AGENDA

SELECT COMMITTEE - ENERGY SECURITY

Tuesday, 15th December, 2015, at 2.00 pm

Bewl Room, Sessions House, County Hall Maidstone

Ask for: **Denise Fitch/David Price**

Telephone **03000 416090/414182**

Tea/Coffee will be available 15 minutes before the start of the meeting in the meeting room

Membership

Mr J N Wedgbury (Chairman), Mr D L Brazier, Mr B E Clark, Mr A D Crowther, Mr C P D Hoare, Mr P J Homewood, Mrs E D Rowbotham, Mr C P Smith, Mrs C J Waters and Mr M E Whybrow

UNRESTRICTED ITEMS

(During these items the meeting is likely to be open to the public)

2.00 – 2.45pm Jeremy Martin (Southend-on-Sea Borough Council) (Pages 3 - 28)

3.00 – 3.45pm Matthew Morris (Kent Downs AONB - Biofuels) (Pages 29 - 38)

4.00 – 4.45pm Joseph Grice (London Borough of Islington) (Pages 39 - 42)

EXEMPT ITEMS

(At the time of preparing the agenda there were no exempt items. During any such items which may arise the meeting is likely NOT to be open to the public)

Peter Sass
Head of Democratic Services
(01622) 694002

Monday, 7 December 2015

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Energy Security Select Committee

Jeremy Martin

Energy & Sustainability Manager (Southend-on-Sea Borough Council)

Biography

Following a career in transport and the motor industry involving large management and project/programme roles, Jeremy established an energy reduction business with colleagues in 2005. Rebranded as CarbonAqua in 2006, this business offered energy reduction in commercial buildings regularly achieving savings of 15-30% with short paybacks of 2-3 years with Jeremy combining the roles of Managing Director and Finance Director. Jeremy left CarbonAqua in 2011 and continued to provide these services through his own company before joining Southend Borough Council on contract in 2014. In 2015 he was appointed as Energy and Sustainability Manager.

As part of his work, Jeremy has been involved in Southend Energy – the partnership between Southend Borough Council (SBC) and OVO Energy Ltd. The scheme has 1,500 customers (2% market share) signed within 6 months of launching, with savings of £375,000 per annum between the customers.

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Energy Security Select Committee

Hearing 5

Tuesday 15th December 2015

Witness Guide for Members

Below are suggested themes and questions. They have been provided in advance to the witnesses to allow them to prepare for the types of issues that Members may be interested to explore. All Members are welcome to ask these questions or pose additional ones to the witnesses via the Committee Chairman.

Themes and Questions

Jeremy Martin, Energy and Sustainability Manager, Southend-on-Sea Borough Council

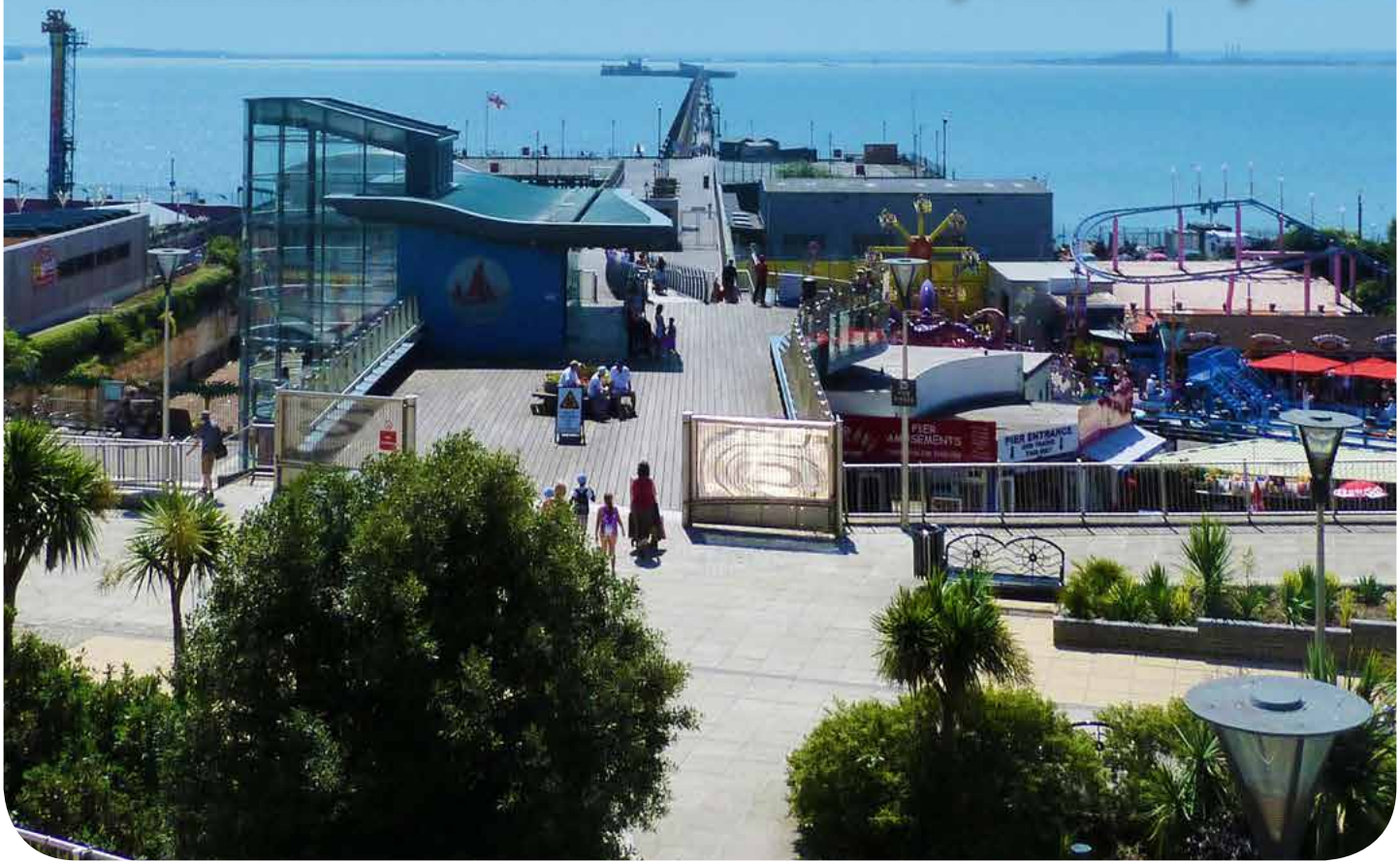
- Please introduce yourself and provide an outline of the roles and responsibilities of your post.
- What is "Southend Energy"? How did it come about?
- What were the challenges, if any, in setting up Southend Energy? What are its main benefits, if any?
- Please discuss Southend Borough Council's LED street lighting project.
- Please discuss the programme undertaken by the Council to promote energy efficiency in local schools.
- Please discuss Southend Borough Council's overall approach to using its Low Carbon Strategy to drive energy savings and revenues.
- What are the "Eco Innovation Zones"?
- In what ways, if any, is the Council targeting local fuel poverty?
- What are the Council's future projects – if any – to promote local energy efficiency and security?
- What role can the public play in meeting energy security requirements and UK carbon targets?

- What, in your view, can Kent County Council do to promote energy security within the county?

- Are there any other issues that you would like to raise with the Committee?

LOW CARBON ENERGY & SUSTAINABILITY STRATEGY 2015-2020

the transition to a low carbon, smart city



southend·on·sea
town, shore and so much more

southend onsea BOROUGH COUNCIL

THE TRANSITION TO A LOW CARBON, SMART CITY

This is Southend-on-Sea Borough Council's second Strategy that focuses on delivering low carbon growth, improving energy efficiency and providing a more sustainable future for our residents, communities and businesses. Through the successful implementation of this five-year Strategy we will aim to establish Southend-on-Sea as a 'Low Carbon, Smart City' and have set more ambitious targets to achieve this than those found in its predecessor.

THE STRATEGY COMPRISES OF SIX KEY FOCUS AREAS

FOCUS AREA ONE:	**Reducing our Carbon Emissions.**
FOCUS AREA TWO:	**Policy and Regulation.**
FOCUS AREA THREE:	**Delivering a Local Low Carbon Economy.**
FOCUS AREA FOUR:	**Supporting Low Carbon Communities.**
FOCUS AREA FIVE:	**Encouraging Sustainable Transport and Travel**
FOCUS AREA SIX:	**Adapting to Climate Change and Enhancing Biodiversity.**

The focus areas are not mutually exclusive and have been designed to enable the Council to adopt a coordinated approach to delivering the new Strategy, which will include cross-departmental work and building close relationships with local residents, businesses and other external stakeholders. The Strategy is supported through an Action Plan to ensure progress in each of the focus areas and the results will be made public through the publication of an annual Sustainability Report.

WHAT IS A LOW CARBON SMART CITY?

Up to 70% of the world's carbon emissions can be attributed to urban consumption and many cities and urban areas want to do more to tackle climate change and pursue low carbon growth opportunities. The overriding objective of the new Strategy is to enable Southend -on-Sea to become – and be recognised as - a 'Low Carbon, Smart City' by 2020 and play its part in addressing the global issue of climate change through localised actions.

A 'Low Carbon, Smart City' establishes a more sustainable and vibrant local economy and society for all of its residents, communities and businesses. It provides an opportunity to safeguard against rising energy costs and fuel security, improve the energy performance of new and existing buildings, make efficiency savings and explore new revenue generation models at a time of public sector cutbacks.

By implementing cost-effective, low carbon interventions throughout the Borough we can support the delivery of the UK's legally binding commitment under the Climate Change Act 2008 to cut carbon dioxide (CO_2) emissions by at least 80% by 2050, with a minimum reduction of 34% by 2020 across the UK (set against a 1990 baseline).

We can also ensure that the Borough's infrastructure is 'climate resilient' by taking steps to reduce risks from flooding and protecting our natural environment and heritage. Being a catalyst for change is at the heart of our ambitions to become a Low Carbon City – we will use the low carbon and smart city agenda to make a positive impact throughout the Southend-on-Sea Borough.

We will make use of new technologies and increase the amount of 'smart' data we collect in order to improve service delivery and address various economic, social and environmental challenges. For example, smart energy meters can help us manage energy demand, reduce cost and safeguard the environment, while improvements to traffic control and transport systems can help manage traffic flows, ease congestion and make commuting easier for all.

Join us on our journey to a low carbon and more sustainable future.

The second element of ensuring our transition to a Low Carbon City is delivering public services more efficiently while at the same time supporting sustainable and long-term economic growth. It will allow us to make a real contribution in delivering local objectives around health and well-being, housing, fuel poverty, air quality, transport, education, economic development and community cohesion.

We also need to recognise that today's business models and practices are not equipped to make the most of the opportunities that the low carbon and sustainable agendas present.

Our Strategy sets out to fully integrate and embed low carbon and sustainable considerations into the decision making process, which will help to ensure that decisions we make will result in actions and outcomes that will be sustainable for the long and short term.

Through demonstrating community leadership and establishing ambitious objectives in this Strategy we can establish Southend on Sea as a thriving 'Low Carbon City' by 2020.

COMMUNICATIONS

A vital element of this Strategy is to ensure that Southend on Sea Borough Council delivers the right communications message to local residents, businesses, communities and other stakeholders around issues of energy efficiency, sustainability and climate change. The message needs to be clear and concise from the outset so that it resonates with people across the Borough and encourages active engagement in Southend on Sea's vision to become a Low Carbon, Smart City.

The Council will develop a separate strategy for communications to realise this vision – it will require a clear framework and a plan of both short and long-term activity and will ensure that any engagement and promotional work is targeted and relevant.

By achieving this we will be able to bring about positive social change that benefits the whole Borough. Community 'buy-in' is therefore essential if we are to maximise the low carbon opportunities for Southend on Sea - we want people to see that by supporting the Council's work to establish Southend on Sea as a more sustainable, low carbon city can help to bring about improvements to infrastructure, create new jobs and drive the local economy, improve the standards of living and enhance our local environment.

As a result the Low Carbon Energy and Sustainability Strategy will run in parallel with a Communications Strategy, which will help establish and maintain a brand that will drive this agenda and engage with all stakeholders and help Southend on Sea become a low carbon city, which local residents, businesses and communities can all be proud of.

The Council's award winning *Ideas in Motion* campaign is an example of the type of community, idea generated approach we wish to adopt. You can find out more about the campaign by visiting:

www.ideasinmotionsouthend.co.uk

FOCUS AREA ONE
REDUCING OUR CARBON EMISSIONS

Vision

Our vision is to lead by example by taking positive action to reduce carbon emissions and improve the energy efficiency performance and sustainability across our property estate. We will identify ways to reduce our energy bills, generate new revenue streams, ensure buildings are energy efficient and increase the uptake of renewable and low carbon technologies in our buildings and infrastructure. We aim to improve our overall environmental performance and become a more sustainable organisation in the process.

Aspirations

- To put all appropriate Council owned buildings through an Energy Performance Contract or equivalent process.
- To have renewable generation active on at least 50% of our buildings (including schools).
- To reduce carbon dioxide emissions across the school estate by 34%.

2020 Goals

Carbon Reduction	• Reduce the Council's overall carbon emissions. • Improve energy efficiency and sustainability throughout the estate. • Reduce associated energy costs.
Finance	• Positively address the issues around rising energy costs. • Explore revenue generation models. • Support an Energy Performance Contract Framework.
Renewable Technology	• Embrace renewable technologies across the estate. • Consider renewable technology installation for all future building works (including retrofits). • Implement large scale renewable generation facilities on Council property
School Estate	• Reduce carbon emissions across the school estate. • Save schools money through reduced energy bills. • Help improve the educational and learning environment.
Smart Data	• Ensure accurate data collection throughout the estate. • Increase number of half hourly and AMR meter readers. • Help support work based around 'Smart' Cities.

Overview

The majority of the UK's emissions (85% in 2011) arise from our production and consumption of energy – whether that's driving cars, manufacturing goods or simply boiling a kettle. Emissions can be lowered by becoming energy efficient and by switching to low-carbon fuels. Both will be necessary to meet the UK's carbon targets.

Carbon and energy management is an increasingly important issue for all organisations to consider. Taking sustainability and carbon emissions seriously is an integral part in future proofing an organisation against rising energy costs and ensuring that a local authority can deliver its services to a high standard. It can also unlock the opportunities for efficiency savings and new revenue generation through government incentives that encourage the growth of renewable technologies.

With energy costs rising, energy efficiency is now seen as an optimal way of saving money. Initiatives to improve efficiency can often generate financial savings with relatively short payback periods. These actions often require the installation of new more energy efficient technologies into the estate or the refurbishment of existing technologies to ensure they operate more effectively.

The efficiency of the built fabric is also an important consideration and should play a key role in adapting the Borough's building stock to cope with current climate and future climatic changes. New development in Southend should therefore be energy and resource efficient, including incorporating water efficiency and urban greening measures, which help to minimise energy demand. For new non-domestic buildings, the obtainment of BREEAM "Very Good" or higher will be encouraged; Code for Sustainable Homes Level 3 or higher for residential buildings. At Saxon Business Park, in accordance with JAAP policies, building will be expected to obtain a BREEAM Excellent rating.

High standards of energy and water efficiency should also be sought in existing buildings, and where appropriate the retrofitting of the existing building stock should enhance the internal environment to make them more comfortable and ensure few resources are consumed, thus helping to reduce costs and CO_2 emissions.

Every organisation should review its energy and carbon management at senior level; develop more use of renewable energy where appropriate; measure and monitor on a whole life cycle cost basis; and ensure that these measures are supported via a behavioural change programme for individuals across the organisation.

Southend on Sea Borough Council has a carbon footprint of 17,560 tonnes of CO_2 per year across its property estate including the schools for which it buys or helps to buy energy. This is comprised of the Civic Centre (11%), school estate (35%) and other buildings (54%). Since 2006 the Council has reduced energy consumption by 16% (over 12m kWh or the equivalent of 505 household's consumption)

This Strategy sets the ambitious target for the Council to reduce the CO_2 emissions associated with its school estate by 34% by 2020 (based on 1990 levels) – it will also set CO2 reduction targets for key buildings across its entire property portfolio including the Civic Centre, leisure centres, Cliffs Pavilion, the Pier and other heritage buildings.

Every member of the Council's workforce will be encouraged and enabled to take action in their workplace. The Council will support its staff by promoting increased awareness, conducting behavioural change programmes, encouraging the use of existing home working policies, low carbon and sustainable travel, the use of ICT, and by ensuring sustainable development is included in every job description.

What we've done

The Council is a full participant of the Government's Carbon Reduction Commitment Energy Efficiency Scheme (CRC), which requires the Council to report to the Environment Agency each year on the carbon dioxide emissions (CO_2) of its qualifying buildings. The Council is then charged £12 per tonne of CO_2 it emits from those buildings (this will rise to £16.40 per tonne from 2014/2015). The Council's 2012/2013 submission was 19,926 tonnes of CO_2 but by 2013/2014 had reduced this to 17,940 tonnes of CO_2 – this equated to a saving of £23,832 in a twelve month period (please note that reason why the CRC tonnes of CO_2 differs from the Council's carbon footprint is because the CRC requires emissions generated from renewable energy sources to be included).

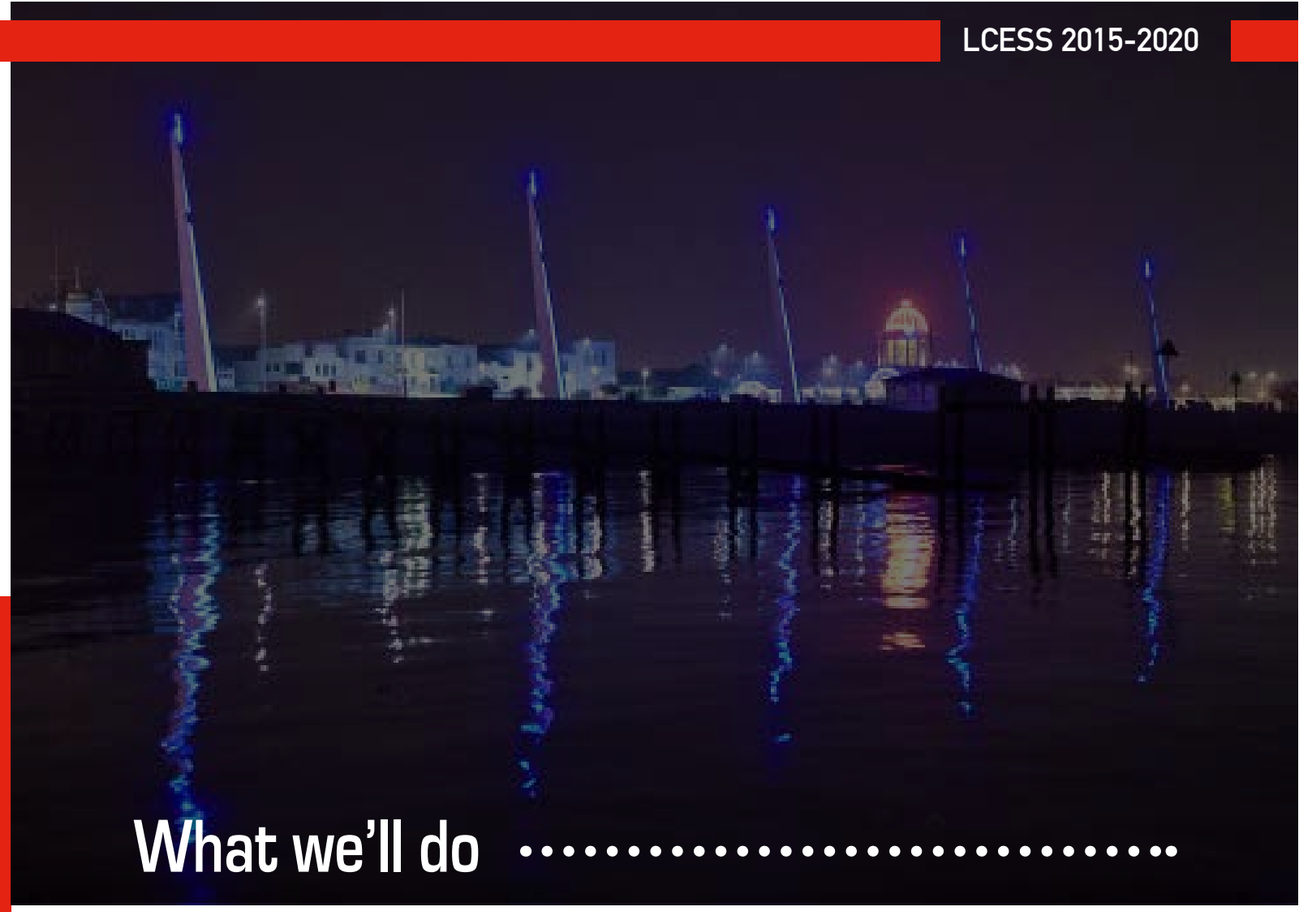
Over the last eight years we have been able to reduce the consumption of electricity by 12% and gas by 25% across the Council's property estate (including schools). This is despite winters having been 15% colder across this same period. In part this is due to being able to collect smart energy data from the vast majority of our property estate, we have established Automated Meter Reading ('AMR') on more than 85% of sites, which provides us with extremely accurate data to support future energy reduction programmes and highlight areas for the Council to reduce costs.

In June 2013, the Council conducted a feasibility study of low carbon and renewable opportunities across the property estate. The final Report identified a series of opportunities that the Council could prioritise as a series of short-term projects and has been used as a basis for the work on energy opportunities listed on the right:

- A conservative estimate of potential for 5.3 MW of photovoltaics ('PV') on the roofs of Council-owned properties;
- 14,000 sodium based street lights for a LED street lighting replacement programme across the Southend on Sea Borough which is now being implemented.
- 61 priority buildings across the Council's estate received a Display Energy Certificate ('DEC') in 2012 with a rating of D or below (nearly 146,000 m2 of floor space);
- In excess of 100 social housing blocks requiring solid wall insulation (plus a further tranche of the stock has hard-to-fill cavities that are more suited to external wall insulation). South Essex Homes will be installing External Wall Insulation (EWI) on 10 homes during this year as a pilot and follow up to the Really Smart House project.

Additional work has been conducted by the Council since this time to further explore the financial viability of each of these projects, including the approval of pilot projects (£1.9m) that will deliver annual CO_2 savings of 442 tonnes whilst providing the base for the Council to ramp up to a large scale delivery. The project costs including funding costs will be fully refunded by revenues generated within the project.

In order to realise the cost and CO_2 savings the Council has established its own mechanism to deliver these projects, which enables comprehensive energy efficiency and renewable technology installations to be undertaken. The Council has also signed up to Blue Sky Peterborough (BSP), which will provide an option for completing its low carbon and renewable programme. The BSP framework will provide an additional mechanism to deliver projects with fewer internal resources and with a guarantee of savings where appropriate. As the number of low carbon and renewable projects increase the Council will need to ensure that it can expand the delivery team. Essex Homes will be installing External Wall Insulation (EWI) on 10 homes during this year as a pilot and follow up to the Really Smart House project.



What we'll do

We aim to increase the amount of renewable and low carbon energy utilised by the Council and improve the efficiency and sustainability of our buildings, which will help us reach our ambitious target of a 34% reduction in carbon dioxide equivalent emissions from building energy use across our school estate and priority buildings by 2020.

We will undertake work to help us understand the opportunities where we can make carbon and energy efficiency savings, and determine where improvements to a buildings' fabric to enhance it efficiency, reduce energy demand and alternative energy sources could be implemented across the Council's property estate, including to our heritage buildings where sensitive an appropriate solutions can be implemented. To achieve this we will continue to increase the number of AMR meters to ensure that our energy data is as accurate as possible, so that we can make informed decisions about future opportunities and seek to identify opportunities for retrofitting, including energy and water efficiency measures.

The Council's energy efficiency and carbon reduction programme is not just limited to our property estate. It will also focus on the Borough's infrastructure, we have already replaced the town's traffic lights with a more energy efficient LED lighting system.

The Council has approved a multi-million pound programme that will replace all streetlights in the Borough with a more energy efficient LED equivalent, which should result in saving almost two-thirds on energy bills and improve safety. The brighter white lights from the LED bulbs will also improve the quality of images produced by CCTV and make it easier for drivers to spot potential hazards on roads at night. Research conducted in other towns that have switched to LED street lighting has shown a positive response from residents in terms of improved security, ambience and unnecessary spread of lighting.

Energy Saving Table

CURRENT APPROVED PROJECTS

Site	Project	Capital Costs	Gross Savings across 25 year project lifetime before costs**	Annual Savings net of cost/Annual Budget Impact* (excludes investment income on capital accruals)	
Temple Sutton School	Solar, biomass, GSHP, lighting, heating controls, motor controls, insulation, windows	£1.29m	£2.84m, 25 years	£2.8k (also £400k reduction in future costs)	285 tCO2
Southend Adult Community College	Solar, biomass, heating controls, motor controls, insulation, lighting	£0.59m	£1.31m, 25 years	£1.0k (also £150k reduction in future cost)	137 tCO2
Civic Centre	Draught proofing	£0.13m	£0.61m, 15 years	£4k for 5 years, then £24k	176 tCO2
Civic Centre	Car park lighting	£0.02m	£0.13m, 20 years	£3.0k	19 tCO2
Civic Centre	Optimise Building Mgt System	£0	£0.81m, 20 years	£25.0k	120 tCO2
Garons Leisure Centre	Lighting, motor controls, insula-tion	£0.07m	£0.44m, 15 years	£20.4k	132 tCO2
Various small projects	Heating, lighting, insulation	£0.05m	£0.12m, 15 years	£3.5k	35 tCO2
Total		£2.14m	£6.26m	£59.7k+ (also £550k avoid-ed cost)	904 tCO2

*Annual savings are based on the energy savings, tax savings and revenue expected from Feed-in-Tariffs and Renewable Heat Incentive at 2014 rates net of costs including interest, repayment of capital and maintenance but excluding investment income on capital accruals during the project prior to loan repayment at the end of the project.

**Gross Savings are based on the expected lifetime of equipment, funding and revenue streams assuming 5% energy inflation and 2.5% RPI. Some maintenance may be needed to achieve the equipment lifetimes. These savings are the sum of savings achieved and must be set against cost when considering budget impacts

Targeting energy saving in Schools

Schools typically account for up to 60% of the CO_2 emissions from a local authorities' property estate. By prioritising the school estate for energy and water efficiency and carbon reduction programmes an organisation can achieve substantial cost and carbon savings. In addition, improving the lighting of classrooms or properly insulating the school building enhances the overall learning and educational environment for pupils and teachers, which is another major benefit of targeting schools.

The Council has established a priority programme for schools in the Borough, which aims to reduce the school estate's CO_2 emissions by a total of 34% by the end December 2020. It is an ambitious target, which has been made possible through a successful European funded project called Community Retrofit through Sustainable Technology (CREST). CREST has enabled the Council to work closely with a number of schools on a series of pilot projects and help them through the various stages of an Energy Performance Contract. The pilot projects looked to engage with schools and highlight the opportunities that existed for them through implementing energy efficiency measures and installing renewable technologies.

Two projects have been approved at Temple Sutton Primary School and Southend Adult Community College to the value of just under £2 million that will result in life-time savings of the project of £4.15 million and 422 tonnes of CO_2.

Works include the installation of solar PV panels, biomass boilers and ground source heat pumps and implementing heating controls, insulation and improving the lighting of the classrooms.

FOCUS AREA TWO
POLICY AND REGULATION

Vision

Our vision is to apply the local planning framework positively to ensure maximum benefit for our residents, communities and businesses. We will ensure all new development in the Borough is designed and built to be energy and resource efficient (including water) and that existing development is adapted, where feasible, to enhance its long-term sustainability. We will seek to increase the amount of energy derived from renewable and low carbon technologies across the Borough and work to identify areas of opportunity for renewable, decentralised and low carbon projects.

Aspirations

- To be recognised as a leading local authority on the low carbon agenda.
- To ensure sustainability and carbon reduction are corporate priorities for the Council.
- To facilitate the uptake of renewable and low carbon technologies in the Borough, and ensure all development is built to reduce energy and resources, through the positive application of planning policy.

2020 Goals

Leadership	• Publish an annual Sustainability Report to highlight progress. • Ensure sustainability and carbon reduction remain corporate priorities. • Proactively target low carbon opportunities in the Borough.
Planning Policies	• Positively apply planning policies to enable low carbon growth. • Develop a robust evidence base for renewable and decentralised energy projects to support planning policy. • Establish a Low Carbon Offset Fund.
Regulations	• Support national targets in the Climate Change Act 2008. • Help meet UK renewable energy generation targets. • Seek to identify appropriate areas for renewable energy and low carbon projects.
Procurement	• Promote and specify sustainable goods and services. • Embed 'social values' in all our commissioning and procurement activity. • Consider 'climate resilience' in the procurement process.
Eco Innovation Zones	• Deliver the first Eco Innovation Zone in Eastwood by 2016. • Identify opportunities for establishing further Eco Innovation Zones in key future developments. • Engage local residents, businesses and communities on this agenda.

Overview

The Climate Change Act 2008 commits the UK to reducing its carbon emissions by at least 80% by 2050 from 1990 levels. Furthermore, the Renewable Energy Directive (2009) ensures that we are committed to meeting 15% of the UK's energy demand from renewable sources by 2020. The Committee for Climate Change has identified that local authorities have influence on over 60% of carbon emissions in the UK. Proactive action from local authorities is therefore essential if the UK is to achieve the ambitious targets outlined above.

With buildings accounting for approximately 40% of carbon emissions in the UK, and non-domestic buildings making up nearly half of this, there is a clear need and opportunity for comprehensible standards to be set for new buildings, as well as opportunities for retrofitting the existing building stock. Sustainable development is the core principle that underpins the planning system and planning has an essential role to play in the delivery of the renewable and low carbon infrastructure that will help to tackle carbon emissions generated by the built environment through the development and implementation of policies and practices that help to meet these national targets.

Our planning policies will be positively prepared and encourage both low carbon growth and sustainable development, and will be supported by a robust evidence base which will be developed to support future low carbon policies and site specific development briefs and masterplans as appropriate.

By adopting a positive approach to the application of our planning policies through the development management process now we can help to support the provision of energy from renewable and low carbon technologies in new developments across the Borough, which will help to ensure a secure energy supply, reduce greenhouse gas emissions that could in turn help tackle climate change and stimulate investment in new jobs and businesses.

These policies will also help us to ensure development is designed and built to reduce energy and resource use, drawing on passive design principles, obtaining environmental credentials through initiatives such as BREEAM and Code for Sustainable Homes, incorporating water efficiency measures to address water resourcing issues in South Essex, as well as installing urban greening measures to contribute towards the absorption of rainfall, filtering of pollution and providing shade and shelter.

Local authorities have the opportunity to identify suitable areas within their jurisdiction for renewable energy and low carbon projects through the development plan. For Southend on Sea this could, for example, include a roll out of Solar PhotoVoltaic Panels (PV) across the Council's property estate, developing community heat networks or investigating renewable energy generation opportunities including biomass and ground source heat pumps.

Our Sustainable Procurement Policy recognises the impact that an organisation with the spending power of the Council can have on the environment and the economy. We will actively engage with current and potential suppliers to promote and specify sustainable goods and services wherever practicable.

The Social Value Act (2012) provides a legal framework for the Council to take 'social value' into consideration throughout the procurement process – building specific requirements into contract documents to deliver real benefits to meet wider community needs.

We have embedded 'social values' into all of our commissioning and procurement activity, providing our suppliers with the opportunity to set themselves apart from their competition and for the Council to really test innovation across our supply chains, whilst ensuring all social benefits and contracted for delivery.

What we've done

Our adopted Core Strategy Development Plan Document (DPD) sets out the spatial strategy for the Borough. Core Strategy Policy KP2: Development Principles seeks to ensure that all new development, including transport infrastructure, contributes to economic, social, physical and environmental regeneration in a sustainable way. One of the key ways in which Policy KP2 identifies that this will be achieved is through a reduction in the use of resources, including the use of renewable and recycled resources, requiring at least 10% of the energy needs of new development comes from on-site renewable options (and/or decentralised renewable or low carbon energy sources).

Our emerging Development Management DPD (examination set for Nov 2014) builds upon the principles set by the Core Strategy, setting out within Policy DM2 the principles for low carbon development and the efficient use of resources, including water efficiency, urban greening and retrofitting and the obtainment of national prescribed standards such as BREEAM and Code for Sustainable Homes. Within Policy DM15 setting out the principles for managing the development of a sustainable transport network in Southend, including supporting opportunities for the provision of facilities for electric / ultra-low carbon emission vehicles.

These planning policies are supported by Supplementary Planning Documents (SPDs), providing detailed planning guidance. Our Design and Townscape Guide SPD1 provides guidance on how good design should be achieved locally, including guidance on sustainable development and design, and setting out a range of renewable technologies that could be considered by developers for implementation within the Borough. The Streetscape Manual SPD3 seeks to provide a coordinated approach to creating sustainable and cost effective streets within the Borough, reducing waste by reusing redundant materials and recycled products, identifying for example opportunities for energy efficiency including LED street lights and low energy keep left bollards.

Furthermore, we've produced a Joint Area Action Plan (JAAP) for London Southend Airport and Environs with Rochford District Council. This strategic planning policy document has been prepared in response to the challenges and opportunities offered by London Southend Airport together with an airport related employment cluster, which includes Saxon Business Park (the majority of which is in Council ownership). The plan is intended to integrate land use, transport, environmental and regeneration proposals with clear mechanisms for delivery.

The release of land for the provision of a high quality business park – Saxon Business Park – is required to enable Southend and Rochford to meet demand for B1 and supporting B2 Use Class Development generated by the growth of London Southend Airport and within the economic sub-region. All new development will be expected to achieve high standards of sustainability, with a BREEAM rating of "Excellent" as a minimum requirement, with expectations that development will include the active use of rainwater harvesting and water recycling systems, SUDS, renewable technologies and other techniques such as green walls and roofs where appropriate.

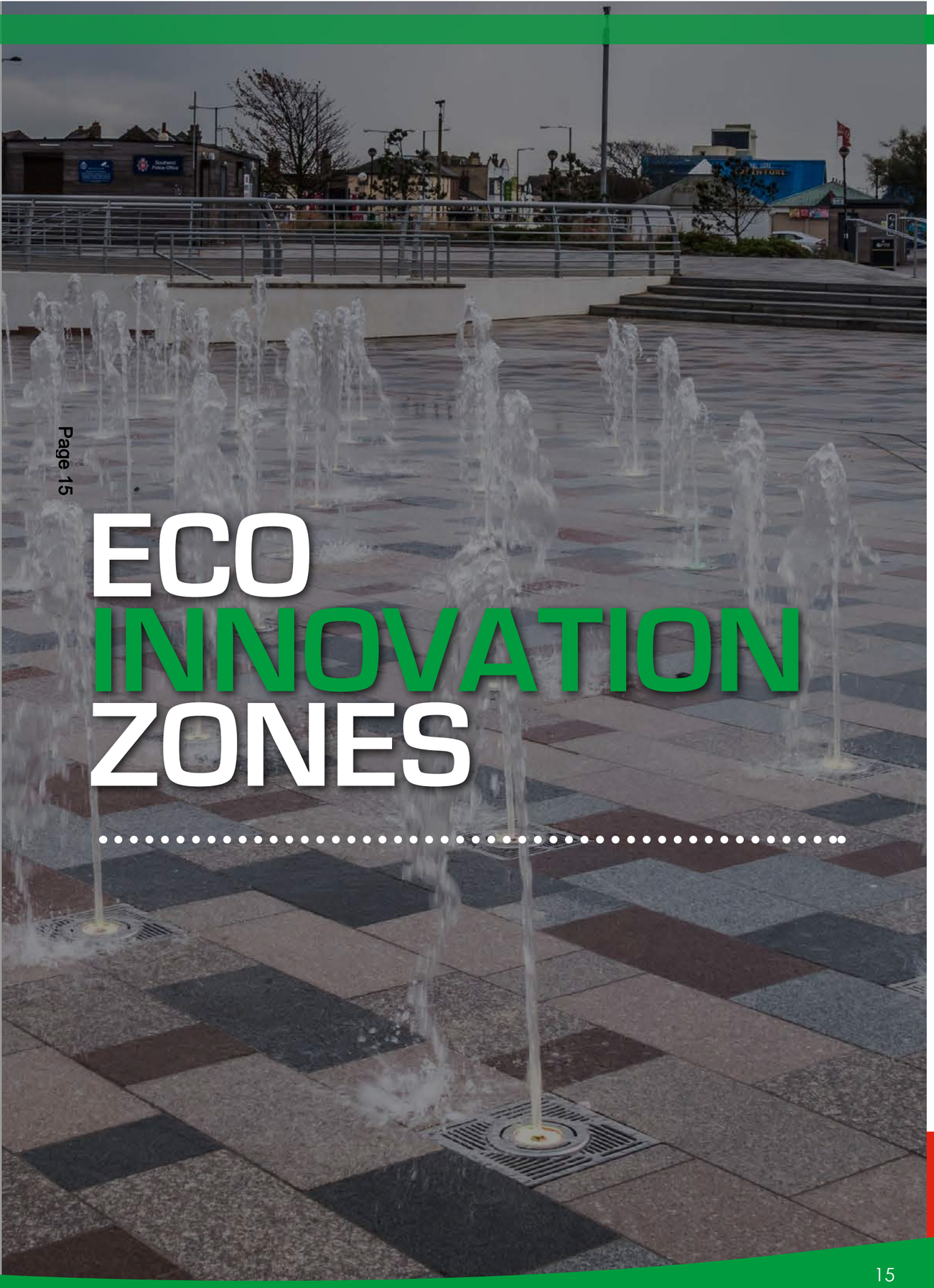
What we'll do

Embedding sustainability and low carbon considerations into the Council's decision making process is a key deliverable of this Strategy. Becoming a more sustainable organisation and proactively targeting low carbon opportunities is a corporate priority and we will need to take account of both in purchasing, investment, operational and strategic decisions and ensure that we can influence the behaviour of those both inside and outside of the Council. Our progress will be made available each year through the publication of an annual Low Carbon Energy and Sustainability Report.

A key priority is to continue to build a robust evidence base to support the development of future low carbon policies and site specific development briefs and masterplans as appropriate. One area the Council is exploring, for example, is the opportunity to undertake a Borough-wide 'heat mapping' study and the potential for grant funding to be successfully sought from the Heat Networks Delivery Unit, part of the Department of Energy and Climate Change. Such a Study would enable a heat map to be produced for Southend that would highlight potential opportunities for decentralised energy generation within the Borough.

The Council will consider following the lead of Milton Keynes Council and Southampton City Council by establishing a Low Carbon Offset Fund. The money would be used to help fund energy efficiency and renewable projects across the Borough's estate. The fund would be the first step taken by the Council to support Government objectives to establish Zero Carbon Developments, legislation for which is expected to come into force in 2016 and such funds are expected to form a part of this.

Should such legislation comes into force during the lifetime of this Strategy, the Council could give consideration to adopting a hierarchical approach, firstly requiring energy efficiency for new developments, secondly onsite carbon reduction and energy generation projects and thirdly payments to the local fund in order to achieve carbon neutrality.



ECO INNOVATION ZONES

Eco Innovation Zones

The main driver for achieving the 2020 Goals under this Focus Area is through the development of a series of 'Eco Innovation Zones' (formerly Low Carbon Zones under the previous strategy) that provide an excellent opportunity for the Council to deliver a coordinated approach to carbon reduction, sustainability and tackling climate change. It will also allow the Council to put together a series of large scale programmes that can deliver significant CO_2 reductions and cost savings in targeted geographic areas.

The Eco Innovation Zones can ensure that built environments can be designed to encourage sustainable development and low carbon usage in every aspect of their operation. This includes resilience and adaption to the effects of climate change, energy management strategies, and a broader approach to sustainability including transport, service delivery and community engagement

The Council will be launching its first Eco Innovation Zone in the ward of Eastwood in late 2014 and sets out to engage close to 10,000 residents through the initiative. The initial focus of the Eastwood Eco Innovation Zone is the ward's three primary schools, which will all have the opportunity to benefit from a multi-million pound energy efficiency and renewable technology installation programme (to include solar PV panels, biomass boilers, insulation and heating controls) that will help schools understand the opportunities available to them.

We aim to transform each of the three schools into a 'sustainable hub', which provides us with an excellent platform to deliver a positive community-wide communications message to local residents, businesses and communities.

While the energy efficiency works are being completed at the schools the Council will run a series of coordinated initiatives, including launching its LED street lighting replacement programme in the ward and targeting businesses engagement through the Low Carbon Business Programme to Eastwood-based businesses.

The Council has identified two additional Eco Innovation Zones in the Borough – Southend Central Area (which includes the Victoria Avenue Office area) and the Airport Business Park development, which offers the potential for new commercial buildings to be built sustainably, seeking to obtain a BREEAM "Excellent" rating in line with the policy approach set out within the JAAP.

We will continue to scope out the low-carbon opportunities for additional Eco Innovation Zones in the Borough, which could include for example urban greening, sustainable drainage systems, energy efficient buildings-including the retrofitting of existing buildings, using sustainably sourced materials, reducing the use of mineral resources by employing sustainable construction methods and the installation of renewable technologies and decentralised energy projects.

FOCUS AREA THREE
DELIVERING A LOCAL LOW CARBON ECONOMY

Vision

Our vision is to place communities at the heart of Southend on Sea's transition to a low carbon and sustainable future. We will help to facilitate the growth of community-led action to help meet local needs, address fuel poverty and develop local energy projects. We envisage that this will provide our residents, communities and businesses with the opportunity to use more sustainable forms of energy and save money on their fuel bills. .

Aspirations

- To establish Southend on Sea as a Low Carbon City by 2020.
- To become a thriving local low carbon economy.
- To secure European funding to help support local residents, businesses and communities.

2020 Goals

Low Carbon City
- Establish Southend on Sea as a Low Carbon City.
- Target local regeneration through low carbon growth.
- Deliver low carbon and renewable projects.

Local Economic Development
- Strengthen the local economy.
- Ensure money is kept in the local economy.
- Help reduce fuel poverty.

Secure European Funding
- Establish a Southend coordinating focus group for bidding to the EU Horizon 2020 programme.
- Develop a network of funding UK and EU partners through the "Smart Cities" Innovation Partnership.
- Utilise best practice and examples from other European cities.

Support Local Businesses
- Promote the benefits of sustainable business.
- Support businesses to reduce energy consumption.
- Creation and retention of jobs in the Borough.

Develop Partnerships
- Support local residents, communities, volunteering groups, social enterprises, associations and businesses.
- Work closely with other local authorities.
- Support South East LEP's low carbon objectives.

Overview

This Strategy acknowledges the increasingly strong role that Local Authorities have to play in the delivery of the local low carbon economy. This is not just because the Committee for Climate Change has identified that they have influence over 60% of carbon dioxide emissions but also because of the opportunity to grow the local economy and improve the well-being of local people.

The UK Department for Business, Innovation and Skills (BIS) evaluated the global market for smart solutions across five sectors –water, energy, transport, waste and assisted living –and estimated its value to reach $400 billion by 2020 of which 10 per cent can be reaped by the UK.

Those that are proactive will find that they are able to benefit from financial savings on their utility bills, improved resource efficiency and economic growth. They will also be able to safeguard against the concerns surrounding future fuel security, rising energy costs and a changing climate.

Local Authorities have a leading role to play in promoting the growth of the low-carbon economy locally. This will present them with a unique opportunity to make a real contribution in delivering local objectives around health, fuel poverty, housing, air quality, transport, education, economic development and social inclusion.

Make the wrong choices now and future generations will live with a changed climate, depleted resources and without the green space and biodiversity that positively contribute to our standard of living.

All businesses are facing the same issues when it comes to rising energy and utility costs. Businesses that adopt a proactive approach to energy management and invest in energy efficiency measures will go a long way in securing a sustainable future.

What we've done

The Council has mainly concentrated on opportunities for energy generation and energy savings on its own building portfolio including schools but there is a substantial opportunity to generate on land owned by the Council and on buildings owned by others.

As such, we have undertaken a comprehensive feasibility study that has helped to identify the low carbon opportunities available to the Council and throughout Southend on Sea. This study showed that there were opportunities for a number of large-scale renewable energy projects that included a potential solar PV farm and a large scale roof-top solar PV project, both of which are outlined below.

Through the City Deal process we have secured some £2.5m from Government to deliver a range of business support including a business centre in the old library building and a range of business support measures. The business centre will enable more people to set up their businesses locally with the right support thus reducing our commuting.

The programme will have a number of elements, one being a business to business procurement portal which will encourage and enable greater trading between businesses locally reducing emissions and positively impacting on the local economy..

Low Carbon Business

We are an active partner in the European Regional Development Fund (ERDF) Thames Gateway South Essex Low Carbon Business Programme, which aims to help businesses reduce their carbon emissions, save costs and become more competitive in the process. The programme will run until March 2015, but the Council is in discussions with other partners to extend the lifetime beyond this date.

As of September 2014 the programme has delivered the following for Southend-on-Sea based businesses:

- 800 Southend businesses 'touched' by the Programme
- 180 Green Business Audits
- 238 Organisational Achievement Records (12 Hour Assists or Grants).
- 102 Grants defrayed totalling £325,503.10

The Council is also a partner in the ERDF Low Carbon Innovation Programme through the Anglia Ruskin MedTech Campus partnership. This programme seeks to enable low carbon innovation in the medical technologies sector and supply chain through grants, access to academics, clinicians, researchers and specialists.

Horizon 2020 and EU Funding

To showcase our commitment to becoming a Low Carbon, Smart City the Council made a successful application to join the European Innovation Partnership on Smart Cities and Communities, which brings together cities, industry and citizens to improve urban life through more sustainable integrated solutions. Being a member of the partnership will allow the Council to develop bids and deliver projects with European partners that address energy efficiency and low carbon solutions; policy and regulation; finance and procurement; urban mobility; integrated energy networks; and open data.

Horizon 2020 is the biggest EU Research and Innovation programme that has ever been established, with nearly €80 billion of funding available between 2014 and 2020. It is a single programme that couples research to innovation and provides simplified access to European funding for local authorities, businesses and universities across Europe.

The Council have established an in-house team to develop strong regional, national and European partnerships with external organisations that will allow it to make and join funding bids that will allow it to target projects that address the following areas:

- Energy efficiency and carbon reduction, including polic and evidence base development;
- Climate change adaptation and mitigation;
- Sustainably managing natural resources and raw materials;
- Enabling the transition towards a green economy and society;
- Improving well-being and promoting health benefits; And
- Sustainable transport development.

What we'll do

Southend on Sea Borough Council recognises that it has four key roles to play to attract finance based on the overwhelming desire of the private sector to know that there will be a strong pipeline of investable projects to justify its own investment in start-up costs and project engagement;

- Setting the investment context – through development of local policies that create an investment pipeline on the basis of local economic development, the reduction in energy demand and alleviation of social problems such as fuel poverty
- Convening – local authorities can bring together the required private, public and third sector stakeholders that are required for successful business models. For example, this can be done formally through procurement or through the use of the Local Enterprise Partnership (LEP) and, or informally through the various business networks that currently exist.
- De-risking through use of assets – local authorities have tangible assets such as buildings, highways or infrastructure and land which can kick-start the required investment pipeline but also they can use intangible assets such as brand and the award of contracts
- Enabling finance – local authorities, whilst financially constrained, can use their finance to initiate programmes and create an investment return. This return can repay start-up costs and create a long term income that fully finances the low carbon programme.

The Council will continue to work closely with the South East Local Enterprise Partnership (South East LEP) to help the region realise the enormous potential for low carbon growth by creating a more innovative and climate resilient economy. The Council is committed to supporting the delivery of a pipeline of low carbon and renewable projects in order to help deliver economic growth and sustained employment, as well as increasing efficiency and a reduction in CO_2 throughout the Borough. The Council will also consider how other incentives could be introduced to local businesses to encourage them to invest in energy efficiency and renewables generation. Options may include setting up or partnering with a Non-Domestic Green Deal Provider or extending any potential Rent-a-Roof opportunities to include businesses.

FOCUS AREA FOUR
SUPPORTING LOW CARBON COMMUNITIES

Vision

Our vision is to place communities at the heart of Southend-on-Sea's transition to a low carbon and sustainable future. We will help to facilitate the growth of community-led action to help meet local needs, address fuel poverty and develop local energy projects. We envisage that this will provide our residents, communities and businesses with the opportunity to use more sustainable forms of energy and save money on their fuel bills. .

Aspirations

- To eliminate fuel poverty throughout the Southend on Sea Borough.
- To deliver a Borough-wide solar PV rent-a-roof scheme.
- To enable a growth in community owned energy projects and assets.

2020 Goals

Local Economic Development
- Ensure money stays in the local economy.
- Establish a series of Eco Innovation Zones.
- Create new local employment opportunities.

Fuel Poverty
- Take steps to help eliminate fuel poverty.
- Target cold homes and areas of deprivation.
- Improve health and well-being of residents.

Energy Efficiency
- Promote energy efficiency throughout the Borough.
- Facilitate the improvement of existing housing stock.
- Deliver a solution to energy efficiency throughout the Borough's tower blocks.

Green Deal
- Encourage the uptake of the Green Deal for residents.
- Support Energy Company Obligation applications
- Promote the opportunities for businesses to benefit from the Green Deal.

Community Energy Schemes
- Support community energy projects.
- Deliver a Borough-wide solar PV 'rent-a-roof' scheme.
- See local ownership of energy assets.

Overview

The Strategy recognises the essential role that local residents, businesses and communities have to play in helping Southend on Sea to become a low carbon City. This is especially relevant today with the threat of rising energy prices and security of supply in both the domestic and private sector, which requires communities to take steps to ensure that they are more resilient to these increases – this would include taking steps to improve energy efficiency, reducing fuel bills and even participating in community energy projects.

A recent report from investment bank UBS demonstrated that UK household energy bills have risen 70% since 2004 and are expected to rise by another 46% in nominal terms between 2013 and 2020. In December 2012, Ofgem stated that the average gas bill for a standard account is £811 and for electricity it was £531, which equates to a total energy utility bill spend of £1,342 per household.

In Southend on Sea there are 73,000 households, which in 2012 would spend a total of £97,966,000 per annum on energy. If the predicted 46% rise in energy costs occurs then by 2020 the total of Southend's household energy spend could increase to £143,026,360 – that is an increase of £45,064,360 from 2012 in households throughout the Borough.

What we've done

In March 2011 Southend on Sea Borough Council signalled its commitment to reduce fuel poverty within the Borough by signing the East of England Fuel Poverty Declaration developed by the charity National Energy Action.

The Council has also published its Housing Strategy, which covers the period 2011-2021 and aims to facilitate the improvement of the existing stock and meet the needs of vulnerable applicants of all ages; children and older persons. Both of which have contributed to helping the Council to deliver a coordinated approach to addressing fuel poverty and improving the quality of the housing stock throughout the Borough.

We have taken steps to promote energy efficiency in Southend that include encouraging the take up of the Government flagship programme the Green Deal to local residents and businesses, identify opportunities to utilise Energy Company Obligation (ECO) funding to pay for energy saving improvements, securing European funding to run a carbon reduction retrofit programme called Really Smart House and committing to undertake a yearly community energy switching scheme to help reduce our resident's energy bills.

The Council participated in the first Essex Energy Switch, which secured in excess of £25,000 worth of energy savings for Southend residents. The Essex Energy Switch works by bringing together residents who want to switch providers and pay less for their gas and electricity bills. Essex residents were able to sign up for the Energy Switch during January and February 2014. A one-day 'auction' then took place, with energy companies coming forward to offer their best possible tariffs.

The Essex residents who signed up for the scheme each received a personalised offer detailing how much they could save, with no obligation to switch. The Council will continue to explore the opportunities around community energy switching in order to determine the best means to support Southend residents and businesses to reduce their energy bills in the future.

Eliminating Fuel Poverty

As the cost of energy rises there is a real risk of the numbers of those vulnerable to fuel poverty increasing - fuel poverty is defined as households who spend more than 10% of their income on home energy costs. It is a long-standing health issue and contributes to social inequalities; the impact of cold housing and the stresses brought on by living in fuel poverty have been recognised for decades by researchers, policy makers and health officials alike.

Not only does it result in excess mortality during winter months, but research has shown that fuel poverty can lead to reduced weight gain in infants, an impeded ability to learn in older children, increased incidence of cold and flu, mental health problems and chronic lung diseases, heart attacks and strokes in older people.

In London, an average of 3,710 Londoners die every year as a result of living in a cold home, there are over 23,000 additional emergency hospital admissions and just under 93,000 additional outpatient attendances. This is an urgent issue, which does have a solution.

The NI187 returns from 2010 and 2011 showed that 56.46% of the population of Southend on Sea that was claiming Council Tax Benefit were in properties that met one of the criteria that identified them as being 'Fuel Poor' households. By adopting a positive approach through our policies and interventions we can take steps to successfully tackle cold housing, and reduce (and then) eliminate fuel poverty. We will work closely with South Essex Homes and local voluntary organisations to help Southend residents reduce their fuel bills and improve the energy efficiency of our housing stock.

The Council is involved in a series of innovative projects targeting the Borough's tower blocks. The projects not only aim to make an immediate impact on fuel poverty on a vulnerable community but will seek to apply a technological solution to reduce the heating requirements by 90% in each building. To achieve this, the Council will undertake a programme of installing energy monitoring equipment that will provide the necessary data to shape the financial case to run the project and transform the energy performance of the tower blocks. The project will be funded through a combination of Council funding and EU bids.

Really Smart House

The Really Smart House project is a European Regional Development Fund (ERDF) match funded project with two main aims; firstly to retrofit 42 properties with energy saving interventions, that will reduce CO_2 emissions and energy costs for residents (interventions have included - Fuel Cells and Micro-CHP unit, Thermodynamic Panels, External Structural Insulation, Photovoltaic panels, DC LEDs and Mechanical Ventilation with Heat Recovery), and secondly to assist at least 70 Small and Medium Sized Enterprises (SME's) in the East of England to stimulate low carbon economic growth, and to help them take advantage of green business opportunities.

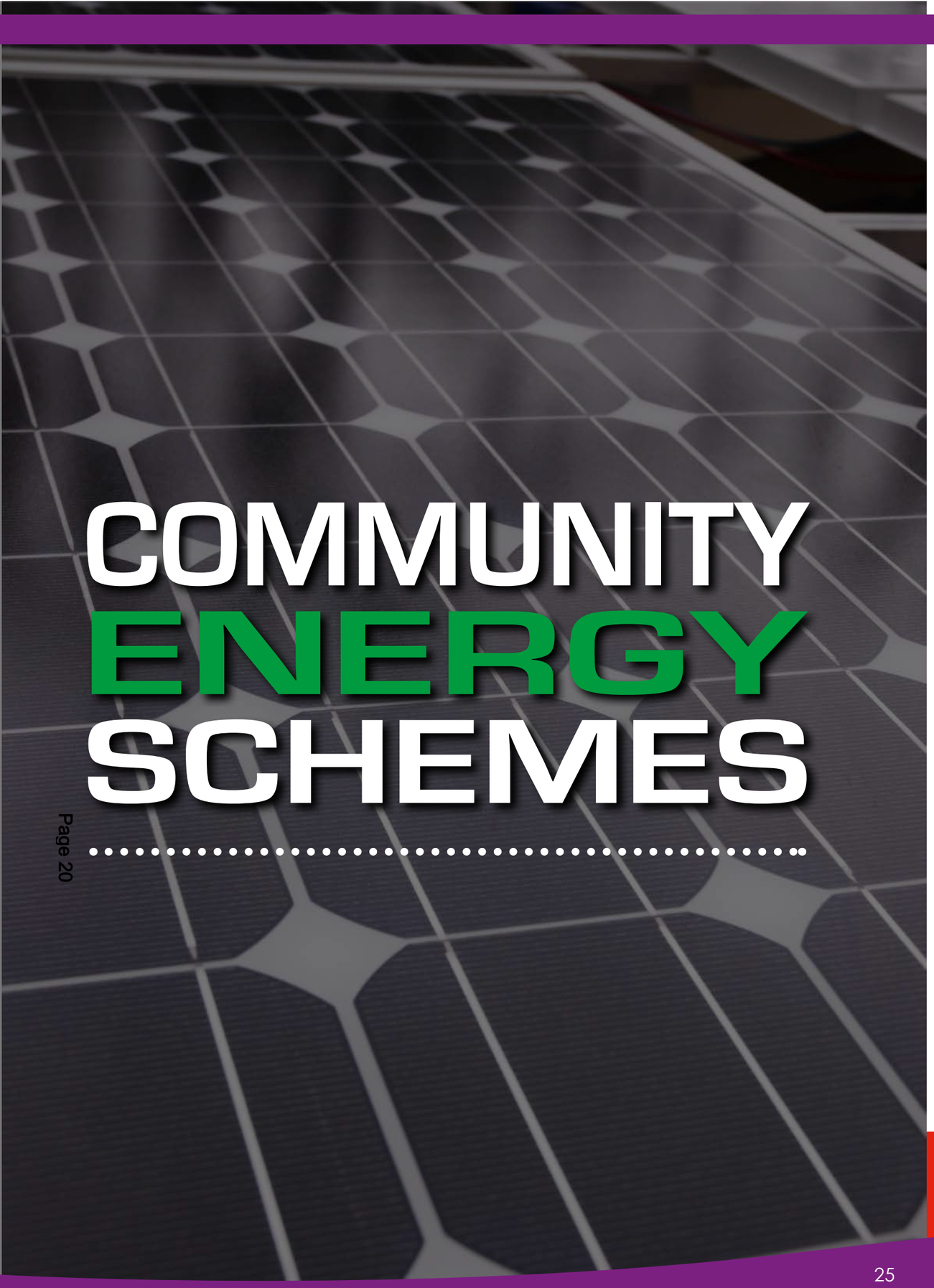
What we'll do

The Council's future approach to delivering low carbon communities will focus upon establishing a series of 'Eco Innovation Zones' throughout the Borough, which target key geographical areas and help to deliver a comprehensive energy efficiency programme. Each Eco Innovation Zone will establish a local approach to improving energy efficiency, tackling fuel poverty and encouraging the uptake of renewable technologies.

We will work with community organisations, residents and businesses to find innovative solutions to the local challenges that the programme will tackle – it will help local communities to build their understanding and capacity in this area by being given access to the right information, advice and expertise. The role of the Council is to help facilitate and coordinate a programme that will empower residents, communities and businesses to make informed decisions about their energy usage.

More information about the Eco Innovation Zones can be found in Focus Area Two: Policy and Regulation.

In June 2014 the Council secured £40 million through the Big Lottery Fund, which will be used to improve the lives of 13,000 vulnerable children in the six most deprived wards of the Borough. The work will include undertaking work to address fuel poverty and reducing the negative health and well-being implications and make sure that we are able to provide Southend on Sea's youngsters with a better start in life.



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Facilitating Community Energy Schemes

The Council will help support the development of local energy schemes and encourage the uptake of more grassroots groups and projects. We will help identify potential routes of investment of funding, ensuring that a positive approach is adopted during the planning process where proposals comply with relevant local and national planning policies.

THE BENEFITS OF COMMUNITY ENERGY SCHEMES:

- **Use of local resources** – locally owned schemes are better at exploiting local resources like solar, biomass and water on sites that may be overlooked by commercial developers.
- **Skills, education and work experience** – members of the community can all benefit from the opportunities to learn new skills through involvement in community energy activity.
- **Attracting new investment** – community energy projects are able to attract funding and investment from new sources, usually directly from the local community itself.
- **Community cohesion** – local community energy schemes can help bring together local residents and businesses and help enhance community cohesion.
- **Funding energy reduction initiatives** – the revenue generated from community schemes is often spent on helping to fund local energy-saving initiatives.
- **Helping the local economy** – by keeping the revenue from renewable energy projects in the local community this can have many positive benefits for the local economy.
- **Increased awareness of climate change** - community energy schemes can help improve “energy literacy” and understanding of climate change issues.

FOCUS AREA FIVE
ENCOURAGING SUSTAINABLE TRAVEL AND TRANSPORT

Vision

Our vision is to reduce the carbon emissions, congestion and air pollution that are associated with transport throughout the Southend on Sea Borough. We want to re-think the way we travel. Facilitating the use of electric vehicles is part of the solution, as is developing an integrated public transport system that makes it an easy choice to use the train, bus, walk or cycle for all members of the community. .

Aspirations

- To meet the Borough's future transportation needs with low carbon infrastructure.
- To maximise opportunities for developing and integrating lower carbon travel choices.
- To future proof the Borough's infrastructure from the impacts of climate change.

2020 Goals

Reduce Carbon Emissions	• Reduce the number of car journeys in the Borough. • Integrate and promote low carbon travel options. • Support the objectives of the Local Transport Plan 3.
Sustainable Transport	• Encourage the uptake of active travel. • Expand the cycle route network in the Borough. • Increase the number of electric vehicle charging points.
Ideas in Motion	• Deliver personalised travel planning. • Develop a smart phone app to promote Ideas in Motion. • Continue a targeted marketing programme to promote walking, cycling and public transport.
New Ways of Working	• Provide opportunities for home working. • Install infrastructure at the Civic Centre for active travel. • Promote sustainable transport to Council staff.
Low Carbon Infrastructure	• Ensure 'smart' data is collected from the Borough's transport infrastructure. • Install energy efficient street and traffic lighting. • Undertake initiatives to reduce congestion.

Overview

Although data shows that 17% of CO_2 emissions in the Borough are from transport, the Borough's per capita road transport CO_2 emissions are significantly lower than both the regional and national averages. Yet the Department for Transport has forecast that 'business as usual' transport related emissions in the UK will rise by 35% by 2030, partly because of factors like increased car ownership and the reducing relative costs of car travel to public transport.

Within the Borough itself this is also set against a background of population growth, particularly people aged over 80, and an aspiration for economic growth and prosperity. We need to find ways to effectively manage carbon emissions from travel and transport if we are to meet the UK's carbon reduction targets and maximise opportunities for developing, integrating and promoting lower carbon travel choices that will contribute to tackling climate change.

The Southend Local Transport Plan 3 Strategy Document 2011-2026 is the major policy document for the Council's transport policies and implementation plans. Throughout the Strategy we place importance on low carbon transport and the need to develop a low carbon and sustainable infrastructure for the Borough's future transportation needs. Opportunities exist for local authorities to explore environmentally sensitive fuels in essential vehicles, including hybrid and electric vehicles.

Emphasis is placed on tackling the problem at its cause, through influencing transport demand as opposed to mitigating its impact. It also requires better information and targeted marketing to influence driver behaviour and choices. It also aims to encourage the uptake of active travel, including walking and cycling.

Taking action now will not only reduce this risk in the long term. Action now will also have health benefits immediately. Increased levels of active travel, for instance, lead to a reduced risk of obesity, diabetes, heart disease, and mild mental illness, as well as reducing road traffic injuries and deaths, and improving air quality.

Key transport challenges:

- Majority of road transport CO_2 emissions arise from personal travel, namely petrol cars on minor roads, with the greatest opportunities for reducing transport CO_2 emissions.
- To promote more sustainable travel and reduce the need to travel through planning for growth and development policies.
- Decreased summer rainfall (better summer weather) may mean increased visitor numbers to the area, although this would need to be catered for in a sustainable manner.
- Increases in annual mean temperature will promote walking and cycling.
- Increasing the resilience of the transport system to the effects of climate change such as increased frequency of extreme weather events.
- Making use of emerging technology to address CO_2 emissions and pollution from transport.
- Protecting the Borough's natural and built environment whilst securing economic prosperity.

What we've done

In April 2011, Southend Borough Council was awarded a grant of nearly £5million from the Department for Transport as part of its Local Sustainable Transport Fund (LSTF). A major programme to come out of the funding was 'Ideas in Motion', which aims to promote sustainable transport throughout the community in Southend and has already seen an 11% reduction in the number of people travelling to work by car or van and a 14% increase in the number of people walking to work.

The Ideas in Motion project has helped to deliver Personalised Travel Planning programmes throughout the Borough. In phase 1 13,000 homes were visited and gave personalised travel planning advice to over 4,000 households. All of which contributed to the project winning two national awards – in 2013 Ideas in Motion won the 'Social Marketing Campaign of the Year' at the Public Sector Communications Awards and in 2014 it won the Behaviour Change Award at the MJ Achievement Awards.

In July 2014 the Council was awarded an additional £750,000 from the Department for Transport, which will allow work on sustainable transport to continue, including more work on personal travel planning (PTP) smartphone app, travel smartcards and targeted marketing to promote walking, cycling and public transport. It will also include a joint project between the Council and Sustrans to embed cycling in the primary and secondary school curriculum.

The Park that Bike project has delivered 50 new cycle parking spaces via businesses and organisations. Cycle parking has been received by schools, voluntary sector groups, small businesses and London Southend Airport.

We have also participated in a regional programme called Evalu8 that has helped the Council to kick start a programme of providing electric charging points for vehicles across the Borough. We currently have 7, which can be found in the following locations:

- Outside Sainsburys in town centre,
- Hamlet Court Road
- Seaways carpark
- Warrior Square carpark
- Council North carpark
- Belfairs cultural centre
- Thorpe Bay station

Through the 'New Ways of Working' programme the Council has also taken steps to ensure that home working for its staff is available where appropriate, which not only increases productivity and job satisfaction but will also reduce the Council's own carbon emissions attributable to staff travel. We have also ensured that we have essential infrastructure for active travel such as showers, changing rooms, drying rooms, locker facilities, and covered secure cycle storage at the Civic Centre.

What we'll do

Every organisation should routinely review the need for building users to travel; consistently monitor business mileage; provide incentives for low carbon transport; and home working opportunities. Through the Southend Local Transport Plan 3 Strategy the Council will continue to prioritise these actions and measure success in the following ways:

- Reduced need for car parking spaces or on street parking
- Create better streets, through design and creation of green spaces
- Less air and noise pollution
- Less congestion
- Fairness in the costs of travel
- A healthier, fitter and happier workforce
- Reduction in carbon emissions

Transport improvements aimed at reducing CO_2 emissions from road transport will be focussed on local journeys beginning and ending within the Borough, particularly where congestion occurs.

For journeys that extend beyond the Borough boundary, we will work closely with partner organisations such as Network Rail, bus and train operating companies, Essex County Council, Rochford, Castle Point and Thurrock Council, to develop a coordinated and consistent approach to reducing carbon emissions from these longer distance trips.

We will reduce the energy consumption and introduce renewable energy into transport installations, for example by installing more energy efficient street lighting and traffic signals, details of which will be included in our Streetscape Manual SPD3 as it is reviewed to ensure a consistent approach is adopted across the Borough. We will also encourage the use of low carbon emission vehicles (electric, bio-fuel) and continue to support and further develop the EValu8 project which encourages the implementation of electric charging points. This will be supported by our emerging Development Management DPD, which will encourage the provision of such facilities wherever practical and feasible.

In the shorter term, we will look to reduce vulnerability to the transport network from flooding and extreme weather events by delivering specific adaptation improvements. These will be prioritised along key routes that are also within Flood Risk Zone 3 in order to minimise economic disruption.

To ensure that vulnerability to climate change impacts on the transport network are minimised in the longer-term, we will integrate climate change adaptation considerations into the design of all new transport schemes, including through the maintenance regime and sustainable drainage systems.

We will also work with Network Rail to ensure that climate change vulnerability is reduced along the rail network within the Borough, particularly in relation to landslip of the railway embankment and cuttings. We will also monitor further landslips along the cliffs that may damage the highway or rail network.

We will continue to improve the provision of information regarding sustainable travel options through Ideas in Motion and by the further development and promotion of technological advances regarding real time travel information and smart ticketing.

FOCUS AREA SIX

ADAPTING TO CLIMATE CHANGE AND ENHANCING BIODIVERSITY

Vision

We will take local actions that will enhance both the natural and historic environment of Southend on Sea and ensure that we adopt a proactive response to pressing environmental issues. We will play our part in tackling the global issue of climate change and promote a more sustainable future for our residents, communities and businesses in the process. .

Aspirations

- To create the 'Greenest Borough' in the East of England.
- To protect and enhance Southend on Sea's natural environment and biodiversity (including natural resources)
- To take local actions that will help tackle the global issue of climate change.

2020 Goals

Climate Adaptation
- Consider adaptation in all future policies and strategies.
- Understand the risks climate change poses.
- Become a signatory to Climate Local.

Climate Mitigation
- Reduce carbon emissions throughout the Borough.
- Ensure the planning process includes mitigation actions.
- Address the risks of flooding.

Natural Environment
- Create more green spaces and enhance biodiversity.
- Promote associated health and well-being benefits.
- Manage the nature reserves in the Borough.

Biodiversity
- Set Biodiversity Targets in line with the Post-2010 Biodiversity Framework.
- Work closely with the third sector to support local biodiversity.
- Explore opportunities under the EU fund Life + (and other grants).

Waste & Recycling
- Reduce the amount of waste being deposited into Landfill.
- Increase the amount of waste being recycled.
- Adhere to national and European targets.

Overview

Some degree of climate change is inevitable because of past and present carbon emissions. Even with strong international action to curb emissions, global temperatures still have a fifty percent chance of rising above 2 °C by the end of the century. In England temperatures are, on average, between 0.5-1 °C higher than they were in the 1970s. Sea levels have risen by an average of 3 mm each year in recent decades, and could increase by 12-76 cm by the end of the century (compared to 1990 levels).

Climate change is likely to have a significant impact on the health and well-being of the population in the East of England. The table below identifies how a changing climate will impact upon the region.

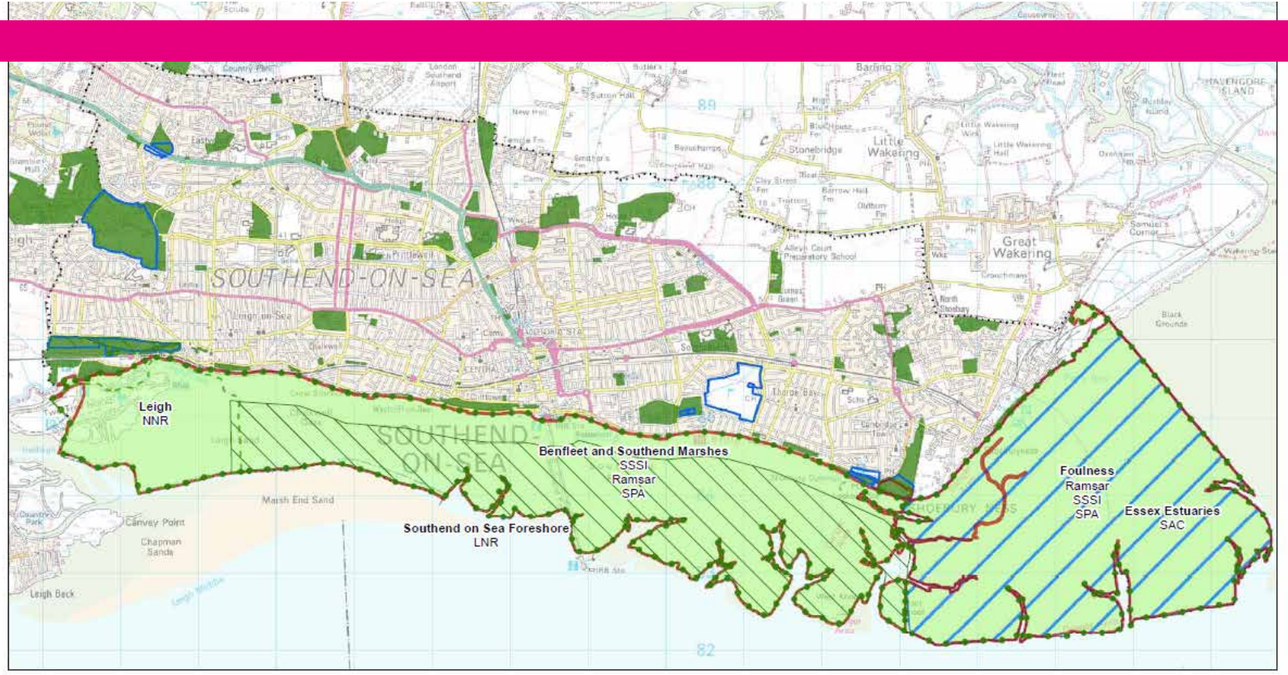
Increase in average summer temperature	Decrease in summer rainfall	Increased winter rainfall	Sea level rise
• Increased heat stress • Heat related deaths • Risks to infrastructure of buildings, utilities and the transport system • Risks to biodiversity and the natural environment • Risks to water sucurity	• Reduced stream flow and water quality • Increased drought • Decrease in water resources exacerbated by potential increase ind emand • Subsidence • Decreased crop yields	• Increased risk to people, property and the environment from flooding • Risk to urban drainage • Severe disruption to transport and the national infrastructure	• Greater risk of coastal erosion and flood-ing affecting coastal communities and infrastructure

Extreme weather events already cause damage and disruption. Around two thousand people across the UK died as a result of the 2003 heatwave. Insured losses from flooding and severe weather events have cost an average £1.5 billion per year over the past twenty years. In 2007 widespread flooding affected 55,000 homes, killed 13 people and cost the economy £3.2 billion. Events such as these are likely to become more frequent and severe as the climate changes.

As one of the driest areas in the UK, water resourcing issues are also of concern locally, particularly as summer temperatures are predicted to increase and summer rainfall is expected to decrease. The Essex Thames Gateway Water Cycle Scoping Study 2009 identifies South Essex as not being self-sufficient in relation to water resources and over the last 25 years has been dependent on the transfer of water from other areas.

In very dry years there has been a supply and demand deficit in the Thames Gateway South Essex area, meaning there are insufficient resources to meet peak demand. Integrating water efficiency measures into developments will help to address these water resourcing issues and our planning policies (Development Management Development Plan Document) are looking to address this.

Adapting and preparing for climate change today in many instances will reduce the impact of future costs and damages, and enable organisations and individuals to take advantage of potential opportunities.



Map 1 - Open Space and Protected Sites

Areas within the Borough of Southend that have Local, National or European Protection

Legend

- Parks and Open Spaces
- National Nature Reserve (NNR)
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Local Nature Reserve (LNR)
- Ramsar
- Local Wildlife Site
- Southend Boundary

N

0 1,000 2,000 Meters

Green Spaces in Southend

Growing evidence shows that access to the natural environment improves health and well-being, prevents disease and helps people recover from illness. Experiencing nature in the outdoors can also help tackle obesity, coronary heart disease and mental health problems. It is therefore essential that 'green' spaces in Southend are enhanced whenever possible and protected from a changing climate.

Although predominantly an urban area, the Borough does have a number of protected sites including sites of special scientific interest (SSSI), local wildlife sites, local nature reserves, national nature reserves, special areas of conservation (SAC), special protection areas (SPA) and Ramsar.

There are also a number of parks, green spaces and open spaces, all of which support local biodiversity. Some of these sites are located within the marine environment and are detailed on the map above.

What we've done

Southend has been rated the second 'greenest' place to live in the UK. It scored 28 out of a maximum of 30 points in the UK Vitality Index 2013 – a national health check of every large town and city outside of London. The indicators measured in the study carried out by property consultant Lambert Smith Hampton, were recycling levels, energy consumption and carbon emissions. The study highlights Southend as a leading UK town in terms of its environmental credentials and through this Strategy we will aim to continuously improve the town's environmental performance and promote a sustainable future for our residents, businesses and communities.

Our adopted Core Strategy DPD includes strategic planning policies and objectives to ensure all new development, including transport infrastructure contributes to economic, social, physical and environmental regeneration in a sustainable way. This will be achieved through, inter alia, making best use of previously developed land; applying a sequential approach to the location and siting of development – particularly having regard to minimising the use of greenfield land, avoiding or appropriately mitigating flood risk, reducing the need to travel; including appropriate measures in design, layout, operation and materials to achieve a reduction in the use of resources and avoidance of flood risk, or where a residual risk remain, the provision of measures to mitigate that risk. It also seeks to ensure that development proposals incorporate sustainable urban drainage systems (SUDS) to mitigate the increase in surface water run-off.

In 2008 Southend on Sea Borough Council signed the Nottingham Declaration on Climate Change to signal our commitment to acting as a community leader on the pressing issue of climate change. When the Council approved this Strategy it also signed up to the Local Government Association's Climate Local – the successor to the Nottingham Declaration – which supports local authorities in the following ways:

- Provides a platform owned and led by councils to promote activity of climate change and demonstrate leadership locally and nationally.
- Supports local authorities to share good practice and identify other authorities undertaking similar initiatives and encourage joint working and the sharing of experience and ideas.
- Provides practical tools and advice to councils on climate change issues.
- Raises the profile of carbon reduction and adaptation nationally.

Climate Mitigation Priorities

We have already undertaken a Local Climate Impact Profile, which helped the Council to identify five key areas to target that would help to positively address the future impacts of climate change throughout the Borough. The findings are published below.

1. Taking a strategic approach to land use planning – for example to (i) ensure that new buildings and infrastructure are sited in areas that minimise exposure to flood risk, do not increase flood risk to others, and do not create a legacy of flood defence or water supply costs; (ii) manage competing pressures on land – urban, natural and agricultural – in response to a changing climate; (iii) enhance green space, including employing urban greening techniques such as green walls and roofs, where effective in the design of towns and cities to help manage surface water drainage and cope with rising temperatures and heat-waves; and (iv) ensure design solutions that maximise the use of sustainable and renewable resources in the construction of development and resource and energy conservation (including water) in developments.

2. Providing local infrastructure (energy, water, transport, waste and communications) – to ensure it can cope with rising temperatures; it is resilient to potential increases in certain extreme weather events, such as storms, floods and droughts; and it takes account of changing patterns of consumer demand in areas such as energy and water use, travel and consumption.

3. Designing and renovating buildings – to ensure they can cope with rising temperatures and floods and minimise water use through appropriate use of construction materials and and water efficiency measures through better design.

4. Managing natural resources sustainably – by using water more efficiently; improving and extending ecological networks so that species can adapt and move as the climate changes; and making space for water along rivers and the coast.

5. Effective emergency planning - by making better use of weather forecasts to anticipate extreme weather events more effectively; creating plans that reduce impact on and ensure continuation of care for the most vulnerable groups in society during heat-waves and floods; and developing business continuity plans based on high-quality climate risk information so that businesses can cope better with disruptions to their supply chains and damage to their assets.

Flood Risk Management

Climate change is having effects on the flood risk in Southend in two important ways. World-wide, sea levels are rising as global warming leads to the melting of huge quantities of polar ice, and also by thermal expansion of the warming water in the oceans. This rise in sea level leads to reduced "freeboard" in the sea defence structures protecting the town and, as a result, increased annual risk of overtopping of the walls during extreme weather and surge events.

Secondly, the trend towards increased rainfall during winter is leading to greater risk of surface and groundwater flooding as the maximum capacity of sewers is more frequently exceeded, and water table levels rise with the increasing precipitation. The Council is working on a number of strategic plans to deal with this two fold increase in the risk of flooding.

To counter the increased risks of tidal flooding, the Council is working to develop a "Coastal Strategy" which will be the outcome of an intensive examination of the Borough's coastal flood defences and coast protection assets. With Environment Agency support, this strategy will identify the most cost effective way of improving the coastal defence structures of the town into the future, to ensure that the optimum Standard of Protection is provided at all times, in the face of sea level rise and deterioration of the existing walls. The total cost of this work is currently estimated to be of the order of £500 million, over the course of the next century. This cost highlights the need to gain Environment Agency approval and support to implement the strategy into the future.

We are also developing a "Local Flood Risk Management Strategy" in line with recent legislation, which will identify the areas in the town which may be vulnerable to flooding from surface water and ordinary watercourses. Cost effective methods of reducing the risks to these areas, in partnership with the Environment Agency and Anglian Water Services, will be developed through this strategy. The Environment Agency will also be involved in funding a proportion of the cost of the work to be carried out by the Council arising from this strategy.

Other studies and reports are required for informing the EU of the risks faced from all kinds of flooding and these are underway locally, nationally and Europe-wide.

Our adopted Core Strategy DPD seeks to ensure that development proposals contribute to the creation of a high quality, sustainable urban environment that enhances and complements the natural and built environment assets of Southend. This will be achieved in a number of ways, including by ensuring design solutions maximise the use of sustainable and renewable resources in the construction of development and resource and energy conservation (including water) in development.

Flood Risk Management Continued

The Council's emerging Development Management Development Plan Document provides the policy approach for low carbon development and the efficient use of resources. It recognises that in order to secure effective and efficient sustainable development that minimises local contributions to, and the impact of, climate change, and the depletion of non-renewable resources, development proposals should seek to incorporate water conservation measures.

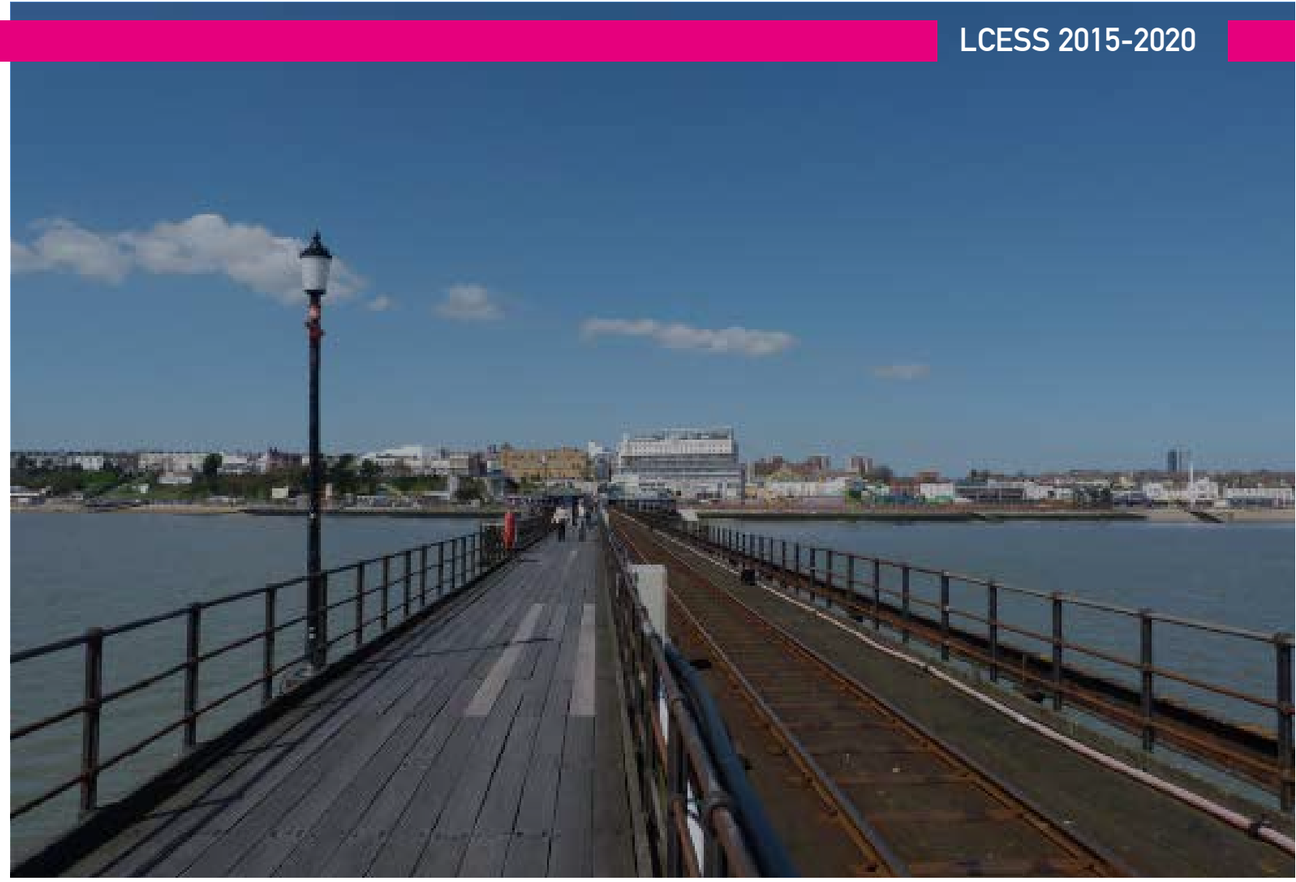
In regard to water efficiency it identifies a local need for measures to be integrated into new developments to take account of local water resourcing issues and once adopted will provide the planning policy framework to ensure that new development incorporates water efficient design measures that limit internal water consumption to 105 litres per person per day (110 litres when including external water consumption). Such measures could include the use of water efficient fittings, appliances and water recycling systems such as grey water and rainwater harvesting.

Biodiversity

Southend-on-Sea Borough Council has had a long-term relationship with the wildlife charity Essex Wildlife Trust. The partnership culminated in the employment of a partnership post in 2008, which is responsible for delivering environmental projects in the Borough. Projects to date have included the delivery of the Belfairs Woodland Centre, the annual Avocet Watch on Two Tree Island and regular updates of the Biodiversity Action Plan. The partnership between the Council and the Trust has also led to Essex Wildlife Trust taking over the management of Gunners Park in Shoeburyness.

The UK Biodiversity Action Plan has been succeeded by the UK Post-2010 Biodiversity Framework as a result of a change in strategic thinking. This framework demonstrates how the UK achieves the Biodiversity Targets and identifies the activities required. The next step is to identify the requirements of the local authority with regards to achieving Biodiversity Targets.

Further research is required to develop the new report and ensure its value as a resource. In May 2013 the first 'State of Nature' report was published for the UK as a collaboration between the 25 UK conservation and research organisations. The aim of this report was to produce an authoritative assessment of the changing fortunes of nature in the UK by focusing on species. This report will form the basis of actions to be undertaken in Southend-on-Sea.



Coppicing in Belfairs Nature Reserve

Coppicing is the sustainable practice of extracting timber from a woodland; it is a method of forestry composed of stools (the stump left after cutting) that produce coppice shoots as a main crop. The shoots are cut and harvested and the stool allowed to regrow. Belfairs Nature Reserve has been in virtually continuous coppicing since it was purchased in the 1930s.

Belfairs Park Wood has recently had coppicing introduced and in 2012/2013 this role was taken on by Essex Wildlife Trust. The coppicing is undertaken for conservation and is an important part of managing the woodland for wildlife. The timber that is removed is generally used locally or sold. Essex Wildlife Trust processes the timber they coppice for fire wood and also produce woodland products for sale. The income is used to offset the cost of managing the woodland.

The Council utilises the timber from Belfairs Nature Reserve for rights of way furniture, fencing, chainsaw artwork and interpretation that is used across the Borough. Timber from the coppicing programme was also used in the restoration of the Prittlewell Priory.

Waste and Recycling

Waste management and recycling in the UK are driven by three key pieces of European legislation: the Waste Framework Directive; the Landfill Directive; and the Packaging and Packaging Waste Directive. Each of these has slightly different target areas:

- The Waste Framework Directive – commits national governments to recycling or re-using 50% of household waste by 2020
- The Landfill Directive – sets progressive targets to reduce the amount of 'biodegradable municipal waste' being sent to landfill (to 35% of the 1995 level by 2020)
- Packaging and Packaging Waste Directive – requires the recovery of 60% of all packaging waste since 2008.

In addition, European legislation is also underpinned by achieving national recycling targets of 50% by 2020. In 2014 an EU legislative proposal put forward a number of increased targets including:

- Recycling and preparing for re-use of municipal waste to be increased to 70 % by 2030;
- Recycling and preparing for re-use of packaging waste to be increased to 80 % by 2030, with material-specific targets set to gradually increase between 2020 and 2030 (to reach 90 % for paper by 2025 and 60% for plastics, 80% for wood, 90% of ferrous metal, aluminium and glass by the end of 2030);
- Phasing out landfilling by 2025 for recyclable (including plastics, paper, metals, glass and bio-waste) waste in non-hazardous waste landfills – corresponding to a maximum landfilling rate of 25%;
- Measures aimed at reducing food waste generation by 30% by 2025;

The new targets would, if brought into effect, update those already in force across the EU under the three existing directives.

Southend Borough Council has, with the help of residents, increased recycling and re-use rates year on year since 2002/3 when only 17.5% of waste generated by households in the Borough was recycled or re-used. In 2013/14 a rate of over 52% was achieved, the highest level achieved both through increased efforts by residents to recycle and an ever expanding range of types of materials that could be recycled or re-used locally.

THE WASTE CHALLENGE AND THE WASTE SOLUTION

Waste management, both nationally and in Essex, has historically been based around waste being deposited into landfill. However, this can create its own environmental problems, through the loss of valuable raw materials that could be recycled and biodegradable materials that can potentially decompose and release climate changing gases such as methane.

Landfill has also become an increasing expensive option for handling waste due to the Landfill Tax that is applied to each tonne of waste deposited in landfill. The cost per tonne associated with the Tax has risen steadily up until a ceiling in 2014/15, to get this into context the Landfill Tax costs Southend Borough Council around an extra £300,000 per year for the same amounts of waste being deposited. A further challenge is that local landfill provision will disappear of the next few years as the sites become full and/or their licence to operate expires.

The 'waste solution' for meeting this challenge has involved working with Essex County Council to secure a £100.9 million waste infrastructure grant to construct a Mechanical and Biological Treatment (MBT) plant at Courtauld Road, Basildon. The MBT plant will process black bag (residual) waste and through a mechanical and biological process extracts recyclables (around 15% of the material processed is extracted) by reducing the mass of the waste (there is a 33% reduction in water through evaporation and drying) and reducing the biodegradability of the waste to produce a biologically stabilised material that meets legislation. The end product, that can be screened to produce a predominantly shredded plastic material, can either be used as a potential fuel to generate energy or in the worst case scenario, if a market cannot be found, can be landfilled as a stabilised material but as a fraction of the amount that was initially delivered to the plant.

Southend and Essex Councils are working together to produce a new replacement Joint Waste Local Plan. The Waste Local Plan will set out the vision, objectives and spatial strategy for dealing with waste in the Plan area up until 2032. It identifies locations for the provisions of waste management sites. It also sets out the key development management policies that waste planning applications will be assessed against.

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Join us on our journey to a low carbon and more sustainable future.

Energy Security Select Committee

Matthew Morris

Woodfuel Development Manager (Kent Downs AONB Unit)

Biography

Matthew is an environmental specialist with consultancy experience in energy efficiency, sustainability, carbon reduction, renewable energy, biomass heating, wood fuels, rural economy and protected landscapes. He is currently focusing on biomass heating and is a contract holder with KCC, currently working at the Kent Downs AONB Unit as the Woodfuel Development Manager.

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Energy Security Select Committee

Hearing 5

Tuesday 15th December 2015

Witness Guide for Members

Below are suggested themes and questions. They have been provided in advance to the witnesses to allow them to prepare for the types of issues that Members may be interested to explore. All Members are welcome to ask these questions or pose additional ones to the witnesses via the Committee Chairman.

Themes and Questions

Matthew Morris, Woodfuel Development Manager, Kent Downs AONB Unit

- Please introduce yourself and provide an outline of the main roles and responsibilities that your post involves.
- Please discuss the Kent Downs AONB Wood-Fuel Pathfinder.
- Please discuss biomass heating for schools.
- In your view, what are the benefits and challenges of this initiative?
- In your opinion, what other energy sources can provide energy efficiency in local schools?
- In your view, what are the benefits and challenges associated with the usage of fossil fuels to produce energy?
- In your view, in what ways can KCC engage with local communities in order to promote energy security?
- What, in your view, can Kent County Council do to promote energy security across Kent?
- Are there any other issues that you would like to raise with the Committee?

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econergy

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FEASIBILITY REPORT

Kent Downs AONB Wood-fuel Pathfinder

BIOMASS HEATING FOR SCHOOLS

Report on technical and financial feasibility of biomass heating for rural school clusters

EXECUTIVE SUMMARY

Kent County Council

KENT DOWNS Area of Outstanding Natural Beauty

Forestry Commission

"Investing in your future"
Crossborder cooperation programme
2007-2013 Part-financed by the European Union
(European Regional Development Fund)

Executive Summary

Kent Downs Area of Outstanding Natural Beauty (AONB) has partnered with Kent County Council (KCC) and the Forestry Commission (FC) to support the continued deployment of biomass heating in schools with the aim of stimulating demand for locally produced biomass fuels, reducing CO_2 emissions, supporting local job creation and realising woodland management benefits.

To date biomass heating systems have been installed in seven schools in Kent, generally on larger sites ranging from 150 kW to 660 kW. The new the Renewable Heat Incentive (RHI) provides a potentially powerful mechanism to support the installation of biomass heating in schools, particularly those in rural areas where most schools are dependent on oil and LPG.

Econergy, a biomass heating specialist (and part of British Gas), were engaged study the practical application and financial viability, in the context of the RHI, of installing biomass heating solutions for primary schools in Kent by looking in detail at twenty sites in five clusters across the County.

Based upon our understanding of the client requirements a set of design principals has been developed to define the practical approach to biomass implementation at KCC schools with key principals including:

- Specification of equipment and detailing system design to maximise efficiency and reliability and minimise emissions; high quality automatic boilers, *always* installed with buffer vessels.
- Sizing biomass systems to meet 100% of the site heating load, but also retaining standby capacity, at least initially, to ensure security of heat supply while biomass systems and local support infrastructure “bed in”.
- Where practical and economically viable wood chip systems should be preferred to maximise local benefits.
- Any disruption to the operation of the school or to local residents must be kept to an absolute minimum both during installation and during operation, particularly with respect to fuel delivery and chimney emissions.
- With these principals in mind a detailed study was made of each of the shortlisted sites, including:
- Initial contract via a remote survey to gather data on the existing heating system, site operation and so on which was then combined with data already provided by KCC.
- A site visit to survey each school focussing in particular on the practical considerations including space for biomass plant, access for fuel deliveries and so on.
- Assessment of heating demand and likely load profile based on a whole building heat loss calculation for each site, analysis of historic oil use and consideration of current boiler plant capacity.
- Selection of an appropriate combination of biomass boiler and thermal store for each site based upon estimated heating load and practical considerations, principally; space, access and availability of three phase power required for wood chip solutions.

Following completion of the site surveys and examination of the data a set of biomass heating product solutions where defined for the range of sites based upon the design principals outlined above, the boiler outputs required and practical constraints observed on site.

The proposed product solution is based upon a range of pre-fabricated self-contained biomass energy centres including biomass boiler, buffer vessel / thermal store and ancillary plant as well as an integral wood fuel store and appropriate wood fuel reception system, with boiler outputs ranging from 38 kW to 199 kW and for both wood chip and wood pellet fuels.

For sites where space and access allow and where three phase power is available (essential for the fuel reception system) a fast auger woodchip reception system is proposed to accept tipped deliveries and load the integral fuel store. For wood pellet sites the standard blown delivery from bulk wood pellet tanker is assumed.

In each case the proposed location of the biomass energy centre has been identified and provisional runs for underground heat mains to existing plant rooms detailed and measured. At each existing plant room a suitable interface including heat exchanger, modulating flow control, heat exchanger and local controls integration (with automatic standby boiler enabled) has been specified to connect to the existing system(s).

For every site where a biomass solution could be practically achieved a complete cost for the installed system has been developed and the expected annual quantity of heat supplied used to estimate fuel costs and RHI income and for each a simple business case has been assembled to calculate the simple payback period (capital investment by savings plus RHI) providing an straightforward measure of financial viability.

The key findings with respect to the biomass solution proposed for each school ranked by simple payback period may be summarised as follows:

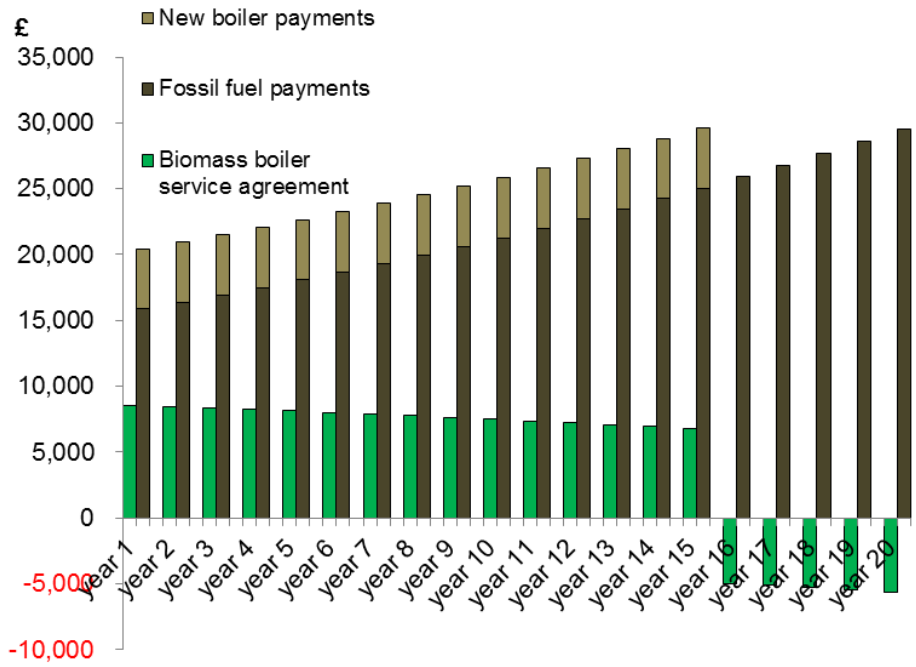
School Name	Payback (yrs)	Fuel type	Recommended biomass boiler size	Expected biomass utilisation level	Total installed cost	£ per kW installed
EIS Shepway	4.6 years	Wood Chip	199	15%	£161,300	£811
Swattenden	5 years	Wood Chip	199	17%	£183,500	£922
Sellindge	5.3 years	Pellet	100	20%	£101,100	£1,011
Lamberhurst	7.9 years	Pellet	100	13%	£106,077	£1,061
West Kent Health Needs Education Service	8.1 years	Wood Chip	100	13%	£120,427	£1,204
West Kingsdown	8.1 years	Wood Chip	150	11%	£164,000	£1,093
Cobham	8.2 years	Pellet	100	15%	£128,400	£1,284
Brabourne	9 years	Pellet	60	14%	£98,800	£1,647
Sevenoaks Weald	10.5 years	Pellet	60	19%	£110,500	£1,842
Challock	10.8 years	Wood Chip	80	12%	£118,777	£1,485
Lyminge	11.4 years	Wood Chip	80	12%	£123,077	£1,538
Crockham Hill	11.6 years	Pellet	80	11%	£113,000	£1,413
Petham	13.2 years	Pellet	80	10%	£106,277	£1,328
Stowting	14.6 years	Pellet	48	16%	£109,184	£2,275
Bodsham	15 years	Pellet	60	12%	£106,500	£1,775
Goudhurst and Kilndown	15.5 years	Pellet	80	8%	£104,877	£1,311
Trottiscliffe	22 years	Pellet	38	10%	£89,200	£2,347
Borden	N/A	Pellet	38	13%	£97,800	£2,574
Shoreham	N/A	Pellet	60	13%	£110,795	£1,847
Seal St Lawrence Cof E	N/A	Pellet	38	7%	£0	£0

From these results a set of key findings has been derived:

- Of the 20 sites surveyed a biomass heating solution was practically achievable for 17, (i.e. 85%) with 16 paying back within the expected 20 lifetime of the installation and thus, in theory at least viable.
- Of these 16 sites where a biomass system might be viable, six (four schools, two others) are suitable for wood chip fuel while the other 10 would need to operate on wood pellet.
- The cost per kW installed for the viable sites ranges from £811/kW up to £2,275/kW.
- The total installed cost for biomass installation for the 16 viable sites ranges from £98,000 to £183,500, the total for all 16 sites (14 schools plus two others) being £1.96 million.
- For the 14 viable primary school sites (ignoring the two non-school sites), excluding the smallest and largest school sites to analyse the 12 more “average” sites;
    - the boiler size range was between 60 and 100 kW;
    - the average installed cost per site was £111,500;
    - the average simple payback period was 10.5 years; and
    - three were suitable for wood chip while nine would need to use wood pellet.

To further establish the viability of the biomass heating solutions proposed for the schools various approaches to funding have been considered and an example of a long term financed energy services funding model tested on a cross section of four sites; chip and pellet with long and short paybacks.

In each case the lifetime cash flow for the financed installation has been developed as per the example below for *Sellindge School, a proposed 100 kW pellet system with 20% utilisation, 100% financed.*



Based upon this study, conclusions have been developed which might reasonably be applied to a wider sample of schools and other similar sites, including:

- By delivering a larger group of projects together in partnership with a selected supply partner(s), or perhaps in a series of phases, the cost and challenges of delivery may be much reduced. In particular we'd expect savings to the cost of; design and feasibility, communication with the schools and stakeholders (e.g. events), processing of planning, buildings regulations and so on, overall supervision of installation on site and so on.

- Existing school boiler rooms will rarely be suitable for the installation of biomass boilers and in the great majority of cases a pre-fabricated biomass energy centre with integral fuel sore is likely to be the most appropriate solution.

- Biomass solutions must include appropriately sized, high quality boiler plant including automatic grate and heat exchanger cleaning and lambda modulating control, and which should *always* be installed with a suitable buffer / accumulator tank and appropriately sited with a properly designed chimney system to ensure reliable, efficient operation and low emissions.

- While existing boilers should be retained to provide emergency standby capacity where possible it is not likely to be cost effective to provide new oil boilers for standby only for primary schools and as such a "biomass only" approach is recommended, with oil boilers being retained in the early years but not replaced when life expired.

- Achieving a higher density of installations in the region will yield benefits in terms of reduced fuel costs (wood pellet in particular), reduced maintenance costs and improved maintenance cover, making subsequent phases of biomass installations easier and more cost effective form the start.

- While biomass heating will not be appropriate for all primary schools it is likely to be possible and feasible for the great majority, this study suggest 85%, of off gas grid sites, and is likely to be suitable for some schools on the gas grid in later phases of deployment.

- The majority of primary schools will require systems of 60 to 100 kW at an average capital cost of about £111.5k and with an average simple payback of 10.5 years.

- Biomass heating for schools may be procured via a suitable financed energy services arrangement provided that a long loan term (15 years) is available and a balanced approach is taken to long term risk sharing (fuel tariff etc).

- In the context of the RHI the installation of biomass heating systems therefore is very much a viable proposition for a large proportion of off-gas grid primary schools and other public buildings and can deliver both running cost savings and substantial CO2 emissions reduction.

We therefore recommend that KCC implement a relatively rapid programme to roll out biomass heating across its estate, perhaps entailing:

- Pilot implementation by installing biomass heating for a set of four of the sites included in this study representing a range of scales and technology solutions (i.e. wood chip, pellet, small and larger) by end 2012 to refine the technical, commercial and regulator / stakeholder approach solution for a large scale roll out and provide sample sites to support the roll out.

- At the same time it would be worth reviewing KCC's entire property portfolio so that prime biomass heating sites with the most rapid paybacks are identified as soon as possible. As part of this process plans for a mass roll out programme, including securing sign offs and selection of an appropriate procurement mechanism, should be initiated to ensure that KCC is in a better position to benefit from the RHI and reduced running costs.

- Complete mass roll out of biomass at KCC sites, in phases from late 2012, complete by April 2014.

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Energy Security Select Committee

Joseph Grice

Energy Capital Projects Manager (Islington London Borough Council)

Biography

Joe joined Islington Energy Services in 2015 and manages the Capital Projects team. He is responsible for overseeing all capital projects developed by the wider Energy Services team, including decentralised energy, insulation and other energy efficiency installations.

Prior to working at Islington, Joe studied for an MEng in Materials Engineering at the University of Sheffield. Between 2009 and 2014 he was the Energy Manager for Guy's and St Thomas' NHS Foundation Trust. This role involved managing the operation, maintenance and performance of the district heating and cooling systems within two of the UK's largest hospital buildings. After leaving the Foundation Trust, he was a Senior Technical Manager in the RHI team at Ofgem.

Joe has responsibility for the overall management of the phase II expansion of Bunhill Heat and Power, the Council's own district heating network, which involves extracting heat from the London Underground. The work is part of the EU-funded Celsius project, implementing innovative heating and cooling technologies.

Joe is a Member of the Energy Institute, a Chartered Energy Engineer, and a Chartered Energy Manager.

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Energy Security Select Committee

Hearing 5

Tuesday 15th December 2015

Witness Guide for Members

Below are suggested themes and questions. They have been provided in advance to the witnesses to allow them to prepare for the types of issues that Members may be interested to explore. All Members are welcome to ask these questions or pose additional ones to the witnesses via the Committee Chairman.

Themes and Questions

Joseph Grice, Energy Capital Project Manager, London Borough of Islington

- Please introduce yourself and provide an outline of the main roles and responsibilities of your post.
- Please discuss Islington's Combined Heat and Power network. How does it work?
- What are the financial and organisational aspects of this project?
- Why did Islington choose this path?
- What were the opportunities and challenges associated with this initiative?
- In your view, to what extent can such an initiative be replicated in Kent?
- What other energy generation technologies has Islington considered, if any?
- Please discuss future projects, if any, that Islington is working on in the area of energy security.
- In what ways does the London Borough of Islington engage with local communities in order to promote energy security?
- What, in your view, can Kent County Council do to promote energy security across Kent?

- Are there any other issues that you would like to raise with the Committee?