the report of the Commission as set out below.
- The Scrutiny Committee recommends that the District Executive considers the report of the Overview Commission and agrees to adopt the protocol as detailed in this report.
- The Commission recommends that the relevant Portfolio Holder and Heads of Service present an update report to the Scrutiny Committee 12 months after adoption of the protocol, outlining any issues relating to the implementation of the protocol.

### Financial Implications

There are no increased costs involved in the use of existing resources.

### Implications for Corporate Priorities

Ensure safe, sustainable, cohesive communities – maintain above 80% the people satisfied with their neighbourhoods as a place to live.

Promote a balanced natural and built environment – maintain above 80% of residents and businesses satisfied with the quality of the local natural and built environment by 2012

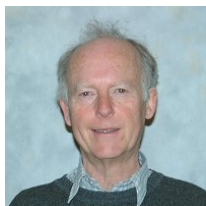
**Background Papers:** *Report of the Overview Commission April 2007 attached.*



## Reducing CO<sub>2</sub> Emissions

Interim Report of the Economic Vitality and  
Environment Overview Commission

**Members of the Overview Commission**



Councillor Andrew Turpin



Councillor Geoff Clarke



Councillor Jean Smith



Councillor Peter Roake



Councillor Peter Seib

## Introduction from Commission Chairman



Councillor Martin Wale, Chair of the Economic Vitality and Environment Overview Commission

“ I am pleased to present this interim report of the Economic Vitality and Environment Overview Commission. As you will see from the detailed research and information contained within this report, the Commission has looked at this critical issues in great depth. Whilst obviously, I would like to have been in a position to present a final report, it became clear to me and members of the Commission that in order to fulfil our Scrutiny role effectively, we needed to fully investigate and research future policy options before making any further recommendations.

The role of Scrutiny is to constructively challenge and review existing policies and practices and where appropriate, identify new ways of working in the future. Reducing CO<sub>2</sub> emissions is a local, national and international issue and whilst South Somerset District Council is already actively addressing the challenge, as a result of our review, we feel there is much more we could and should be doing. However, we wanted to be absolutely clear about **what** we should be doing to enable us to present viable options to the Executive and Officers.

Therefore, this interim report outlines our research to date alongside the steps we are taking to continue to progress the review.

I would like to take this opportunity to thank all the members of the Commission as well as the officers who have, and continue, to support this important piece of work.”

*Martin Wale*

## Background

### Review Objectives

Councillor Geoff Clarke requested that the Scrutiny Committee should review the progress being made against Corporate Objective 19. In his submission to the Scrutiny Committee, Councillor Clarke stated that the build up of overwhelming scientific evidence for climate change is recognised by SSDC in Corporate Objective 19. This has so far produced few tangible results to demonstrate to the public that SSDC is anywhere near its target to deliver 3 exemplar projects.

Councillor Clarke requested that the policies and procedures of SSDC in relation to reducing CO<sub>2</sub> emissions including investment in alternative energy and promotion of sustainable construction be the subject of a Scrutiny review.

Based on Councillor Clarke's request, members agreed to establish an Economic Vitality and Environment Overview Commission to review the issues surrounding the delivery of Corporate Objective 19.

It was agreed that the review would look at all the issues relating to Carbon Emissions to form a detailed organisational perspective, this in turn would enable members to critically evaluate the appropriateness of the critical activities contained within Corporate Objective 19.

Corporate Objective 19 is set out in more detail on the following page and progress to date is as below;

**Corporate Objective 19**

<p><b>Objective 19:</b> To have SSDC as one of the top exemplar councils in the country in reducing CO<sup>2</sup> emissions by 2012</p>	<p><b>Baseline Data:</b> In 2005 the council was shortlisted, with partners, for a national award in recognition of its work on a renewable energy project. The council is committed to doing more and to gain government recognition as one of the best councils in the country in this field</p>							
	<b>Critical Activity</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>
	Facilitate delivery of 3 CO <sup>2</sup> emission reduction exemplar projects by 2009.	✓	→	→	→			
	Develop a protocol to encourage small scale renewable energy projects. To be developed during 2006.		✓					
	Programme of tree planting to create carbon sinks. Programme established during 2007.			✓	→	→	→	→
Actively encourage the use of low energy construction materials and energy efficient design in all developments including new build, conversion and renovation and repair.	✓	→					→	

## Corporate Plan outcomes

Progress against Objective 19 – 2005-06			
Objective – To have SSDC as one of the top exemplar councils in the country in reducing CO <sup>2</sup> emissions by 2012			
Facilitate delivery of 3 CO <sup>2</sup> emission reduction exemplar projects by 2009	2005/06 – 2008/09	Target achieved in 2005/06	<p><b>March 06 comment:</b> Mills Project- Installation of hydro-power at 3 mills completed, partially complete at a further 4 and in planning stage for 3 more.</p> <p>Windy Schools - 3 schools pulled out. 5 still at project planning stage</p>
Actively encourage the use of low energy construction materials and energy efficient design in all developments including new build, conversion and renovation and repair	2005/06 and ongoing	Target achieved in 2005/06	<p><b>March 06 comment:</b> One example - Ham Hill Education Centre (has sheep's wool insulation material), is built on concrete raft rather than deep foundations to reduce the impact on the archaeological features and has no windows to the north elevation to reduce heat loss.</p>
Progress against Objective 19 – 2006-07			
Objective – To have SSDC as one of the top exemplar councils in the country in reducing CO <sup>2</sup> emissions by 2012			
Develop a protocol to encourage small scale renewable energy projects. To be developed during 2006.	2006/07		Work has progressed including signing the Nottingham Declaration, educative programme and application to the Carbon Trust. The protocol will be incorporated into co <sup>2</sup> reduction strategy to be developed in 2007/08.

## Progress against Corporate Objective 19

The information on the previous page sets out the current position in terms of delivering Corporate Objective 19. Members of the Commission acknowledge that there is more work to do in terms assessing the appropriateness of this Objective and Critical Activities. However, in the interest of effective Scrutiny, members of the Commission feel that the Objective cannot be robustly challenged without other viable options being available.

Later on in this report there are details about a consultation service for local authorities provided by the **Carbon Trust**, this service provides local authorities with a comprehensive carbon emission audit as well as detailed advice on drawing up effective climate change and energy saving policies and strategies.

Members of the Commission recommend that the Council actively engages with the Carbon Trust and hope that in doing so we will gain the necessary knowledge and information to recommend realistic future policy development options to the Executive. More details of the service provided by The Carbon Trust can be found on page 17 of this report.

### Review Recommendation 1

**That the content relevance of Corporate Objective 19 should be reviewed by the Scrutiny function in the light of any work carried out in conjunction with the Carbon Trust's Local Authority Management Programme.**



## SSDC CURRENT POSITION

As an authority, South Somerset District Council is already taking a pro-active approach to addressing climate change and other associated environmental issues.

Below is a list of the energy saving initiatives implemented in public buildings.

### ENERGY SAVING INITIATIVES IMPLEMENTED IN PUBLIC BUILDINGS

<b>Initiative</b>	<b>Location</b>
Automatic infra-red tap controls	Brympton Way Offices Goldenstones Leisure Centre Octagon Theatre
Automatic infra-red toilet flush controls	Brympton Way Offices Goldenstones Leisure Centre Octagon Theatre
Automatically dimmable, high frequency fluorescent light fittings	Brympton Way offices
Waterless urinals	Churchfield Offices, Wincanton
Installation of building management software control systems for effective environmental control	Goldenstones Leisure Centre Brympton Way Offices Yeovil Recreation Centre
Time controlled showers	Goldenstones Leisure Centre Yeovil Recreation Centre
Time controlled taps	Yeovil Recreation Centre
Point of use water heaters with timers	Various offices
Rainwater harvesting for horticultural use in the Nursery Polytunnels	Lufton Depot
Use of sustainable materials in building projects :  - Recycled paper for roof insulation - Sheeps wool roof insulation	Ham Hill Education Centre
Street name plate backing and posts made from recycled plastic	District wide
Approximately 65% of energy used in our main buildings is obtained from 'green' sources e.g. hydro-electric, wind etc.	High volume sites e.g. Brympton Way offices, Goldenstones Leisure Centre, Lufton Depot, etc.

#### **Goldenstones Leisure Centre**

Installation of insulated metal roofing in place of glazed roofing
Use of 'ultra-violet' pool water disinfectant systems instead of 'ozonation'
Installation of additional water meter to separate supplies with second high volume meter operating on lower tariffs
Pool cover and inverters fitted to main air handling fans to reduce over-night heat loss
Removal of electric powered/heated Jacuzzi

This pro-active approach is further strengthened by the fact that South Somerset District Council has a dedicated Climate Change Officer. This officer will play a key role in delivering the recommendations of this review. A significant amount of progress as already been made and as the current work programme on the following pages shows, there is more work planned;

## Meeting 23<sup>rd</sup> April 2007 – Corporate Objective 19 Prioritisation

Present – Jo Roundell-Greene, Vega Sturgess, Andy Foyne, Keith Wheaton-Green

	Action	By	Comments
<b>Exemplar Renewable Energy Projects</b>			
Assist Regen SW with pre feasibility studies and subsequent detailed design costing and fuel sourcing for wood heat at Lufton and Brympton Way.	Keith/Brian	End June	Black & Veatch Ltd and Enviros have been awarded the contract to deliver support. During the week 23-27 <sup>th</sup> April SSDC will be contacted for information about our two projects. 30 projects across the SW will be given intensive support with the tools developed by consultants available to other projects. Completed Questionnaire must be submitted by 4 <sup>th</sup> May
Progress 1 kW Windsave turbines at Brympton Way and Ham Hill visitors centre ASAP and assist Ian Johns with facilitating installation	Keith/Ian	Early May	The installers considered Brympton too difficult a site to work at and refused the installation. A site survey of Ham Hill by installers took place a.m. 26/4/07. Ranger staff suggest consultation with Parish Councils. IJ to produce drawing. Ian will be submitting a resolution to committee to make a planning application for the Ham Hill turbine
Assist Ansford School with their project to install a 330 kW Enercon wind turbine	Keith	Ongoing	£30,000 grant funding has been achieved from EDF but funding from the governments Low Carbon Building fund seems increasingly unlikely as the government change the criteria and unmet demand make the application process very competitive. An anti turbine group has held a local meeting.
Consider workshop/seminar for householders to explain the	Keith	Sept	This will be planned once our windsave

SSDC experience of purchasing and having installed a windsave. Contrast with a pole mounted installation (presentation from a site owner e.g. Mr Weeks at Castle Cary or the farmer at Buckhorn Weston.) also B&Q (or Mark Insulations) and a planner			turbines are installed.
Identify sites on or around SSDC major buildings for pole mounted Proven wind turbines.	Keith/Brian	Done	Lufton Depot and the Innovation Centre met the criteria for selection. A business case for each is being prepared.
Write report detailing hydro projects to include management of grants an allocation to mill sites	Keith	Done	Report going to July District Executive
Suggest to Lyn Lockyer that Gants or Clapton Mills would be highly suitable as sites to visit as part of the tour for new members	Keith	Done	Both mills have hydropower installed and visitor's facilities.
Waterlinks Project - Commission consultants to undertake feasibility studies for the 7 identified sites. Assist Charlotte Jones with text required for monitoring and further funding applications.		Done	Hydrogeneration have been commissioned and will report on 31 <sup>st</sup> May
<b>Protocol for renewable energy installations</b>			
Implement Development Control protocol for a Merton style renewable energy requirement for large developments; first working with two developers to take two applications through the policy	Keith	On going	A meeting with Jean Marshall – DC officer – developer Shaun Travers from Boon Brown Architects took place 23/4/07. A typical single dwelling is application of choice, the more usual the better. Paul Rowe didn't show but made telephone contact later. He has two suitable applications in mind. Discussions with Regen SW have led to discovery of a web tool that may assist this application process
Update website with climate change issues relating to SSDC activities	Keith	On going	Additional text was placed during March.

<b>Sustainable Construction</b>			
Respond to PPS 1 supplement "Planning and Climate Change" and "Building a Greener Future" consultations.	Keith	Done	This was endorsed by District Executive 5/4/07
Re-launch sustainable construction information sheet with Simon Gale.	Andy	On going	Following a meeting with Charles Couzins of the ECOS Trust and Simon Gale it was agreed that we work towards a disc with comprehensive information that would go out with planning applications. (detailing renewable energy requirement, methodology and Sustainable Construction be produced with help from ECOS, Regen SW and EST)
Agree seminar programme for joint renewable energy/sustainable construction event with ECOS Trust and SSDC	Keith/Charles	End March	A draft programme is written. The aim is to inform developers about our new Renewable Energy Requirement Policy. Paul Rowe and Shaun Travers have agreed to speak about their experiences of our policy.
Hold seminar in Council Chambers	Keith/Charles	September	Dependent on the progress of the above mentioned planning applications.
<b>Climate Change</b>			
Respond to Climate Change Bill Consultation	Keith	Done	This will be taken for endorsement to District Executive in June. Met with JF for discussion, amendment and endorsement. E-mailed result to JRG for further comment for amendment
Summarise staffing requirements for Carbon Trust Local Authority Carbon Management Programme for stage 1 – 5. Include registration date.	Keith	Done	Brian Tufton will lead the SSDC staff facilitating this programme. Funding for additional admin support is found from the Sustainable Somerset budget RE706
List energy saving ideas the Carbon Trust are likely to suggest	Keith	End June	

## SSDC FLEET

At SSDC we currently operate 7 LPG/unleaded petrol Citroen Berlingo Vans, the rest of the SSDC fleet is entirely diesel.

It is understood that at the time of evaluation, it was cheaper to purchase the vans and then have the LPG unit retrofitted. This has led to ongoing maintenance problems and with hindsight, it would appear that factory fitted units would possibly have been more reliable.

We do not have in-house facilities to maintain the LPG equipment on these vehicles and all routine maintenance is carried out by a local specialist, Pemco Pitstop, on the Pen Mill Trading Estate and the vehicles also have to be taken there each time there is a problem with the LPG system at a higher hourly rate (£37.00 Pemco) than if we were able to carry out the work ourselves at a cost of £20.60 per hour.

Initially drivers reported a smell of gas and the vehicles cut out in dangerous places – for example when pulling away and especially at roundabouts. One of the units was so problematical that it had to be changed completely at an additional cost of £800. Regular fleet items use Derv from the deposit at a cost of £0.73 pence per litre against pump process for unleaded petrol of £0.90 pence per litre. With considerably less miles per gallon obtained than with standard diesel engines the converted vehicles have proven more expensive to run.

The Fleet Services Supervisor has been unable to find an actual purchasing policy relating to this subject.

The Environmental impact of all aspects of fleet management will be included in any work carried out with the Carbon Trust.

South Somerset District Council is ahead of many other districts in that we have a dedicated Climate Change Officer who works closely with the relevant Directors and Portfolio Holders to drive our climate change agenda. Below is a copy of the Climate Change Officer's current work programme and work to date – this clearly shows the wide range of work that is already being undertaken across the council.

All of the above information provides an excellent basis for further work with the Carbon Trust.

## CONTEXT

Over the past 100 years global temperatures have increased on average by 0.7 degrees. The 1990s were the warmest years in recorded history and here in the UK, the last two summers have been amongst the hottest on record. Although this increase in temperature may appear small, it has been accompanied by an increase in extreme weather patterns in some parts of the world and is likely to have further impacts on climate e.g. Northern Europe is predicted to become wetter and the Mediterranean drier.

It can be argued that these climate changes are part of a natural cycle, but it is becoming increasingly difficult to dismiss the human impact, especially in terms of Carbon (CO<sub>2</sub>) emissions.

Tackling CO<sub>2</sub> emissions is now firmly on the national and international agenda, especially since the publication of the **Stern Report** which for the first time, focused on the economic effects of climate change on the global economy.

In his report, ex-World Bank Chief Economist Sir Nicholas Stern focused on the economic impact of climate change. He claims that global temperatures have risen by 0.5 °C due to Carbon Emissions, and predicted that if steps aren't taken now, this could rise further still, resulting in an annual reduction of between 5-20% in global GDP.

Taking action now will present a cost of as little of 1% of global GDP which is significantly less than if no action is taken.

Therefore, Climate Change has become a matter of economic necessity. Stern proposes that the global power sector should ensure that at least 60% of their output is from non-fossil fuel by 2050. This has prompted Gordon Brown to propose a new European Emission reduction target be set at 30% by 2020 and 60% by 2050.

It is within this global context that we as a local authority have a responsibility to act and set an example within our community.

In the face of this global context, local authorities could be forgiven for thinking they have no real scope for improving the situation. The Sustainable Development Commission compares local authorities to 'rabbits in the headlights – aware of the imminent danger but not sure what to do about it'. However, there are various Government agencies and funding streams that have been introduced to support local authorities as they tackle this difficult subject. Angela Smith, the DCLG Minister with responsibility for climate change, is quoted as saying, *"I am not convinced that local government takes full advantage of the finance streams out there such as SALIX – that fund is consistently under-spent and could considerably help local authorities to deliver on the climate change agenda"*

There are examples of local authorities who have made real progress in addressing Carbon emissions, and as such have been recognised by the Beacon Scheme. Woking Borough Council is one of these councils, they were the first council in the country to introduce a corporate Climate Change Policy, which provides a strategic framework for all services and provides each individual service with specific climate change objectives. Their advice to other authorities is to get your own house in order and then lead the community by example.

It is also worth considering the impact that the imminent appointment of Gordon Brown as Prime Minister. It is possible that he will use the Stern report as a basis for introducing strong policy changes to minimise the national financial impact of climate change.

It is therefore clear to see that the local authority role in addressing the global, national and local climate change issues is an important one and one that SSDC should continue to develop.

Based on this initial background research, members of the Commission decided that it was important to gain more in-depth knowledge in some areas and look in more detail at what other authorities are doing.

## DETAILED RESEARCH

At an early stage of the review, the Commission invited Barry Griffiths from the Institution of Civil Engineers to meet with members and provide his perspective on reducing Carbon emissions and the merits of some alternative methods of producing energy such as Wind, solar and Biomass. A copy of the very detailed presentation is attached at Appendix A to this report.

The information provided gives a very real picture in terms of the scale of the problem of increasing Carbon emissions. Members were also presented with compelling business cases for alternative forms of sustainable energy production.

It is an acknowledged fact that wind turbines are a controversial issue, especially in terms rural areas such as South Somerset, where tourism is an important economical consideration. The data shows that wind turbines require a significant land mass in order to produce significant amounts of power. There are also limitations relating to optimum operating conditions including insufficient and excess.

Mr Griffiths presented a compelling case for the use of Solar Photovoltaic panels in an area such as South Somerset, where there were sensitivities around the wind turbines and the natural landscape.

He also stressed the business case for local authorities to take an active role in energy conservation and efficiency, especially in terms of rising energy costs. He encouraged members to observe the energy hierarchy when determining future policies;

### Energy Hierarchy

- **Look at energy conservation in the first instance**
- **Look at becoming an energy efficient organisation**
- **Investigate and exploit renewable, sustainable energy sources**
- **Investigate continued use of non-sustainable resources but exploit low carbon technology**
- **Exploit conventional resources**

At this point of the review, members were by no means ruling out the future use of wind turbines but agreed that other sustainable options such as Solar photovoltaic cells (SPV's)

As with many aspects of modern local government, sharing learning with other organisations is an important part of the Scrutiny process. With this in mind, members requested that information be provided detailing any other local authorities who had successfully installed SPV's.

## INFORMATION FROM OTHER AUTHORITIES

In 2003, Chesterfield Borough Council in Derbyshire agreed to install a large number of Solar PV panels on the roof of their main leisure centre. The Council managed to secure grant funding from the Energy Savings Trust (EST). The installation was completed in May 2005 within budget and on time – it has been generating electricity since with no faults.

BP Solar was approved by EST to carry out initial feasibility and design work for the project. The installation was calculated by BP Solar to generate 80,000kwh of electricity given 'average' weather conditions over a full year of operation. There is a fairly sophisticated calculation of this 'average' which takes into account the site location and weather statistics going back over a number of years. It was made clear by the installers that actual performance is of course dependent upon actual weather conditions and that this would vary from month to month and year to year.

The 'payback' period will not only depend upon prevailing weather conditions, it will also be heavily dependent upon future increases in the price of power supplies. Illustrations of various scenarios were given in the report ranging from average increases in power costs between 7.5% and 20% pa giving simple payback periods of between 14.5 years and 9.5 years. In fact, the cost of imported electricity at the time of the original report was quoted at 4.9p/kwh which is 24.5% less than the current rate of 6.1p/kwh.

In addition to savings resulting from the on-site generation of electricity, the following credits were anticipated as contributions towards the payback of capital costs:

- Renewable obligation credits (3.324p/kwh)
- Recycled renewable obligation credits (0.92p/kwh)
- Climate change levy (0.47p/kwh)
- System availability charges (£100pm)
- Shading effect of panels (saving not quantified)

In the first 9 months of operation, the installation has generated approximately 50,000kwh of electricity which is around 62.5% of the full year target of 80,000kwh.

It is of course difficult to predict the weather conditions over the next three month period but our best guess is that the final total for the first full year of operation will be around 75,000kwh, which would be around 6% short of the (average) anticipated output.

Council Officers have experienced considerable difficulty and delay in the registration procedure to enable renewable obligation credits to be claimed. In fact, the Council eventually became registered in January and it has not been possible to backdate our claim.

Similarly, Council Officers have not yet been able to secure a reduction in 'system availability charges' from our electricity provider, but discussions are ongoing.

Given that all systems are in place to claim the various credits and a likely imported electricity price of at least 7p/kwh, it is anticipated that the installation will repay around £10,000 towards its initial costs in the second full year of operation.

It is not possible to accurately forecast future increases in the cost of imported electricity but most experts agree that these will be considerably ahead of normal inflation rates.



In simple terms: the higher the cost of imported electricity over the next few years, the shorter the payback period for the installation will be.

Current indications are that in it's first full year of operation, the photo-voltaic installation at Queen's Park Sports Centre will meet 94% of it's target output.

Unavoidable delays in claiming 'renewable obligation' credits have resulted in financial returns for the first 9 months of operation being less than anticipated.

The anticipated 'life' of the installation is at least 50 years, and during this time it is still anticipated that it will save 2,000 tonnes of carbon dioxide emissions thereby reducing damage to the environment.

'Simple' payback calculations will always depend upon future electricity prices and weather conditions, both of which are impossible to accurately predict.

However, even if electricity prices (and credits) stay at present levels for the next 50 years (which clearly they will not), this installation is still anticipated to save a total of £500,000 in revenue costs for an initial investment of £216,000.

The anticipated capital costs of the installation were as follows:-

Installation costs are as follows:-

		£
1	Module	374,800
2	Inverter	54,246
3	Design	5,000
4	Labour	51,050
5	Roof Integration	40,300
6	Electrical	4,200
7	Scaffold, crane etc	7,800
8	Connections, meters etc	2,730
9	Additional panel area	82,000
		622,126
	Less – grant	324,076
	Amount to be funded	298,050

Note : 1 All costs were subject to contract.

Based upon an average of the weather conditions over the last 30 years, the minimum annual electricity generation from the system is anticipated to be 78,266 kwh/year in respect of the original grant application which would increase to approximately 94,000 kwh/year if the additional panels referred to previously are installed. This is the basis upon which the eligibility for grant was calculated, however the actual output could be significantly higher than the minimum and payback periods shown later in the report assume an average output 15% higher than the minimum. The maximum output (including the additional panels) should provide around two-thirds of the electricity used at the Centre.

In addition to savings on the cost of imported electricity the Council would save an element of Climate Change Levy and would also qualify indirectly under a scheme called 'Renewable Obligation Credits'. The latter is a further Government Scheme which is to encourage the generation of power from renewable sources, and the Council would need to enter into a

long-term agreement with Powergen who would in turn be able to claim a corresponding Government credit.

This information obviously demonstrates that other authorities have successfully investigated and installed Solar PV cells.

## LOCAL AUTHORITY CARBON MANAGEMENT PROGRAMME

The Carbon Trust has developed the Local Authority Carbon Management Programme (LACM) to provide councils with technical and change management support and guidance to help them realise carbon emissions savings. The primary focus of the work is to reduce emissions under the control of the local authority such as buildings, vehicle fleets etc.

Participating councils benefit from consultant support in the form of workshops and limited dedicated support tailored around the 5 step process. This process guides authorities through a systematic analysis of their carbon footprint, the value at stake and the opportunities available to help them manage carbon emissions in a strategic manner.

### 5 Step Process

<b>Step 1</b> Mobilise the organisation	<i>Building the team and determining the scope</i>
<b>Step 2</b> Set baseline, forecast and targets	<i>Setting the baseline for the programme and its goals</i>
<b>Step 3</b> Identify and quantify options	<i>Identifying the risks and opportunities presented by climate change</i>
<b>Step 4</b> Finalise strategy and implementation plan	<i>Designing a cost-effective strategy to cut emissions and save money</i>
<b>Step 5</b> Implement the plan	<i>Complete with budgets, targets and success metrics</i>

There are no costs associated with the programme – only time. Participating organisations are expected to commit two days a week for ten months. Most of the work is undertaken by the authorities themselves, with the Carbon Trust consultant or Regional Account Manager always on hand via e-mail or telephone.

The level of one to one consultancy support depends according to the progress being made by the organisation; those having difficulties can expect to be visited more than others. The Carbon Trust also advocates all programme participants coming together and discussing common themes and experiences.

The programme follows a classic project management structure; evaluating the current situation, galvanising support from senior management and evaluating internal support, identifying all opportunities and then prioritising options. The process is covered by a comprehensive tool kit which is further supported by a website community.

The process for applying for the programme is as follows;

- a request from a senior manager who has the authority to commit resources for the duration of the 10 month project and contact details for the Project Manager and Project Sponsor.
- Send a copy of our most recent fuel bills to enable an initial analysis of energy consumption

'Salix' is a funding stream to help 'kick start' CO<sub>2</sub> reduction programmes and whilst being on the Local Authority Carbon Reduction Programme is not a prerequisite to securing Salix funding, the programme will provide us with a powerful business case and therefore, the chances of funding approval are greatly increased.

Bristol City Council has recently completed the Carbon Reduction programme and as a result have produced a comprehensive Climate Protection and Sustainable Energy Strategy – A Corporate Action Plan. A copy of this plan will be available at the meeting.

Working with the Carbon Trust will enable SSDC to;

- Implement a corporate strategy CO<sub>2</sub> emissions
- Enhance our corporate reputation both within our community and nationally
- Understand exposure to, and risks from an increasingly carbon constrained economy and to develop and implement a coherent plan for managing these risks
- Identify the overall carbon and energy savings potential for the Council

**On 22<sup>nd</sup> February 2007, members of the Overview Commission made the following recommendation;**

“The Overview Commission recommends that South Somerset District Council progresses an application to join the Carbon Trust’s Local Authority Carbon Management Programme. This will form part of our formal report and recommendations, but in view of the fact that the deadline for the programme is approaching, it will be beneficial to start work on the application as soon as possible.

The Commission anticipate that participating in this programme will provide the authority with a clear policy framework through which to deliver our Carbon reduction goals and will provide us with invaluable additional resources at no extra cost.”

This recommendation was passed to the responsible Director in February and as of April this year, we were waiting to hear if our application had been successful.

The Portfolio Holder and Corporate Director (Environment) will be able to update Members on the current situation at the Scrutiny Committee meeting in June 2007.

## CONCLUSIONS

As you will be able to see, members of the Commission have been very thorough in their research of this complex and important issue. As a result of our work, we have been able to create a clearer picture of both the internal and external perspective.

It is also through this detailed work that we have identified the Carbon Trusts' Local Authority Carbon Management Plan. We firmly believe that this programme offers an excellent opportunity to develop a comprehensive organisational climate change strategy that will serve both the needs of our organisation and the community we serve.

Although the Carbon Management Plan will provide us with a clear policy direction and focus, there remain many on-going projects and activities that we should obviously continue, such as those included in the Climate Change Officers' work programme.

If we are successful in our application to the Carbon Trust, we would recommend that the Overview Commission are actively involved throughout the 10 month consultancy period. The most appropriate means of involvement will be agreed at a later date but should at least include regular updates.

## SUMMARY OF RECOMMENDATIONS

- That the content, progress and relevance of Corporate Objective 19 be reviewed by the Scrutiny function in the light of any work carried out in conjunction with the Carbon Trusts' Local Authority Carbon Management Programme.
- If we are successful in our application, we anticipate that members of the Scrutiny function will be involved in setting the brief for the consultancy.
- That we apply to join the Carbon Trusts' Local Authority Carbon Management Programme in May 2007 and keep the Overview Commission informed throughout the consultancy period. Any findings and results of the Programme should be reported through the Scrutiny function.
- The Commission acknowledges the good work and progress already being achieved in this area and that this work should continue. In order to monitor this progress, we recommend that the Portfolio Holder – Environment and Property should attend the Scrutiny Committee meeting in January 2007 to update members.

## APPENDICES

**Appendix A**  
**Appendix B**  
**Appendix C**

**Presentation slides – Barry Griffiths**  
**Notes of Overview Commission Meeting held on 31<sup>st</sup> Jan 07**  
**Notes of Overview Commission Meeting held on 22<sup>nd</sup> Feb 07**

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# **Sustainable Energy Issues Achieving a Low Carbon South West**

Presented by

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31.10.2006

Every year 3.3 bn tonnes of carbon are added to the earth's atmosphere.

**Emissions** (Billion tonnes of carbon p.a.)

Combustion of fossil fuels 6.3

Deforestation 1.6

7.9

**Absorption** (Billion tonnes of carbon p.a.)

Seas and Lakes 2.3

Afforestation and increased biomass 2.3

Into atmosphere 3.3

7.9

**Sustainable level of carbon emissions from fossil fuels 3.0**

Source: IPCC (UN Intergovernmental Panel on Climate Change)

**World Population**

2006	6 Billion
2050	9 Billion

**Equitable Carbon Emission's per person**

2006	0.50 tonnes
2050	0.33 tonnes

**Current carbon emissions per person in UK**

2.6 tonnes

**Need to reduce carbon emissions by**

$$3.3 / 6.3 \times 100 =$$

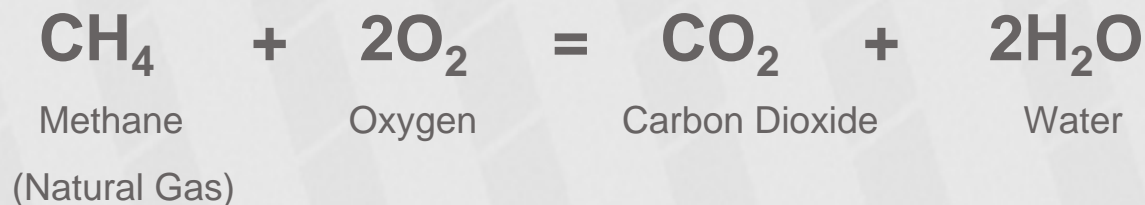
**52%** immediately

**Need to reduce carbon emissions by**

$$(2.6 - 0.33) / 2.6 \times 100 =$$

**87%** by 2050





**Atomic Weight of Carbon**                      **12**

**Atomic Weight of Oxygen**                      **16**

**Molecular Weight of Carbon Dioxide**                      **44**

**Conversion factor from Carbon to Carbon Dioxide**                      **3.7**

**Primary Energy Demand** 240 TWh

**Final Energy Demand** 160 TWh

Note: 1TWh equals one billion kWh or  $1 \times 10^{12}$  Wh

### Primary Demand by Sector

	%	TWh
Domestic	31	74
Transport	26	62
Industry and Services	43	104

### Electricity Demand

	TWh
Primary	60
Final	24

## Electricity

1000 kWh of electricity produces 0.175 Tonnes of carbon with the current fuel mix.

The average household uses approximately 3500 kWh per annum.

Average household emits 0.61 tonnes of carbon

Average Occupancy rate is 2.3

**therefore individual emission is 0.27 tonnes per annum**

## Heating

Average household requires 7000 KWh of heat per annum

Gas 1.0 tonnes

Coal 1.9 tonnes

Oil 1.4 tonnes

Wood 1.9 tonnes

**Average 1.6 tonnes per house - 0.7 tonnes per person**

## Transport

Car travelling 10,000 miles per annum at 35 miles per gallon emits 0.93 tonnes of carbon.

## Air Travel

Bristol to the Mediterranean return emits 0.5 tonnes per person

An individual living in a multi occupancy house travelling 10,000 miles per annum by car or public transport and taking one holiday in the Mediterranean each year, their personal carbon emissions are in the order of:

	tonnes
<u>Electricity</u>	0.27
<u>Heating</u>	0.70
<u>Transport</u>	0.93
<u>Air Travel</u>	0.50
	2.40

Transport and air travel accounts for 60 % of the total.

**Wind Turbines**

	kWh/annum
500 W	1.3
1 MW	$2.6 \times 10^6$
2.5 MW	$6.6 \times 10^6$

To produce 1 TWh the number of machines required are:

500 W	760,000
1 MW	380
2.5 MW	152

**Solar PV**

1 TWh requires 0.028% of the land area of the South West

30 TWh requires 0.84% of the land area of the South West

**Solar Heat**

1 TWh requires 0.007% of the land area of the South West

30 TWh requires 0.21% of the land area of the South West

### **Biomass**

1 TWh requires 0.84% of the land area of the South West 20,000 hectares

30 TWh requires 25% of the land area of the South West

### **Waste Biomass**

The current biomass found in the regions waste stream can produce  
12 TWh of energy.

### **Tidal Barrage**

17 TWh Total energy per annum. Divided between Wales and the South West  
8.5 TWh per annum

### **Wave**

The realizable energy from wave power in the South West is difficult to quantify  
but an estimate of 5TWh per annum could be reasonable

	TWh/annum	Resource
<b>Wind</b>	10	760,000 500 W
		1,900 1 MW
		608 2.5 MW
<b>Waste Biomass</b>	12	All biomass in waste
<b>Solar PV</b>	30	0.84% of SW land area
<b>Solar Heat</b>	30	0.21% of SW land area
<b>Tidal Barrage</b>	8.5	Severn Estuary
<b>Wave</b>	<u>5</u>	North Coast of Cornwall
	95.5	
<b>Biomass</b>	<u>30</u>	25% of SW land area
	125.5	

	TWh/annum	Resource
<b>Nuclear</b>	15.6	2 x 1000 MW Reactor



- **Energy Conservation**
- **Energy Efficiency**
- **Exploitation of renewable, sustainable resources**
- **Exploitation of non-sustainable resources using low carbon technology**
- **Exploitation of conventional resources**

- **Walk/Cycle, no flying, no commuting**
- **CHP boilers, home insulation/passive ventilation, no standby facilities**
- **Wind, Solar PV and heat, Energy from biomass waste, Tidal Barrage, Wave**
- **Nuclear, carbon capture from coal, gas and oil**
- **Gas, oil, coal, biomass**
- **Move towards a hydrogen economy**

- **If your business depends on its employees or customers commuting or travelling, transportation of materials and finished products or is a heavy energy user for production and space heating your costs will rise**
- **Have an energy audit from the Carbon Trust or other energy auditing consultancy**
- **Reduce energy use**
- **Prepare a risk analysis for your business**
- **Exploit opportunities for manufacturing and providing services for the low carbon economy**

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## APPENDIX B

## South Somerset District Council

Notes of an informal meeting of the **Economic Vitality and the Environment Overview Commission** held on **Wednesday 31<sup>st</sup> January 2007** in the Meeting Room, Old Kelways, Langport.

(2.00 p.m. – 4.40 p.m.)

**Present:****Members:**

Martin Wale (Chair)  
Geoff Clarke  
Rupert Cox  
Martin Rawstorne  
Andrew Turpin

**Officers:**

Andrew Gunn	Deputy Team Leader, Development Control
Keith Wheaton-Green	Climate Change Officer
Emily McGuinness	Scrutiny Manager
Angela Cox	Committee Administrator

**Others:**

Barry Griffiths                 Institute of Civil Engineers

Apologies were received from Vega Sturgess, Peter Davies, Jo Roundell Greene, Paull Robathan and Peter Seib.

**Objective 19 - CO<sub>2</sub> Emissions**

The Chairman introduced Mr Barry Griffiths of the Institute of Civil Engineers who provided Commission members with a powerpoint presentation on Sustainable Energy Issues; achieving a low carbon South West. A copy of the powerpoint slides are attached to these notes.

Following the presentation, Members discussed various ways to progress the reduction of carbon emissions, including:

- The installation of a wind turbine at Brympton Way offices or Lufton Depot
- Investigate the use of Solar Photo Voltaic tiles on the roof of Brympton Way offices
- A proposal to replace the boiler at Brympton Way offices with a wood chip burning boiler
- A new Planning Policy to ensure on-site renewable energy efficiency measures are installed in all future new developments

**Actions**

The Scrutiny Manager to:

- Contact Chesterfield BC for information on their Solar Photo Voltaic project.
- Check with the Head of Economic Development, Planning & Transport on the progress of a new Planning Policy to ensure renewable energy measures are installed in all future new developments.
- Investigate the possibility of Government grants towards the installation of energy efficient/producing measures on public buildings.
- Set up a meeting in February to re-evaluate Corporate Objective 19.

The Chairman asked the Commission members to reflect on the presentation and subsequent discussion and submit any further ideas to the Scrutiny Manager for discussion at the next meeting of the Commission.

### **Date of Next Meeting**

It was agreed to hold a further meeting of the Commission at 2.00 p.m. on 22<sup>nd</sup> February 2007 at the Crewkerne Aquacentre, Crewkerne to discuss the Scrutiny Manager's findings and further ideas and to view the proposed solar water heating system at the Aquacentre.

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**South Somerset District Council**

Notes of an informal meeting of the **Economic Vitality and the Environment Overview Commission** held on **Thursday 22<sup>nd</sup> February 2007** at the Crewkerne Aquacentre, Crewkerne.

(2.00 p.m. – 4.20 p.m.)

**Present:****Members:**

Martin Wale (Chair)  
Martin Rawstorne  
Peter Roake  
Peter Seib  
Jean Smith  
Andrew Turpin

**Officers:**

Ian Johns	Property Management Officer
Keith Wheaton-Green	Climate Change Officer
Emily McGuinness	Scrutiny Manager
Angela Cox	Committee Administrator

**Others:**

John Turner of Celtic Solar

Apologies were received from Councillors Geoff Clarke, Rupert Cox, Peter Davies, and Paull Robathan.

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**Objective 19 - CO<sub>2</sub> Emissions**

The Chairman invited the Scrutiny Manager to summarise the previous meetings.

The Scrutiny Manager reminded Members of the presentation on Sustainable Energy Issues by Mr Griffiths of the Institute of Civil Engineers and their request to the Climate Change Officer to investigate several exemplar projects. Mr John Turner of Celtic Solar was in attendance to speak on installing solar heating panels at Wincanton Sports Centre and the Crewkerne Aquacentre to heat the swimming pools.

**Solar Heating Panels**

Mr Turner said that he had surveyed both the Wincanton Sports Centre and the Crewkerne Aquacentre, as requested, for their suitability to install solar panels on the roof.

Wincanton particularly lent itself well to solar panels as the roof was south-west facing and he estimated that 50 panels would be approximately £56,500 + VAT.

Crewkerne Aquacentre would be slightly different as the roof faced south-east and the pitch was not too steep. Also, in consultation with the Centre Manager, the installation would also cover the hot water system and would cost approximately £59,000 + VAT.

Both schemes would equate to a saving of over 9 tonnes of CO<sub>2</sub> per annum and the payback period of the cost of installation would be in the region of 6 years. Installation normally took approximately two weeks.

In response to Members questions, Mr Turner advised that:-

- Grants were available through the DTI, Phase II, however they were restricted to 3 particular manufacturers of solar panels.
- A standard grant of £400 was available to homeowners installing solar panels in England and Wales.
- The average cost of installing panels in a 3-bed house was approximately £4,500 to £4,600.
- It was possible to fit motors to the panels so that they 'tracked' the sun each day, however, the cost of doing this should be weighed against the benefits.
- Solar panels could be mounted at ground level.
- The panels would be secured onto an existing roof structure.

It was noted that it would be beneficial to investigate solar panel heating at both Goldenstones Leisure Centre in Yeovil and the Cresta Centre in Chard.

The Chairman thanked Mr Turner for his time and information and said that the Commission would put forward recommendations to the Scrutiny Committee.

### **The Carbon Trust Management Programme**

The Scrutiny Manager advised Members of a scheme run by the Carbon Trust, called the Local Authority Carbon Management Programme (LACM), which provided councils with technical and change management support and guidance to help them realise carbon emissions savings. The primary focus of the work was to reduce emissions under the control of the local authority such as buildings, vehicle fleets and landfill sites. She said the programme was free of charge, although applications must be made by May 2007. She had spoken to the Corporate Director (Environment) who supported the proposal and had capacity within her service to dedicate officer time to the programme.

Members agreed that this would be a positive step towards achieving Corporate Objective 19 and asked the Scrutiny Manager to progress this with the Corporate Director (Environment) without delay.

### **Exemplar Projects**

Members then looked at the two draft Business Plans which the Climate Change Officer had produced on photovoltaics and wind turbines.

He advised that his research into installing photovoltaic panels on the roof of Brympton Way offices showed the cost would be in the region of £303,000 and although a grant of 50% of the cost was available, the cashflow forecast predicted that the loss of interest on capital taken from reserve funds would be greater than the electrical gain from the photovoltaics. There would, however, be a saving in CO<sub>2</sub> emissions from this project.

The Property Management Officer voiced his concern for the safe access of maintenance inspectors, checking the panels on the roof. He also advised Members that 65% of all energy supplied to Brympton Way offices was already from green energy sources i.e. methane, hydro-electric or windfarms and as such SSDC did not pay any Climate Change Levy on the Brympton Way offices.



The Climate Change Officer then referred to his research into the installation of a wind turbine in the area of Houndstone/Lufton Trading Estates, Yeovil. Although he estimated the cost at £1.3m, he said it would rapidly be operating at a profit. However, the Ministry of Defence were strongly opposed to the scheme as it would seriously affect their radar, both at Yeovilton and Westlands.

He said that he was also progressing a project to install a domestic 'over the counter' purchased wind turbine at Brympton Way to assess how easy they were to install and what problems, if any, would be encountered in the planning permission process. This would serve as an advisory project for householders contemplating a similar installation.

During the ensuing discussion, Members noted that:

- South Somerset Homes had recently won an award for innovation in building environmentally friendly factory built, timber frame homes in partnership with other Housing Associations. Members felt that this warranted further investigation.
- The Government's white paper on climate change 'building a greener future' was at the consultation stage and Members input on the response from SSDC was essential.
- The Regional Spatial Strategy were putting forward a protocol for renewable energy measures on developments of 10 dwellings or more. Developers were welcoming this but it would have to be adopted as supplementary planning guidance by full Council.
- The Council's Green Team should be included in the Carbon Trust Management Programme as they were also responsible for the delivery of corporate Objective 19.
- Participation in the Carbon Trust's Local Authority Carbon Management Programme would assist the Commission in developing a clear policy framework through which to deliver the Council's carbon reducing goals and would provide additional resources at no cost to the Council.

The Chairman thanked the Climate Change Officer for his work in producing the business plans on photovoltaics and wind turbines, however, the Commission did not feel that either of these projects could be progressed at the current time.

### **Recommendations:**

The Economic Vitality and the Environment Overview Commission recommends that:-

1. an interim progress report of the Commission be presented to the April meeting of Scrutiny Committee.
2. South Somerset District Council progress an application to join the Carbon Trust's Local Authority Carbon Management Programme. This to form part of the Commission's formal report and recommendations, however, as the deadline for entry to the programme is approaching, recommend commencing work on the application without delay.
3. Exemplar projects be progressed through the usual channels, including the Capital Appraisal Scheme and the corporate Green Team, within the context of the findings of the Carbon Trust.

### **Date of Next Meeting**

It was agreed that the Commission would reconvene at the beginning of the Carbon Trust's period of consultancy.