

## **ENERGY AND CARBON UPDATE**

### **1 Purpose**

- 1.1 To update Environment and Living Scrutiny members on developments with energy reduction and carbon reduction measures instigated by AVDC's Sustainability Team since the last report was delivered four years ago on 14 November 2012.

### **2 Recommendations**

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| 2.1 That committee members consider the information provided within the report and review current progress and developments. |
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### **3 Executive summary**

- 3.1 This report is to update the Committee on the Council's progress made on carbon, renewables and energy in the four years since the previous report of 14 November 2012. It sets out the Council's achievements in terms of savings delivered, discusses the commencement of the Council's consultancy deliveries through its trading arm Novae Consulting Limited and later Incgen Ltd and makes an introduction to the Bucks Energy Strategy (see appendix 1).
- 3.2 The report comes at a point at which UK Government has reaffirmed its commitment to carbon reduction targets and will launch new plans to address weakness in transport and the housing sector low-carbon policy in the New Year – Local Government will have an important role to play in these areas.

### **4 Supporting information**

- 4.1 The report follows the agreed format of an agreement made in November 2009 for a joint carbon and energy report.
- 4.2 Carbon reduction aimed at reducing the effects of climate change has two major strands, specifically Mitigation and Adaptation
- 4.3 Adaptation (often termed climate resilience) concerns itself with adapting to a world with a changing climate. This area of work tends to look at what actions can take place in a pre-planned process to allow for business as usual in a future with more frequently occurring and extreme weather conditions and events caused by the increases in global average temperatures. More detail on adaptation is provided at appendix 2.
- 4.4 Mitigation is the act of installing measures and changing behaviours towards reducing energy use and consequently the amount of carbon emitted.
- 4.5 **Adaptation**
- 4.6 An updated piece of work is awaiting completion in early January 2017 following research and interviews taking place in August and September 2016. This was conducted for us by a University of Manchester student at no cost and will cover the period from the point at which the last LCLIP ended (March 2008) to date.
- 4.7 **Mitigation:**
- 4.8 Although Central Government policy has recently stalled, the role of energy efficiency continues to be recognised, "reducing emissions and energy bills, improving competitiveness and asset values for business and make buildings

more suitable for low-carbon heating in future” – *Committee on Climate Change October 2016.*

- 4.9 The table below sets out energy reduction/generation projects delivered by class leading AVDC, demonstrating in-house activity in this area since the last report:

<b>Title</b>	<b>Project</b>	<b>Year</b>	<b>Capex Cost</b>	<b>£ Saved/ Year</b>	<b>Payback (Years)</b>
Gateway	10kWp Solar PV Array	2012	£20,500	£2,150	9.53
Gateway	Fan Coil Unit Controls	2013	£19,030	£7,592	2.51
Pembroke Road	Thin Client	2013	£4,339	£2,821	1.54
Walton Street MSCP	Relamping with LED	2013	£52,617	£23,386	2.26
Hampden House MSCP	Relamping with LED and controls	2014	£51,223	£18,364	2.79
Gateway Street	De-stratification fans	2012	£3,582	£716	5.00
Gateway Toilets	LED Relamping	2014	£1,672	£307	5.45
Gateway Stairwells	LED Relamping and sensors	2014	£2,524	£615	4.1
Gateway and High Street	Flange and Valve Insulation	2014	£1,434	£727	1.97
Aqua Vale	Additional Pool Cover	2014	£9,166	£4,075	2.25
Alfred Rose and Prebendal	Cavity Wall Insulation	2014	£2,073	£621	3.34
Gateway and High Street	Boiler optimisation	2014	£12,950	£6,077	2.13
Upper Hundreds	LED Relamping	2014	£41,174	£12,301	3.35

Hawkslade	10kWp Solar PV Array	2014	£12,656	£1,902	6.65
Gateway Server Room	Cooling Controls	2015	£1,500	£700	2.1
Hawkslade and Southcourt	LED Relamping	2015	£8,596	£2,222	3.87
Gateway Street and Oculus	LED Relamping and controls	2015	£24,658	£5,840	4.22
Friars Croft MSCP Pt1 and Pt2	LED re-lamping, dimming and controls	2016	£106,200	£24,239	4.31
AVDC 5# Half Hourly metered sites	Reduced Supply Capacity in line with site demand	2016	£0	£9,881	Excluded: immediate payback
<b>Total:</b>		<b>4 year period</b>	<b>£375,894</b>	<b>£115,036</b>	<b>Averaged 3.27 years</b>

- 4.10 Taken alongside other measures installed and managed since 2008, the savings to the council amount to over two million kilogrammes of carbon dioxide reduced alongside a financial saving this year (2016) of over £200,000 (after taking account of payback periods, life expectancy of the measures and assets installed and ignoring all \*maintenance savings –\*which in and of themselves deliver us significant cost savings). This represents class-leading cost reduction performance within the public sector.
- 4.11 The Council operates a Salix Finance Plan setting out the next four years of projects. Salix is a loan agreed by the Council in 2006 which the Council matched to create a ring-fenced fund for energy efficiency measures amounting to £280,000. A regularly updated four year plan ensures that projects can be managed proactively and avoids the need for reactive responses to plant failure and asset management. Available spend in any one year depends on committed project spend. The fund is managed nationally by our *Not for Profit* partner Salix Finance. The plan adjusts to meet the needs of the Council and includes a large number of projects; some of the larger of which are set out below (full details at appendix 4):

<b>Project</b>	<b>Planned Implementation</b>
Waitrose MSCP	Relamping to LED and controls
High Street Offices	Relamping to LED and controls

Gateway	Filter controls to Air Handling. Re-lamping to corridors (West Wing)
Gateway	Relamping and controls to East wing fluorescent lighting
Pembroke Road Waste Depot	Redevelopment to include potential for renewable energy generation, energy storage, heat and light controls and EV infrastructure
Theatre	Relamping and Controls
Hawkslade Community Centre	Battery storage install to match site demand and PV electricity generation

#### 4.12 **Carbon**

4.13 The Council renewed its Carbon Management Plan in 2014, originally produced in 2008. The plan has been updated to include new targets following the exceeding of the 22% Council agreed 5 year reduction target (to 2013) in 4 years,, a full one year ahead of schedule.

4.14 The Councils target now stands at a demanding carbon reduction of 2.5% per annum. This places the Council in line with the UK Governments 34% target to be met by 2020 and amongst the top Public Sector performers in its field. The Council's 2016 data is not yet available but the carbon reduction rate achieved as at April 2015 stands at 27% from the 2008 baseline (see independent NEF report at appendix 2). This is a total of 5,681.3 tonnes of CO<sub>2</sub> emitted. A reduction from the 2008 baseline of 2,072 tonnes or a little over 2 million kg of CO<sub>2</sub>. See page 4 of Appendix 3.

#### 4.15 **Electric Vehicle Infrastructure**

4.16 Following the achievement of dual vehicle chargers installed in 2012 at no cost to the Council, a bid was submitted for funding a further 3 *Rapid* chargers. This bid was won and three additional chargers were installed in the Gateway (beside the post room) in June 2015. These have allowed the Council to increase use and availability of its electric car fleet and streamline use with re-charge to 80% capacity can now delivered in 30 minutes (as opposed to 4 hours with standard chargers). This has led to a further improvement on the Council's saving in the first 12 months (2014/15) of £90,000 on car travel implemented by the Sustainability Team. The second year savings for the scheme against the same baseline year are showing a saving of £104,254.

#### 4.17 **External Advisory Work**

4.18 Over the past 3 years the Sustainability Team have helped a number of external organisations and businesses to reduce their energy costs/carbon emissions. This has also generated an income to the Council of £26,000.

4.19 The table below sets out the consultancy work completed to external organisations:

<b>Project</b>	<b>Company</b>	<b>Date</b>
<b>Built Estate Energy Audit</b>	SBDC	2013
<b>County-wide EV infrastructure project</b>	Bucks CC	2014
<b>Car fleet presentation</b>	Bucks CC	2015
<b>ESOS</b>	Orange Genie Group Ltd	2015
<b>PV Assessment</b>	Maidstone BC	2015
<b>ESOS</b>	Bottomline Technologies (UK) Ltd	2015
<b>Car Fleet presentation</b>	Enterprise and Welsh Councils	27 Apr 2016
<b>Car fleet presentation</b>	Adur and Worthing Council	6 Oct 2016
<b>Presentation to Fleet Innovators Forum at Portcullis House, Houses of Parliament</b>	Energy Savings Trust and Enterprise	3 Nov 2016

#### 4.20 **Bucks Energy Strategy**

4.21 In concert with the County and other Districts in Bucks, a Bucks-wide Energy Strategy has been consulted upon and produced by Bucks County Council as a County Document. It is currently making its way through the various County and District Council Committee processes. A copy of the most up to date document is attached at Appendices 1a and 1b. This is dated 2015 due to staff changes at Bucks CC.

#### 4.22 **Bucks Affordable Warmth Strategy**

4.23 The Bucks Affordable Warmth Strategy is currently under review and re-write following 10 years since the current strategy document was delivered.

4.24 The Council continues to work in partnership with NEF in Milton Keynes beyond the conclusion of the Government's Green Deal. Work includes assistance with necessary fuel poverty activities, dissemination of advice, grants and loans to householders living in hard to treat properties (for example with no cavity wall).

4.25 At the time of the last housing stock condition survey 6,317 (10.9%) private sector households in the Vale were living in fuel poverty (the equivalent national average at the time was 11.1%). However rates were above average in some areas, particularly in the private rented sector (14.4%) and for inter-war housing (21.2%).

- 4.26 At The National Energy Foundation (NEF) carry out fuel poverty and affordable warmth work on the Council's behalf at a cost of £8,500 p.a.
- 4.27 NEF operate a free telephone advice line and carry out outreach work and training of front line staff to raise awareness of fuel poverty and energy efficiency, as well as signposting callers to external grant assistance (e.g. energy company grants) for insulation and boiler replacement. They also bid for funding for special projects and have recently managed the 'Better Housing Better Health' scheme targeted at people who's health is at risk from cold or damp homes, having been awarded £400,000 from the British Gas Energy Trust.
- 4.28 The work of NEF has a huge overlap with our statutory private sector housing enforcement work and our housing grants programme. Environmental Health officers routinely direct customers to NEF and also use them as a source of expertise for advice on fuel poverty where they come across vulnerable tenants during housing interventions.
- 4.29 Excess cold hazards in housing are one of the most common housing enforcement issues we deal with and one where the risk to health is most significant. The Private Sector Housing Regeneration Policy which was approved by Cabinet in February 2016 references the roles of NEF and the Council to fulfil our fuel poverty obligations. This is also referenced in the Bucks Affordable Warmth Strategy (currently still in draft).
- 4.30 If the Council did not fund the NEF provision we would need to have some provision in-house at AVDC to provide some of the services they offer and I don't believe we currently have the necessary resources to do so. At £8,500 per annum, NEF providing this service is a very cost effective way of dealing with fuel poverty, insulation enquiries and ensuring that we are able to offer available schemes as and when they come to the energy market for the benefit of our residents.
- 4.31 **Home Energy Conservation Act - HECA (1995)**
- 4.32 The HECA Act of 1995 requires Local Authorities to produce a report every two years on the state of home energy efficiency measures in its area. The act recognises Council's unique position in being able to improve the energy efficiency of the housing stock (owner occupied, private and social) in its area.
- 4.33 **Awards and Recognition**
- The Sustainability work of the Council and the staff have been recognised through awards and other areas over the past 4 years. Most recently, the Sustainability Team took Runner Up (second place) in the National Energy Manager Magazine's Energy Champions Award (UK) held at the Excel, London on 17<sup>th</sup> November 2016 and have also been shortlisted for the UK LGC Awards 2017 in the category of Driving Efficiency through Technology to be announced on 8 March 2017 in London.
- 4.34 The Sustainability Team was commended in its submission for the National Sustainability FM Awards in November 2012
- 4.35 Alan Asbury of the Sustainability Team was awarded Sustainability Manager of the Year in December 2012 by the National Public Sector Sustainability Journal.
- 4.36 The Sustainability Team achieved the Silver Award for the 10<sup>th</sup> National Energy Savings Trust Fleet Hero Award in November 2015 Relating to our

work on reducing fleet emissions and costs, AVDC are now recognised and captured as one of only 10 UK public and private sector case studies in the “Getting to Grips with Grey Fleet” Best Practice document. This was commissioned by the Energy Saving Trust and published in July 2016 by the UK fleet trade body; the British Vehicle Rental and Leasing Association (BVRLA).

#### **4.37 Future**

- 4.38 It is recognised that energy storage will play a pivotal role as the nations smart grid develops. This calls for linkages at scale with solar farms and electric, hydrogen fuel cell and storage and low carbon infrastructure. Domestic property interest is leading to further product innovation.
- 4.39 As the Council’s business to business trading arm Incgen expands, there should be further opportunities to provide energy related services to businesses. This includes an offering of “demand side response” which allows companies to trade surplus power when the grid demands.
- 4.40 The Council’s relationship with Enterprise Rent a Car is developing towards a partnership to look at the roll out of an Aylesbury centric car club scheme.
- 4.41 The planned Council Estate refit technologies proposed and allocated Salix funding are set out in the table at 4.18 above. Further discussions are also planned with Aylesbury Vale Estates to assess opportunities for the estate in the future.

### **5 Reasons for Recommendation**

- 5.1 The report serves as an update to members on activity delivered in the four years since the last report.

### **6 Resource implications**

There are no direct additional resource implications relating to this report other than those already funded. All in house energy efficiency measures are funded through the Salix ring fenced energy fund which is a 0% loan from Government matched by the Council. This fund has already recycled 4 times and continues to deliver proven savings of over £240,000 per annum.

Contact Officer  
Background Documents

Alan Asbury 01296 585112  
Bucks Energy Strategy; Carbon Management Plan

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# Buckinghamshire Energy Strategy

June 2015

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**South Bucks**  
District Council



**Chiltern**  
District Council





# Foreword

The way we generate and use energy is entering a critical period at both the national and local levels. As the cost of heating and lighting our homes increases and concerns of energy security grow, we must also act to reduce our impact on the climate and continue to protect Buckinghamshire's special environment.

It is not, however, enough to only address these risks. There are significant benefits to be gained by improving energy efficiency of both domestic and commercial premises and increasing local generation where communities are the primary beneficiaries – delivering these benefits is central to our Energy Strategy.

Changing the way energy is generated and used in Buckinghamshire is a big challenge and requires long term commitment if it is to be achieved. Our Strategy therefore sets out a 25 year vision and framework for action, which together provide the certainty and flexibility which will be necessary. These are supported by the first Action Plan which sets out detailed priorities for the initial 5 years of delivery.

Achieving our vision will not be easy and we must continue to work together if we are to deliver on our ambition. This Strategy has emerged from a collaborative process between Buckinghamshire's five councils and a wide range of business, community, education and individual stakeholders. As we move from planning to delivery, the support and expertise of this stakeholder group will prove all the more valuable.

We hope that this Strategy will both lead and catalyse action to ensure that the communities of Buckinghamshire benefit from their energy resources.



**Nick Naylor**

Cabinet Member for Environment, South Bucks District Council

Board Member of the Buckinghamshire and Milton Keynes Natural Environment Partnership

**Warren Whyte**

Cabinet Member for Planning and Environment, Buckinghamshire County Council

# Summary

Buckinghamshire generates little of its own energy – there are no major power stations in the county and there has been a relatively low uptake of renewable generation projects. As a result, there is an outflow of financial support to those areas which are utilising their energy resources. At the same time, we are seeing communities across the country benefiting from the generation of their own energy.

Doing nothing is no longer an option.

To tackle this, the local authorities in Buckinghamshire in partnership with the Buckinghamshire and Milton Keynes Natural Environment Partnership (the NEP) have led the development of this Energy Strategy. Supporting this has been a wide range of stakeholders from community groups, businesses, charities as well as other partnerships such the Local Enterprise Partnership (LEP). Together we have created a Strategy with the aims of improving energy efficiency of both domestic and commercial premises as well as delivering greater local generation with the benefits this produces being received by the community.

In order to do this, our Energy Strategy focuses action in four key areas:

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- Improving the energy efficiency of public, commercial, residential and community buildings.
- Increasing generation which benefits local communities
- Ensuring communities influence and benefit from projects.
- Growing the local green economy.

The development of energy resources takes time and needs long term certainty if the necessary investment is to be attracted. This Strategy therefore has a 25 year lifetime within which detailed action planning is conducted in 5 year cycles.

Action Plan 1 (2015-20) sets out our priorities and targets for the first 5 year planning cycle and can be found [here](#).

# Developing our Strategy

The District Councils of Buckinghamshire in partnership with the County Council commissioned the development of this countywide Energy Strategy. This started in early 2014 with the development of an Energy Baseline which provided a description of the baseline against which the Strategy was developed. This document also made the case for the county using a novel approach to strategy development based on the benefits that energy generation projects can bring, irrespective of the technology used. By the use of various development scenarios, feedback was sought at a series of four stakeholder workshops. This has resulted in a process of strategy development which has been highly consultative with wide ranging stakeholder input. This includes the public and private sectors and community groups.

Within this process, the first question asked of stakeholders was if the strategy should maintain a 'business as usual' approach or go further. The focus on the use of energy based projects to deliver social, economic and environmental benefits for the people of Buckinghamshire unified stakeholders and led to their unanimous rejection of a 'business as usual' approach. Taking this approach will also go some way to redressing the situation in place at the time of the consultation whereby the people of Buckinghamshire are exporters of money through their energy bills and general taxation to support energy schemes elsewhere in the country.

During the development of this strategy it was identified that a 25 year view was required and for it not be based on short term issues. This reinforces the Buckinghamshire Energy Strategy as a high level document. As a result, the Strategy creates a long term framework within which projects will be developed but it contains no specific targets or actions. This does not mean that the Energy Strategy is devoid of these essential elements. Instead, these are contained in separate but linked Actions Plans each covering a 5 year period. The Action Plans will set out short to medium term actions and targets and a clearly identified route to delivery.

While development of the Buckinghamshire Energy Strategy has led to wide ranging support, there is still the potential for tension when specific projects are considered for development, especially if they involve contentious technologies such as large scale wind or shale gas extraction. This Strategy does not however advocate one technology over another. Instead it aims to ensure that the benefits which can be generated are a key consideration in the projects which are brought forward.

It is also important to recognise that the Strategy operates within the existing planning system and the generation of benefits alone doesn't guarantee planning permission or final development. There are a broad range of factors which interact to determine the success of an energy project – both under planning regulations and in its commercial and technical feasibility – and so whilst the Strategy is benefits led, we must be pragmatic as to its real world application.

# A Shared Vision for Buckinghamshire

The Energy Baseline describes the existing low level of energy generation in Buckinghamshire. It also describes some of the benefits which can be achieved by working with communities to increase the uptake of generation projects. The work to transform the way Buckinghamshire generates energy is based on a shared vision of what our relationship with energy should look like:

***“Communities are central to the future of energy generation in Buckinghamshire and are the key beneficiaries of the development of energy resources.”***

We will know we have achieved our vision when we can all say the following and it won't be unusual or extraordinary, but simply the way things are in Buckinghamshire:

- My community is involved in decision making about new energy generation opportunities.
- I know public sector energy generation is protecting funding for frontline services.
- I have seen the benefits from local energy schemes in my community.
- Local businesses are delivering the goods and services which help provide my energy.
- The local economy is benefiting from more inward investment.
- We all use energy carefully and have learnt how to use even less.

## Our Mission

In order to achieve this vision, we need to describe the work which is needed to achieve it – this is our Mission:

***“To deliver significant, long term benefits to the people of Buckinghamshire by increasing local energy generation and reducing energy demand.”***

The mission establishes the key mechanism by which we are to achieve our vision and allows us to decide whether a proposed project would help achieve this. There are two central criteria for this:

1. Will the project deliver benefits to the people of Buckinghamshire?
2. Will the project help to increase local energy generation, or reduce energy demand?

If a proposed project can answer “yes” to both of these questions, then it will contribute to the achievement of the Vision. We will then always look for projects that deliver best value in terms of the benefits they deliver.

# Background and Baseline

The situation regarding energy generation that was in place in Buckinghamshire at the time this Energy Strategy was developed is described in the [Energy Baseline](#).

The Energy Baseline identifies that small scale, local energy generation using new technology is a growing reality across the UK which cannot be ignored. Generating energy at point of use is also amongst the most cost effective and efficient methods of generation and reduces the need for grid enhancements, thereby keeping installation costs down. Implementing more efficient ways to use energy can also help to reduce the impacts of rising energy costs on the lives of Buckinghamshire people.

The baseline also summarises the energy resources available in the county and whilst these are not the most abundant in the country, they are sufficient to support generation projects in many areas. In particular the baseline highlights the potential for energy projects using wind, solar and wood fuel. Local energy generation brings a unique set of financial and social benefits, as set out in the [Baseline](#). These come from a range of options for local people to become involved in energy projects including project ownership. Energy generation schemes can also deliver significant environmental benefits, such as the creation of biodiversity enhancing habitats, as well as reducing the carbon intensity of energy generation.

## Strategy Principles

As outlined in the Baseline, Buckinghamshire has notable energy resources which could be used to generate both more energy in the county and, importantly, a range of social, economic and environmental benefits.

Our approach to developing these energy resources has two key principles:

- It is benefits led – delivering economic, social and environmental benefits to the communities of Buckinghamshire is central to the development of energy resources.
- It is technology agnostic – we are not defining which technologies should be used.

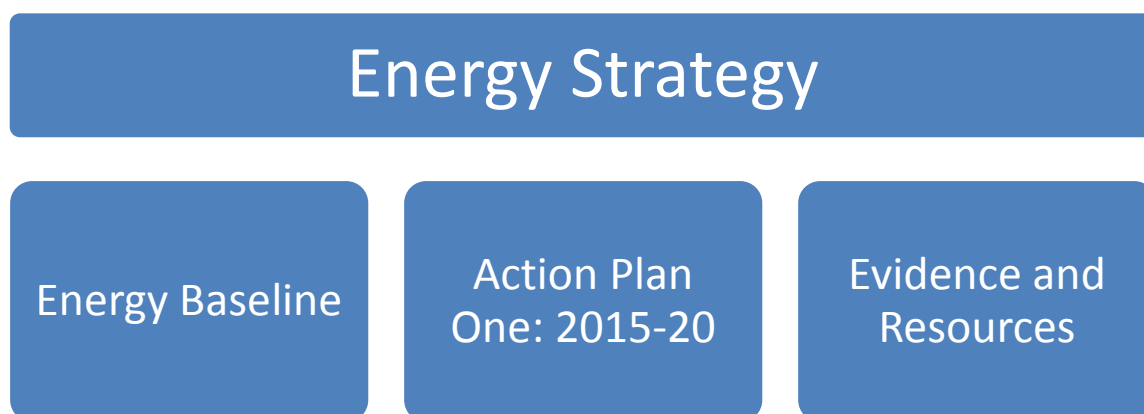
Together these position the Energy Strategy as one which is flexible in how it can be applied, allowing local conditions and needs to be accounted for, but is very clear on the need for benefits to be delivered to communities.

Where energy generation schemes are proposed, we want the surrounding communities to not only be consulted with, but given opportunities to be involved in the projects. This could be through involvement in the financing of schemes, part ownership or influence of the design, layout or scale of the development.

Where communities are involved in such ways, we can both create schemes which communities genuinely feel a sense of ownership of and ones which do not create the opposition which can often arise when schemes are imposed on communities and not developed with them.

## Strategy Structure

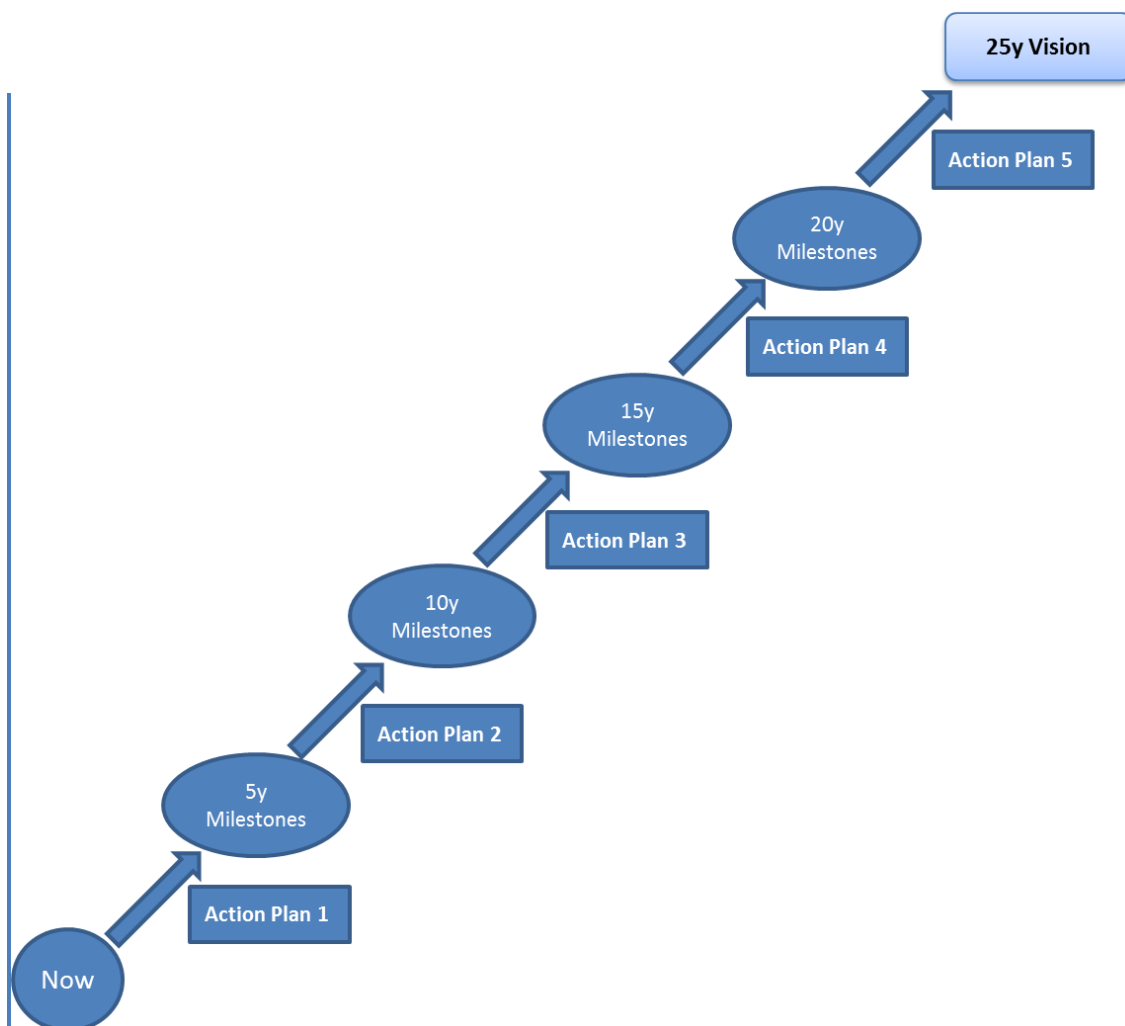
The Energy Strategy forms the core of a number of linked documents. The Energy Baseline provides the background against which the Buckinghamshire Energy Strategy was developed; Action Plans describe the targets that will be met and the actions by which they will be achieved and additional evidence and resources (e.g. case studies and briefings) will help inform and support this work.



# A Framework for Delivery

In addition to establishing the vision for energy in Buckinghamshire, this document sets out the framework within which future actions will be planned, monitored and reported upon. It is not realistic or practical to plan all actions over a 25 year period as many aspects and policies will evolve and challenges not yet considered will arise throughout this time.

The Strategy therefore establishes five, 5 year planning periods through which the milestones for the next phase are confirmed, and key areas of work for their achievement planned. These milestones are likely to change during this period, but it is important to establish a pathway early on in the knowledge that this will need to be reviewed and updated as progress is made.



Year	Milestone Statement
2020	There is significant and widespread community interest in energy generation and many schemes are being proposed or developed. Local authorities work with communities to develop jointly owned projects. Energy efficiency improvements to residential properties are common place. Local businesses have started to grow due to increased local demand for energy related goods and services.
2025	Community groups are regularly developing energy generation projects and the benefits derived attract significant positive attention. Local authority generation has significantly increased – income protects frontline services. Energy efficiency improvements are commonplace in business premises as are energy generation projects. Local education and training establishments have increased energy related content in response to calls from local businesses. Important energy research and development projects are taking place.
2030	Community generation schemes are regularly being delivered across the county. Energy efficiency measures now mainly address hard to treat buildings which have longer payback periods. Local businesses work closely with education and training establishments to ensure skills demands are met. Local businesses are funding energy developments and commercial services relating to energy delivery are growing. Nationally significant research and development work is conducted in Buckinghamshire. Buckinghamshire is increasingly seen as a place to invest.
2035	Community generation continues to grow with the benefits derived seen as essential to providing community based services. Energy efficiency is a mature business sector with significant exports to other counties, including the export of related training and education.
2040	Community energy underpins many local services. Buckinghamshire leads the development of many new energy technologies and research and development is a significant part of the local economy. The energy goods and services sector leads national practice.
Vision	Communities are central to the future of energy generation in Buckinghamshire and are the key beneficiaries of the development of energy resources.



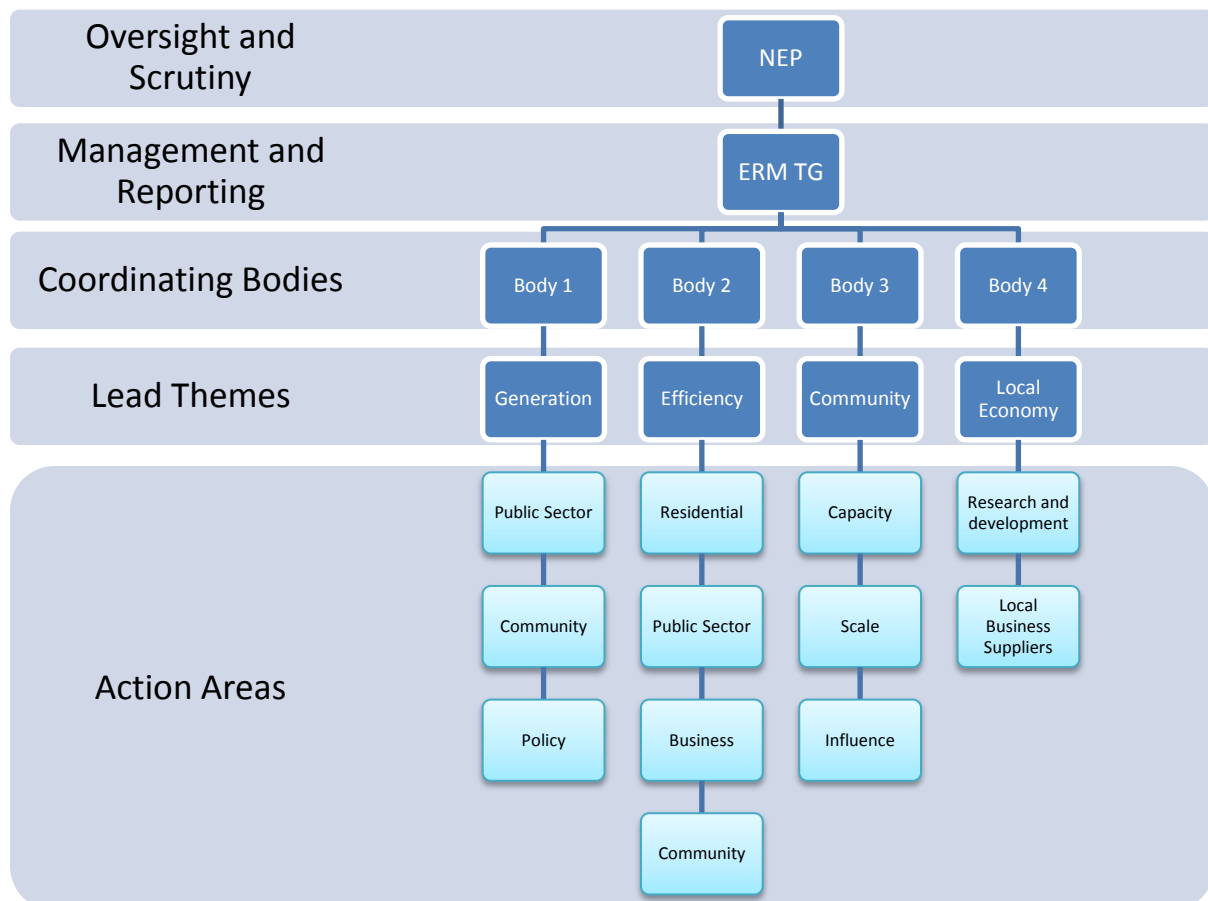
# The Governance of the Buckinghamshire Energy Strategy

In order to ensure the achievement of our vision, it is important that its work is overseen and coordinated in a robust but flexible manner. It is also important that the body providing this oversight and scrutiny has a strategic view of the issues which will influence and determine the success of the Strategy.

For these reasons, the Natural Environment Partnership for Buckinghamshire & Milton Keynes (the NEP) will provide the strategic direction for the Energy Strategy. The NEP’s own Strategic Priorities overlap with the aims of the Energy Strategy and this work will therefore sit well within the NEP’s wider work programme.

As part of this strategic role, the NEP will provide oversight to the Energy and Resource Management Task Group (ERM TG) – a group which includes officers from the four District councils and the County Council, along with a range of other supporting bodies. This group will oversee the day to day management and delivery of the Action Plans and will report and be accountable to the NEP.

The action which will deliver the vision will draw in many different groups and organisations. In order for these to coordinate effectively, they are arranged into complimentary themes, although there will be overlapping activities. These themes will each be coordinated by an appropriate body or partnership.



# Themes

There are many ways in which the Energy Strategy will be changing the relationship between people and energy. In order to structure and coordinate our activity, actions have been arranged into four broad Themes. These do not operate in isolation and there will be important areas of overlap between them. The four themes of the Strategy are described below.

## Efficiency

Our Energy Strategy recognises that reducing demand for energy and increasing the energy efficiency are key areas of work.

Improvements in energy efficiency need to reach all parts of the county and will broadly target groups in 4 buildings uses – residential properties, businesses, public sector bodies and community groups. There are already a range of projects and organisations which help to deliver improvements in energy efficiency and we will work to support these wherever possible.

## Generation

When work began on the Energy Strategy, Buckinghamshire generated little of its own energy – there are no fossil fuel power stations within the county and renewable energy sources currently account for 3% of the county's energy needs. As set out in the Energy Baseline, this means many opportunities are not being realised and our economy is more vulnerable to increasing and volatile energy prices.

In this area of focus, efforts are made to increase the amount of energy generation in the county and through this deliver benefits to communities. This is done both actively, by local authorities developing proposals on their estate i.e. PV on schools roofs, and by creating the conditions to enable community groups to develop their own schemes.

To support and enable greater local generation, we also need to ensure that local planning policy and guidance supports appropriate generation schemes.

## Community

At the heart of our Energy Strategy are the people and communities of Buckinghamshire – it is they who need to have a clear voice in determining which technologies are used, where they are installed and at what scale. In order to deliver this, we need a thriving network of community groups which have the capacity to deliver their ambitions.

In this area of focus, we will work to find innovative ways to grow and support community groups across the county, so that they can effectively lead the change they wish to see. As the network of community groups grows, work to build capacity to deliver projects will become increasingly important.

## Economy

Many of the benefits which can be derived from energy generation and improvements in efficiency have an economic aspect. The economy is not only a beneficiary of this action, but a key ingredient in achieving our vision.

In order to deliver the greatest benefits to the people of Buckinghamshire from energy based projects, the range of goods and services which are needed should be delivered by local businesses. This will also mean that the provision of the knowledge and skills which support these businesses needs to be present, and as demand for the services increases, so will the need for supporting education and training.

These economic benefits are not limited to the scaling up of existing business sectors in the area. Involvement in the research and development of new technologies would also bring benefits, such as further employment opportunities. This along with the early deployment of new technologies, and will complete the transformation of Buckinghamshire to an area which is leading on energy across sectors.

Work in this area will therefore help to create the demand for goods and services and promote the use of local suppliers. We will also work with training and educational providers to ensure that the required skills are available and deliverable locally. We also need to ensure that the conditions for advanced research and development work are present, and that Buckinghamshire is shown to businesses to be an enthusiastic partner for exploring new technologies.

# Benefits and Outcomes

It is a principle of the Energy Strategy that it is nearby communities which should benefit from local energy generation schemes. Ensuring that the desired benefits are articulated clearly is important if we are to ensure these are maximised at every opportunity.

Some of the benefits which we are aiming to deliver are summarised below. However this is not an exhaustive list of benefits, as innovative schemes can deliver new and unforeseen benefits which would not be excluded from our vision.

It is also important to highlight that benefits for which a monetary value cannot (or cannot easily or accurately) be assigned are not excluded either – ultimately, benefits which communities wish to see are those which need to be delivered.

- **Income for community groups** – the return on investment from energy generation can provide a long term income source for community groups, which can help to support the services they provide.
- **Reduced energy bills** – there are a variety of finance and ownership models for generation schemes, but in common is their ability to reduce energy bills for those connected to the generation.
- **Protection of the natural environment** – increasing renewable energy generation can reduce the environmental impact of energy generation, both locally and nationally, for example by reducing carbon emissions.
- **Enhancing and creating new habitats** – the development of energy resources often provides opportunities for habitat protection and biodiversity enhancements, such as planting wildflower meadows or hedgerows.
- **Represented Communities** – criticism of energy schemes can arise where local concerns have not been reflected in the final design. Ensuring communities are represented early on in the development process will help to deliver appropriate and sought after schemes.
- **Protection of public services** – reducing operational costs and providing new income opportunities are important ways that public bodies can address increasing demand for services and reductions to budgets.
- **Contributing to climate change mitigation** – reducing carbon emissions from energy generation is a key way in which the effects of climate change can be reduced.
- **Protection from volatile energy prices** – generating more of our own energy helps to reduce dependency on international energy markets where prices can fluctuate significantly and security of supply can become difficult.
- **Community cohesion** – collectively developing and owning a generation project can help to create new networks and connections between individuals and groups, thereby strengthening a community.

- **Employment** – as demand for energy related goods and services grow, local businesses will have an opportunity to expand to meet rising demand, creating sustainable jobs in the process.
- **Resilience** – increasing the amount of energy generated locally – both at a community and household scale – helps to increase the resilience of communities. This is both through the financial benefits and in reducing dependency on national energy infrastructure which can be vulnerable to extreme weather.

## Conclusion

The approach taken in this Strategy and the means by which it has been developed is innovative and represents a model for others to follow. The true value of the Buckinghamshire Energy Strategy, however, will come from the social, economic and environmental benefits that it will deliver to the people of the county now and into the future.

To achieve this outcome requires everyone within Buckinghamshire to understand that these benefits are real, can be delivered across the county, and can make a positive difference to everyone. It will also require a re-think of the attitude towards the energy projects that will need to be considered to be the source of these benefits. This needs to be but within a framework where local people are more deeply involved in what is developed and where.

This will be an exciting journey. Be part of it and help to make it a success!

To find out what work is currently being undertaken to deliver this Strategy, please refer to the most recent Action Plan, available [here](#).

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# Action Plan One: 2015-2020

## Buckinghamshire Energy Strategy

June 2015

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**South Bucks**  
District Council



**Chiltern**  
District Council



# Introduction

Buckinghamshire's Energy Strategy establishes the framework for delivering our shared vision for energy in Buckinghamshire. To allow the delivery of our vision to evolve over its 25 year lifetime, it has been divided into five planning periods of 5 years each. Each period will build upon previous progress, and by considering the changing opportunities and challenges, establish new focus areas, opportunities and challenges to be tackled.

As this is the first Action Plan, our starting point is reflected in the Energy Baseline and the Activity Baseline. These provide examples of projects which are already contributing to the achievement of the vision and which will continue to do.

This Action Plan sets out the key areas for action, the main challenges which we must respond to and the way we will monitor our progress. The detailed action plan at the end of this document contains the targets for the various projects and areas of work which contribute to the delivery Energy Strategy.

Some of these projects are already well established and operate independently of the Strategy, but are included here to encourage further coordination and collaboration of efforts. Other projects and areas of work will be new and are being started as a direct result of the Energy Strategy and are therefore strongly directed by its Vision. This split between directly controlled projects and those more broadly associated with the Strategy is a result of the collaborative and cross-organisational approach taken to its development.

## Focus Areas

The energy strategy captures a wide range of existing and new areas of work which overlap and strengthen each other – these are the themes which are set out in the Strategy:

- **Generation** – increasing the amount of energy generated in Buckinghamshire, including through community projects, and supporting this through engagement in planning policy consultations.
- **Efficiency** – improving energy efficiency levels across the county, particularly by addressing buildings in four sectors – residential, public sector, business and community owned.
- **Community** – creating a thriving network of community groups with the capacity, scale and influence to deliver significant benefits from energy generation schemes.
- **Local Economy** – increasing the demand for energy related goods and services, with local businesses able to meet the demand.

Within each theme, there are several focus areas for action. These do not limit or form the extent of activity and there are many important areas of work which will contribute to the achievement of our Energy Vision. They do however represent a central pillar of work which needs to be undertaken to advance each theme.

## Generation

Increasing the amount of energy generated in Buckinghamshire is the primary way benefits are to be delivered as part of this strategy. In this first Action Plan, there are three key aspects to this:

- **Public Sector** – local authorities in Buckinghamshire have a key role to play in leading the greater development of energy resources, particularly by making greater use of their estates. Not only will this help to secure public services, but the development of energy generation in public buildings (such as libraries and schools) helps to demonstrate the benefits and real world application of the technologies close to communities, and can help to inspire further action. We will therefore bring forward programmes of work to further develop energy resources in public ownership and use these to catalyse further action.
- **Community** - delivering significant benefits to the people of Buckinghamshire is a central part of this strategy, and this cannot be achieved without substantial community involvement. We therefore need to grow the level of community involvement in energy generation with the aim of community groups developing their own energy generation schemes. Our work will be to support and grow more community groups, so that they have the capacity, capability and opportunity to deliver their own projects.
- **Policy** - whether a scheme is being proposed by a community organisation, a local authority or a private developer, all must gain planning permission. In order to encourage greater development of energy resources, we need to ensure that appropriate and viable schemes are not unnecessarily refused permission and that the policies which determine these decisions support such developments. We will therefore fully engage in the processes of creating planning policy and its associated guidance with the aim of creating planning policy which encourages the development of energy resources.

## Efficiency

In order to balance both sides of the energy equation, we cannot only increase local generation but must also improve energy efficiency across Buckinghamshire. Much of this work is already underway and is being conducted by many organisations involved in the development of this strategy. Work to improve energy efficiency tends to focus on buildings by use or occupier and so this theme has four main areas of activity.

- **Residential** – improving the energy efficiency of homes and thereby reducing energy bills, is one of the most direct ways to deliver benefits to the people of Buckinghamshire. The local authorities of Buckinghamshire are already supporting this through community energy champions and a Community Interest Company (CIC) involved in delivering residential efficiency measures.
- **Business** – large businesses are typically well placed to delivery energy efficiency measures, with specialist teams and financial resources to draw upon. Ensuring that small and medium enterprises (SMEs) can also improve their efficiency is an important way the local economy can be supported, both through the provision of expertise and financial support.



- **Community** – improving the efficiency of buildings which are used by the community has a very important role to play. Not only does this help to reduce the operating costs and therefore serve the community more economically, but it also demonstrates the real world benefits which can be achieved.
- **Public Sector** – Buckinghamshire’s local authorities have been improving their energy efficiency for a number of already and will continue to do so along with other public bodies. Further details of the work being undertaken are available in the Action Plan.

We will therefore continue our work to improve energy efficiency through a range of organisations and projects, collaborating to ensure the benefits can be maximised across the county.

## Community

The people and communities of Buckinghamshire are central to our Vision – and to achieve this we need community groups which are actively contributing to its achievement.

- **Scale and Capacity:** Whilst there are already a number of active community groups, it is recognised that more are required to achieve the scale of our ambition. Therefore, we will find innovative ways to build a network of community organisations, ensuring that the support necessary for them to grow and become sustainable is available.
- **Influence:** Community groups do not necessarily need to develop their own energy generation schemes to receive benefits from one. Developers are increasingly looking to involve communities in the development process and in such circumstances it is important that these groups can influence proposals and ensure the necessary benefits are derived. The early influence of the community is important in achieving a locally desired development.

## Local Economy:

Buckinghamshire will not fully benefit from greater energy generation and efficiency if the local economy is not involved in achieving this.

- **Local business suppliers:** many businesses in Buckinghamshire are already active in the energy sector, for example installers of energy efficiency measures and renewable energy developers. As this strategy aims to increase the use of such goods and services, there is an opportunity for local businesses to grow as they meet rising demand. This in turn helps to cycle the financial benefits into the wider economy. We will therefore work to ensure local businesses are aware of these opportunities and are supported in accessing the right training and development required to realise them.
- **Research and development:** the development of new energy technologies, particularly around generation and storage, is an increasingly important part of the energy landscape. Whilst many of the technologies may be decades away from large scale deployment, there is significant investment in their development and testing which we are not currently

benefiting from. Attracting this investment would help to position Buckinghamshire as a leader in the energy sector.

- **Business Investment:** In addition to improving the efficiency of their buildings, opportunities for investing in low carbon and renewable technologies is a further way local businesses can generate additional revenue and reduce costs. We will therefore encourage and support businesses to investigate these opportunities.

# Key Challenges

Through the development of the Energy Strategy, significant challenges and barriers to increasing local generation have been highlighted. If we are to deliver our vision, we need to ensure that these are addressed. At the start of this 25 year strategy, we have identified three specific key challenges which we need to address within the first 5 year Action Plan.

## 1. Demand for Action

There is strong demand amongst many in Buckinghamshire for action on energy. However, there are also those who may be ambivalent towards greater development of energy resources or are unaware about the need for action and the benefits which can be delivered. There are also those who, often through a desire to protect the natural environment and landscape of the county, may wish to see little or no development of energy resources in Buckinghamshire.

Understanding the reasons for a lack of such demand from some and the concerns of those who may oppose greater development of energy resources is crucial if this strategy is to be for all the people of Buckinghamshire.

### Our Response

To do this we will work with our energy strategy partners to develop and deliver a coherent and compelling communication strategy, with the aim of raising awareness and interest in energy generation, advocating the benefits which can be delivered and allaying concerns of inappropriate development. We must ensure this is a two way process by listening to and addressing concerns as well as delivering a positive message of the benefits which can be delivered.

## 2. Delivering Appropriate Development

We must acknowledge that energy generation projects have not always been universally welcomed by communities. In part, this can be attributed to a lack of community involvement in the design and development process and the feeling of being imposed upon (i.e. “done to” rather than “done with”) which such an approach can create. However, designs which may be considered unsympathetic to the area also contribute to opposition to further development of energy resources.

Buckinghamshire has extensive areas covered by the Chilterns AONB as well as many other land designations such as SSSI (Site of Special Scientific Interest) and Green Belt to name two, which can constrain or influence what development is appropriate. We must therefore be alert to the full range of factors which determine what is possible as well as appropriate.

### Our Response

We must first acknowledge that *appropriate* development is a subjective matter and we cannot guarantee that all developments will be universally welcomed. The planning system works to balance the impacts and benefits of developments whilst preserving the best of our heritage and we should not try to replicate or replace this system.

Instead, our focus will be in pre-planning application stages, encouraging communities and developers to collaborate early in the development process. Developers are increasingly consulting early on and we will further encourage and facilitate early dialogue between communities and developers, so that concerns and opportunities can be identified and taken into account.

### **3. Capacity**

There are already a number of active community groups in the county which have an interest in energy issues. In order to deliver the scale of change necessary, we need to significantly increase the capacity of community groups in Buckinghamshire to deliver projects and positively influence proposals. This can be done by both supporting existing groups and by helping new groups to form and become operational.

#### **Our Response**

In order to increase the number of active community groups in the county, we will work to identify potential groups and provide the support and guidance they need to overcome the barriers to establishment. We will also look to increasingly support groups who are already working to deliver our vision, ensuring that progress already made continues to be built upon.

# Monitoring our Progress

The progress and success of the Energy Strategy will be measured in two important ways. Firstly, we will monitor the delivery of agreed actions against their deadlines.

Secondly, and arguably more importantly, is the change across a number of measures which characterise the relationship between energy and the people of Buckinghamshire. This is not limited to just the amount of energy generated, but also changes to the efficiency of its use, the level of community activity, the economic value and job creation of the sector as well as the benefits delivered as a result.

The following table sets out potential measures which will show our long term achievement. For some of these data is already available, others will require new reporting mechanisms if they are to be understood and some may not be possible in practise. The further development of a comprehensive monitoring framework also forms part of the action plan.

	Key Measures	2015 Value
<b>Generation</b>	<ul style="list-style-type: none"> <li>Total generation capacity within Buckinghamshire.</li> <li>% of Buckinghamshire’s energy demand met by local generation.</li> <li>% of local generation which comes from renewable sources.</li> </ul>	<ul style="list-style-type: none"> <li>TBC</li> </ul>
<b>Efficiency</b>	<ul style="list-style-type: none"> <li>Average Energy Performance Certificate (EPC) and Display Energy Certificate (DEC) ratings.</li> <li>Value of energy efficiency sector in Buckinghamshire.</li> </ul>	<ul style="list-style-type: none"> <li>TBC</li> </ul>
<b>Community</b>	<ul style="list-style-type: none"> <li>Number of active community groups supporting the Energy Strategy.</li> <li>Income received by community groups from investment / ownership in local generation.</li> </ul>	<ul style="list-style-type: none"> <li>TBC</li> </ul>
<b>Local Economy</b>	<ul style="list-style-type: none"> <li>Value of the energy generation sector in Buckinghamshire.</li> <li>Number of people employed in the energy sector in Buckinghamshire.</li> <li>Investment in energy related research and development projects.</li> </ul>	<ul style="list-style-type: none"> <li>TBC</li> </ul>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>Income received by community groups from investment / ownership in local generation.</li> <li>Area with new biodiversity enhancements.</li> <li>Avoided CO<sub>2</sub> emissions.</li> </ul>	Benefits delivered, in part or in full, by this strategy and so 2015 values equal zero.

## Detailed Action Plan

The following tables set out the range of projects and actions the organisations that have collaborated in the production of the Buckinghamshire Energy Strategy are taking.

This will be regularly updated as new projects are started, existing ones modified and as more organisations join the Strategy. It should also be noted that this is not an exhaustive list of all the work which supports the Energy Strategy – if you are aware of a project which helps to meet our aims or have any suggestions, please contact [energy@buckscc.gov.uk](mailto:energy@buckscc.gov.uk).

Theme: Community				
	Area of work	Organisation / Project	Target	Target Date
Capacity	Establishment of a new mechanism / organisation to lead and accelerate the development of community energy in Buckinghamshire.	ERM TG - supported by all District Councils, County Council, BTVLEP, NEP and others.	Agree the mechanism / organisation which is to be taken forward, considering the local context.	Apr-15
			Secure funding for initial start-up costs.	Jul-15
			Establish the mechanism, with clear aims and objectives and business plan for self-financing.	Dec-15
Scale		New organisation / partnership.	Achieve a network of 20+ community groups actively supporting the aims of the Energy Strategy.	Jun-16
			Network to include 10+ businesses.	Jun-16
Influence			Half of community group network own or have influenced the design of energy generation projects.	Jun-17

## Theme: Generation

	Area of work	Organisation / Project	Target	Target Date
<b>Public Sector</b>	Review of BCC estate for renewable energy generation potential (not restricted to electricity).	BCC / Communities / Community Groups	Complete review of agricultural estate and present findings to relevant BCC boards.	Feb-15
			Proposals for community role in projects to be complete.	Aug-15
			Consult with community groups on potential sites / projects	Oct -15
	Engagement with commercial sector	ERM TG	Raise awareness amongst commercial developers in Buckinghamshire regarding the aims of the Energy Strategy.	Jul -15
	Potential for Energy from Waste (EfW) plant to provide heat to local users	BCC / FCC	Keep the potential to convert EfW plant for heat draw under review.	Ongoing
<b>Policy</b>	Monitoring planning policy and guidance development, responding to represent aims of the Energy Strategy (covering energy generation and efficiency)	ERM TG / BCC	Process for identifying and coordinating responses to consultations established.	Mar-15
			Begin coordination of responses on local plans already under consultation.	
			Monitoring, consulting and responding as appropriate	Ongoing
	Addressing grid capacity limits across Buckinghamshire.	ERM TG / stakeholder group	Begin consulting with DNOs on options / approaches.	Apr-15
<b>Community</b>	Solar noise barriers along M40 corridor	<a href="#">M40 CEG</a> / WDC / LEP	Results of HA Procurement Competition for Innovative Barriers Noise Maps for parts of M40 Chilterns	Apr-15  End 2015

			Pilot scheme details First solar noise barriers installed (subject to HA timetable)	End 2016
	Installation of renewable generation	<a href="#">Low Carbon Chilterns</a>	Installation of renewable generation on community buildings	Ongoing

Theme: Efficiency				
	Area of work	Organisation / Project	Target	Target Date
Residential	Improving energy efficiency in homes using Green Deal and Energy Company Obligation (ECO) funding.			
	Help residents to reduce energy usage and bills.	<a href="#">Community Energy Champions</a> / BCC	Expand the network to 120+ members.	Dec-2015
			Provide further training to enable greater impact.	Dec-2015
			Continue thermal imaging activities.	Ongoing
			Help residents to switch energy suppliers.	Ongoing
	Addressing fuel poverty.	District councils / Registered social landlords (RSL)	Continued engagement with and support for the affordable warmth network.	Ongoing
Use 'super homes' to exemplify the benefits which retrofitted energy efficiency technologies can achieve.				



			Data mining to understand where to target (available) resources (e.g. EPCs)	
<b>Public Sector</b>	Carbon Management Plans and utilisation of Salix loans	Each local authority respectively	BCC – continue to fully utilise Salix loan for energy efficiency improvements across estate.	Ongoing
	Action on social housing energy efficiency	District Councils	Continue to report under the Home Energy Conservation Act (HECA) to DECC on practical and cost effective measures for improving energy efficiency.	Ongoing
<b>Business</b>	Improving efficiency in SMEs	<a href="#">Low Carbon Workspaces</a> (Ngage Solutions, Buckinghamshire Business First)	Secure funding for same or similar projects beyond end of 2015	Dec-15
<b>Community</b>	Improving efficiency in community buildings	<a href="#">Low Carbon Chilterns</a>	Installation of energy efficiency measures in coming buildings	Ongoing

<b>Theme: Local Economy</b>				
	<b>Area of work</b>	<b>Organisation / Project</b>	<b>Target</b>	<b>Target Date</b>
<b>R&amp;D</b>	Using Bucks as a test bed for smart energy projects	BTVLEP	Initiate a smart city project in Buckinghamshire.	2020
<b>Suppliers</b>	Circulating economic benefits by using local suppliers.	BTVLEP, Bucks Business First	Utilise procurement approaches to maximise local multiplier effect.	Ongoing
<b>Skills and training</b>	Helping business to recognise the benefits and value of energy efficiency and generation		Messaging in communication strategy to target businesses. Support provided to businesses to highlight value.	Ongoing
<b>Investment</b>	Helping proposals to attract investment	New community organisation / partnership / BTV LEP	Support for developing proposals to an investment ready state.	March 2016

## Challenges / Other Actions

	Area of work	Organisation / Project	Target	Target Date
<b>Demand for Action</b>	Communications strategy to promote benefits of community energy and energy efficiency.	ERM TG	To be launched with Energy Strategy	Aug-15
	Community Energy Champions	BCC	Expand the network of Energy Champions to 120 Hold training sessions focused on promotion of community energy schemes	Dec-15
<b>Delivering Appropriate Development</b>	Policy engagement	ERM TG	See Generation – Policy. Inform stakeholders of relevant consultations, coordination and sharing of responses.	Mar-15 + Ongoing
	Communication to interested parties - developers and communities	ERM TG	Through communication strategy, advocate benefits of early engagement between communities and developers.  Resource bank of measures / design features which help to mitigate impacts of energy projects.	Apr-15  Sep-15
<b>Capacity</b>	New mechanism / organisations to lead and accelerate growth of community energy.	BCC / Communities / Community Groups	Clarity on the mechanism which is to be taken forward considering the local context.	June-15
			Secure funding for initial start-up costs.	Sept-15
			Establish the mechanism, with clear aims and objectives and business plan for self-financing.	Dec-15
	Development of investment ready proposals.	New community organisation / partnership	Development of three energy generation scheme proposals.	Jul-16
	Identifying sources of funding for generation and/or efficiency projects.	ERM TG / All	Investigate accessing finance from Allowable Solutions framework. Share knowledge or potential funding sources.	Aug-15 Ongoing

<b>Monitoring and measuring</b>	Monitoring and measuring of key characteristics of energy generation and consumption in Buckinghamshire.	ERM TG	Secure data or explanation of unavailable data for first progress report to NEP Board.	Jul-15
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## Appendix 2

### Adaptation

According to the Government's Committee on Climate Change, the Climate Change Act (2008) established a target for the UK to reduce its emissions by at least 80% from 1990 levels by 2050. This target represents an [appropriate UK contribution to global emission reductions](#) consistent with limiting global temperature rise to as little as possible above 2°C

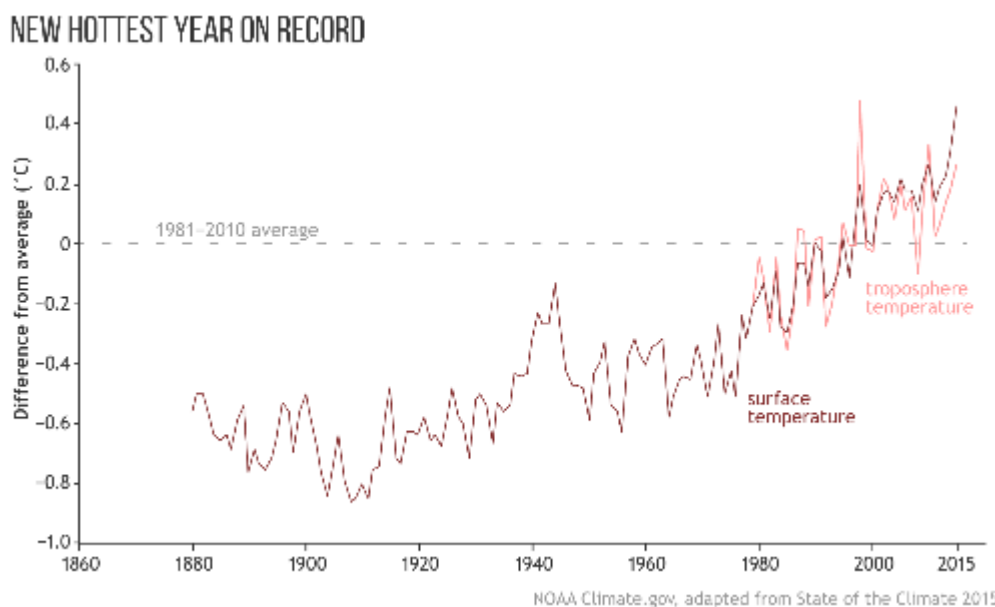
To ensure that regular progress is made towards this long-term target, the Act also established a system of five-yearly carbon budgets, to serve as stepping stones on the way.

The first five carbon budgets, leading to 2032, have been set in law. The UK is currently in the second carbon budget period (2013-17). Meeting the fourth carbon budget (2023-27) will require that emissions be reduced by 50% on 1990 levels in 2025, and meeting the fifth (2028-32) will require that emissions be reduced by 57% on 1990 levels in 2030.

Reference and more detail at: <https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>

The 2015 Paris accord requires the world's average global temperatures to plateau at 1.5C above pre (1750AD) industrial levels.

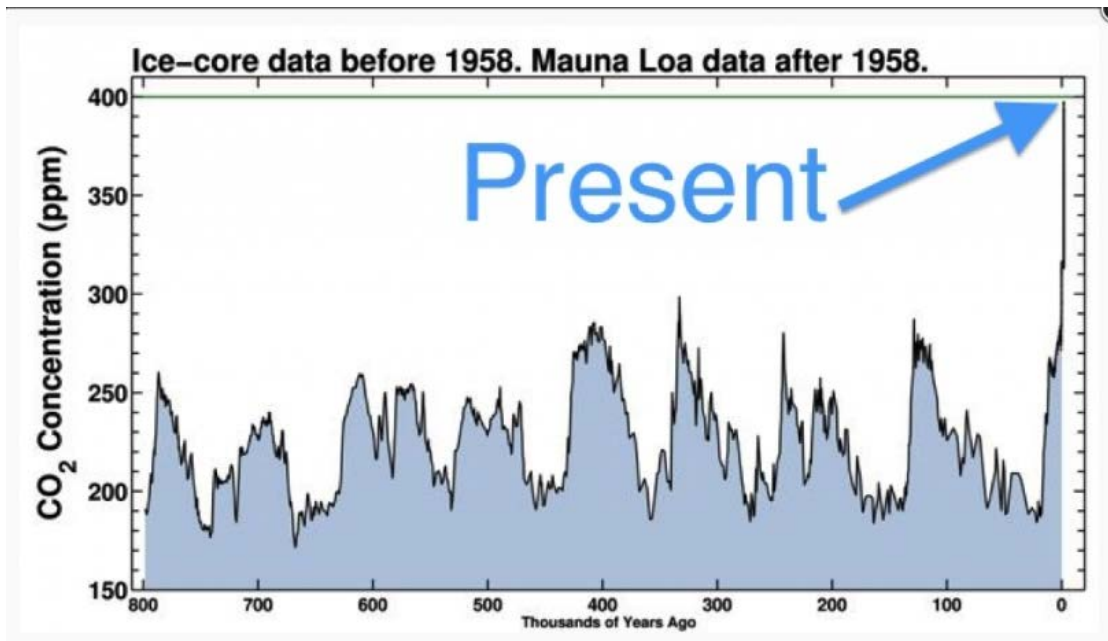
In 2015 it was announced that global average temperatures had already reached 1C above pre industrial levels (see graph at 4.8 below):



<https://www.carbonbrief.org/scientists-confirm-multiple-climate-records-broken-in-2015>

Also in 2015, CO<sub>2</sub> levels in the atmosphere hit 400.8 parts per million, most recently 401.57 (Oct 2016). From ice core data (see graph at 4.11 below), this is the highest figure in over 800,000 years, a time before humans existed.

The first 9 months of 2016 suggest that temperatures will surpass 2015.  
<http://www.bbc.co.uk/news/science-environment-37949877>



<http://www.climatecentral.org/news/the-last-time-co2-was-this-high-humans-didnt-exist-15938>

In the Vale, these conditions tend to focus around flooding but can also involve heat stress, storm damage, ice, snowfall and drought. The Council's focus has centred more on mitigation than adaptation.

The Council was the first district in the UK to produce a Local Climate Impacts Profile (LCLIP) in 2008. This was an 8 year piece of research focussing on assessing extreme weather data for the period, correlating this with archived news and media information for the same periods and then interviewing responsible staff at various organisations (Council, blue light, NHS, rail etc) to establish the costs of having to react to these situations rather than have resilience built in.

An updated piece of work is awaiting completion in early January 2017 following research and interviews taking place in August and September 2016. This was conducted for us by a University of Manchester student at no cost and will cover the period from the point at which the last LCLIP ended (March 2008) to date.



# Carbon dioxide emission analysis 2014/15

**Aylesbury Vale District Council.**

Final Report for year 2014/15 v5

Prepared by:	<b>Viviane Boyd, NEF</b>	Date: 15.10.15
Edited by:	<b>Federico Seguro</b>	Date: 21.10.2015
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## I EXECUTIVE SUMMARY

This report outlines the carbon dioxide emissions resulting from Aylesbury Vale District Council operations for the full financial year 2014/15. Revision of the base year to be 2008/09 with addition of 2007/08 (for information and earlier comparison) was established in last year's report. These emissions have been added upon request of AVDC Sustainability Team Leader.

All emissions are provided in tonnes of Carbon Dioxide (tCO<sub>2</sub>) and utilise the carbon conversion factors defined by DEFRA in "June 2014-environmental reporting guidance and the GHG-conversion-factors web based tool". Please note; this year the carbon emission factor for electricity increased by an average (generation and transmission) of 11% compared to last year 13-14. This had a significant influence over the calculations results. Also note that these emissions are true values and not corrected for weather differences.

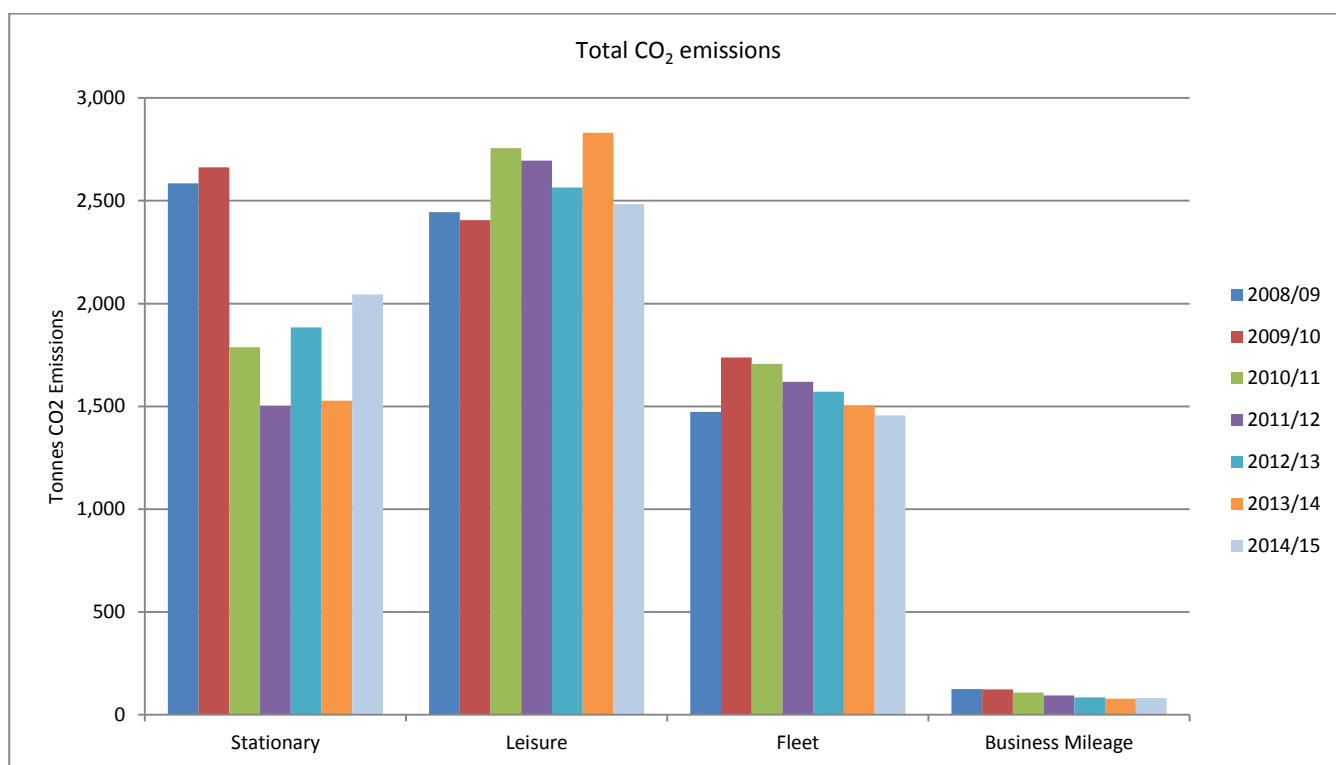
This report covers the council's carbon dioxide emission based on four activity sectors as described below from, 2007/08 to 2014/15:

- Stationary: includes corporate buildings (offices), car parks, community centres, pavilions, toilets and some miscellaneous sites (water fountains etc.)
- Leisure
  - Aqua Vale Centre
  - Swan Pool
  - Waterside Theatre
- Fleet
  - AVDC own fleet
  - SITA Waste vehicles
  - JOC Ground maintenance vehicles
  
- Business Mileage. Staff travelling with their vehicles for business purposes.



**Table 1:** Summary 2014/15 emissions compared against previous years.

Tonnes of CO <sub>2</sub>	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	% change from 07/08	% change from 08/09	% change from 13/14
<b>Stationary</b>	5,205.0	2,584.2	2,662.9	1,787.2	1,501.6	1,884.1	1,527.5	2,056.0	-13%	-20%	35%
<b>Leisure</b>		2,444.0	2,405.1	2,756.7	2,694.7	2,565.1	2,830.1	2,482.8		2%	-12%
<b>Fleet</b>	2548.0	1472.7	1736.9	1707.1	1619.0	1570.4	1503.7	1455.1	-40%	-1%	-3%
<b>Business Mileage</b>		123.9	122.3	107.7	92.7	84.2	77.0	80.9		-35%	5%
<b>TOTAL</b>	<b>7,753.0</b>	<b>6,624.9</b>	<b>6,927.3</b>	<b>6,358.7</b>	<b>5,908.0</b>	<b>6,103.8</b>	<b>5,938.3</b>	<b>6,074.8</b>	<b>-22%</b>	<b>-8%</b>	<b>2%</b>
<b>Saving from renewable</b>						93.93	250.98	393.5			
<b>TOTAL</b>						6,009.9	5,687.3	5,681.3	-27%	-14%	



**Figure 1:** Total CO<sub>2</sub> emission contribution per business activity for 2014/15 compared against previous years.

**Comments:**

AVDC baseline for Carbon emission reporting is 2008-09. In July 2012, 2007/08 total emissions were added to the reporting upon request. Energy data, when available, were retrieved and emission calculations completed according to the DECC methodology. Due to lack of comparability of data in 2007/08 (ie leisure and stationary data lumped together as fleet and business mileage), this has not been included within Figure 1.

Over the past eight years, Aylesbury Vale District council has reduced its total carbon emissions from all sources by 27% compared to 2007-08; this is including carbon offset from renewables/ self-generation of electricity.

Independently, DEFRA annual electricity carbon emission factor for 2014 has increased by an average (generation and transmission) of 11% compared with 2013. This had a significant influence over the calculations results, as reflected in Table 1.

Future reports will use 2012/13 as the Council's new baseline year given changes to carbon reporting requirements and DEFRA changes detailed above, and the fact that this marked the end of the Council's first 5 year Carbon target. This will also assist AVDC Officers in the reporting of recently (2013) agreed AVDC carbon reduction targets of 2.5% per year until 2020.

The Council has achieved a 5.5% reduction over the 2 year period to most recent data (2014/15) which amounts to a Carbon saving of 2.75% per year from this new baseline period. As such, this exceeds the Council's ongoing annual 2.5% target for both years.

It is worthy of note that the carbon emissions from Stationary sources have reduced by 20% since 2008/09 despite a significant increase in floor areas (new Office/ Theatre build /refurbishments) and creation of a new car park.

This has been achieved through a combination of energy efficiency measures in most of its stationary and the installation of renewable technologies where most appropriate.

A large number of sustainable systems have been installed since 2012/13. These are mainly within leisure centres and office blocks and include solar photovoltaic (PV) and thermal panels, air source heat pumps installed at Gateway offices and a Combined Heat and Power unit at the Aqua Vale centre. Within the past year (Oct 14) another set of solar PV panels has been installed at the Hawkslade Community centre (10kWp).

Electricity generated through these units, totalise avoided emissions of 393.51 tCO<sub>2</sub>.

Hence with the inclusion of the renewable elements, AVDC has reached an overall reduction of 27% below 2007-08 level of carbon dioxide emission.

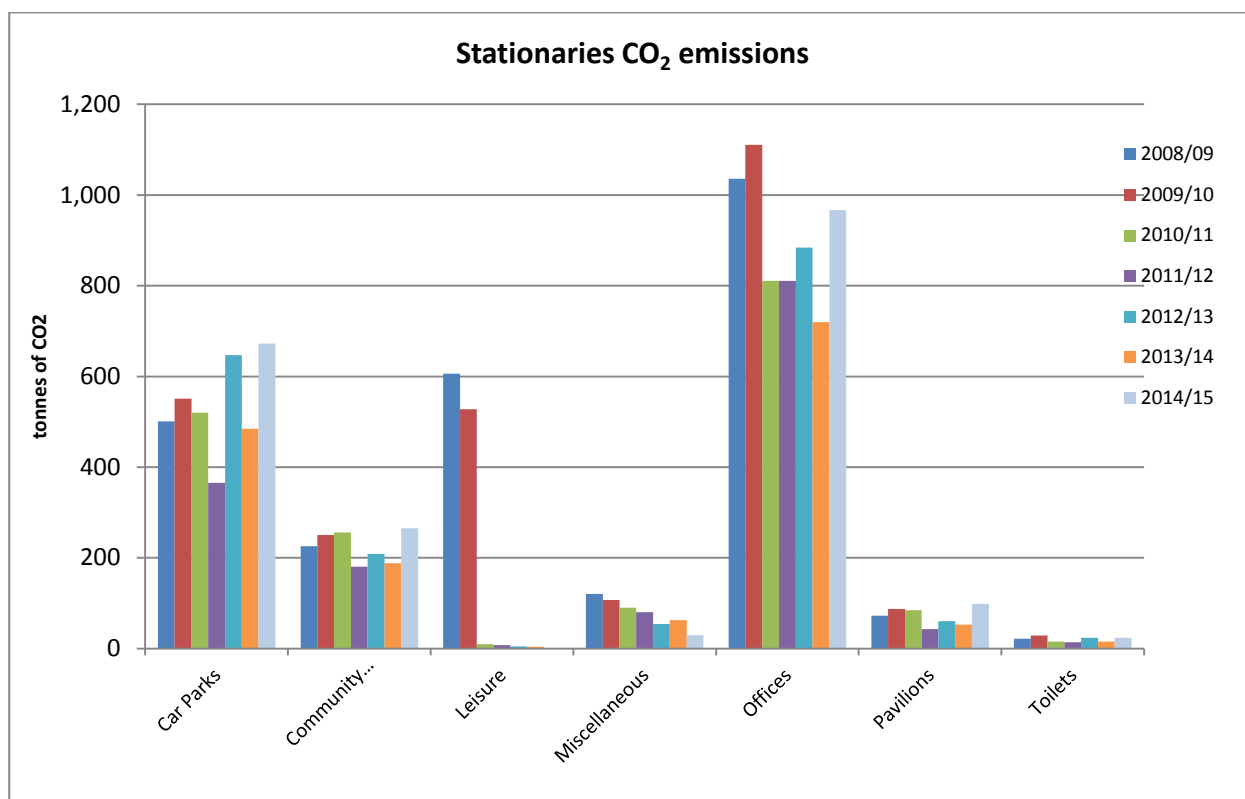
Electricity supplied to corporate buildings under a dedicated green contract from renewable sources, had been renewed and included in the analysis. A total of 725.3 tCO<sub>2</sub> have been avoided this year. Details are included within the Stationary Section of the report under "Green Tariff". Overall averted carbon emissions (green tariff and renewable) amount to 1118.8 tCO<sub>2</sub> for 2014-15.

## 2 STATIONARY

The council collates meter reading data in order to calculate the electricity and gas consumed in its corporate/stationary buildings. The recorded consumptions are unified into kWh in order to apply the carbon conversion factors defined by DEFRA in “June 2014-environmental reporting guidance and the GHG-conversion-factors web based tool”.

**Table 2:** Summary 2014/15 emissions compared against previous years.

Tonnes of CO <sub>2</sub>	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	changes from 08/09	changes from 2013/14
Car Parks	500.7	550.9	520.3	365.5	647.0	484.7	672.36	34%	39%
Community Centres	225.8	250.4	255.9	180.8	209.1	188.4	264.89	17%	41%
Leisure	606.3	527.6	9.5	7.5	4.9	4.0	0.00	-100%	-100%
Miscellaneous	120.8	107.1	90.4	80.3	54.1	62.4	29.62	-75%	-53%
Offices	1036.2	1110.7	811.0	810.6	884.4	719.6	966.51	-7%	34%
Pavilions	72.5	87.4	84.4	43.2	60.5	53.0	98.79	36%	87%
Toilets	22.0	28.9	15.7	13.7	24.1	15.4	23.78	8%	55%
<b>Total</b>	<b>2584.2</b>	<b>2662.9</b>	<b>1787.2</b>	<b>1501.6</b>	<b>1884.1</b>	<b>1527.5</b>	<b>2055.96</b>	<b>-20%</b>	<b>35%</b>
Solar saving					2.2	4.2	6.5		
Green Tariff	906.3	548.6	76.1	408.4	605.8	964.5	725.24		



**Figure 2:** Total CO<sub>2</sub> emission contribution per facilities for 2014/15 compared against previous years.

**Comments:**

A solar photovoltaic and a solar thermal system have been installed at the Gateway Offices. The Solar PV (10kWp) array is expected to generate 8000 kWh/annum. It was installed in July 2012. Within the past year (Oct 14) another set of solar photovoltaic panels have been installed at the Hawkslade Community centre (10kWp). Total self-generated electricity amounts to 12151.3kWh.

The “Leisure” section within the stationaries has included the Old Gaol museum and the Civic Centre. The Civic centre closed its doors in June 2010 and has been replaced by the Waterside theatre, now allocated to the Leisure facilities (see below). The Old Gaol museum has changed tenancy agreement this year and it is no longer part of the reporting list for carbon management.

Car parks related emissions increased significantly compared to last year (+39%). In 2013/14 the Hampden House MSCP recorded half of 12/13 electricity consumption; after investigations this discrepancy was attributed to a catch up on estimated bills. This year Hampden House car park and Upper hundreds MSCP are showing higher energy consumption. A new car park has been opened: Waterside MSCP with a consumption equalling Upper Hundreds car park. The other car parks also show an increased consumption except Walton St. These all add up to raise the level of emissions. Lighting refurbishment, including LED and sensors has now been put in place at Upper Hundreds MSCP (2013-14) and Hampden House MSCP this year 2014/15. AVDC would expect future reductions in emissions, as this work continues.

Southcourt, Prebendall, Hawkslade and Alfred Rose Community centres have received lighting refurbishment to LED. Hawkslade CC received solar photovoltaic panels in October 2014. Despite all this Hawkslade electricity consumption has doubled compared to last year and the total consumption for Community Centres has increased.

Office spaces; two offices had a change to tenancy, which means they are no longer part of the reporting. All remaining offices have increased their energy consumption. This year, energy saving measures focused on the Gateway and High Street Offices (LED refurbishment). Despite such efforts, electricity consumption has respectively increased by 16% and 30%.

For the public conveniences the increase in emissions may have come from adjustments received from last year billing inaccuracies.

Miscellaneous energy use: three new car parks and street lighting have been included within the reporting list; however the related carbon emission has decreased. Potentially updated energy bills would be the cause.

Overall carbon emissions related to Stationary for this financial year 2014/15 have increased by 35% compared to last year 2013/14.

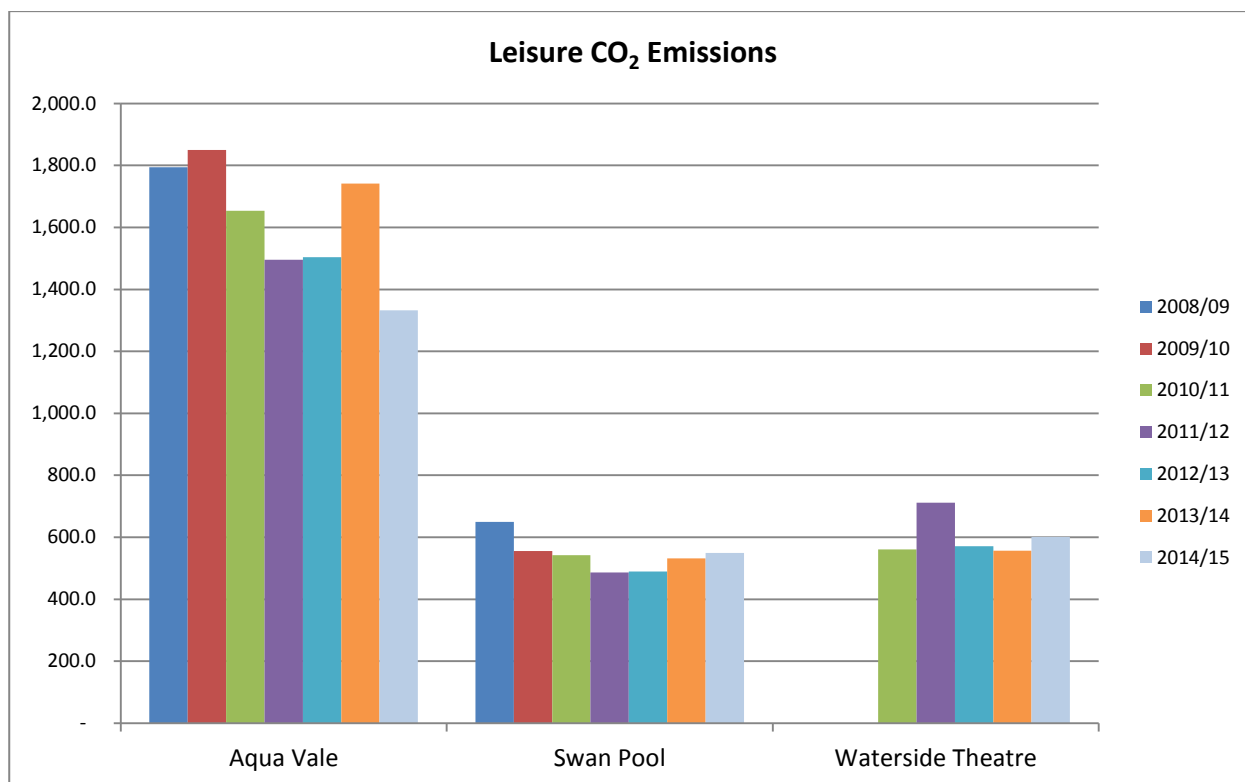
The carbon offset from renewable installation at premises in Aylesbury Vale and the “green” electricity contracts reveals a respective saving of 7.3 and 725.2tCO<sub>2</sub>.

### 3 LEISURE

The council collates the recordings of meter readings in order to calculate the electricity and gas consumption in its Leisure centres. The recorded consumptions are unified into kWh in order to apply the carbon conversion factors defined by DEFRA in “June 2014-environmental reporting guidance and the GHG-conversion-factors web based tool”.

**Table 3:** Summary 2014/15 emissions compared against previous.

Tonnes of CO <sub>2</sub>	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	% change from 08/09	% change from 13/14
<b>Aqua Vale</b>	1,793.9	1,849.7	1,653.2	1,496.0	1,504.1	1,741.6	1,332.75	-26%	-23%
<b>Swan Pool</b>	650.1	555.4	542.4	487.0	489.4	532.0	549.31	-15%	3%
<b>Waterside Theatre</b>			561.1	711.7	571.5	556.4	600.77		8%
<b>TOTAL</b>	<b>2,444.0</b>	<b>2,405.1</b>	<b>2,756.7</b>	<b>2,694.7</b>	<b>2,565.1</b>	<b>2,830.1</b>	<b>2,482.8</b>	<b>2%</b>	<b>-12%</b>
<b>Carbon offset</b>					91.8	246.8	387.0		57%
<b>TOTAL</b>					<b>2,473.3</b>	<b>2,583.3</b>	<b>2,095.8</b>		<b>-19%</b>



**Figure 3:** Total CO<sub>2</sub> emission contribution per centre 2014/15 compared against previous years.

**Comments:**

This year the Aqua Vale centre related emissions decreased of 23%.

Swan pool is showing an increase of 3% in CO<sub>2</sub> emissions compared to last year. The centre was due for refurbishment in 2014/15; no specific details were given for this report.

Waterside theatre energy data are specified by Ambassador- a company looking after other venues of a similar type. Some validation checks performed last year show accurate data were presented; hence no adjustment was to be made. However Waterside theatre shows an increase in related emissions of 8%.

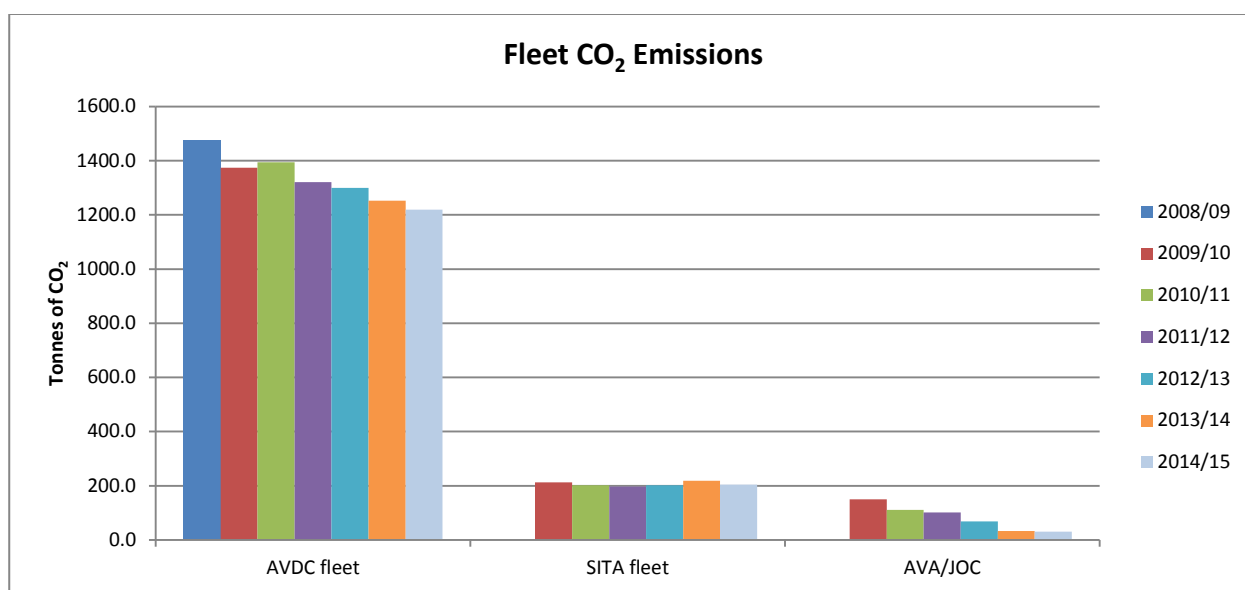
Carbon offset is calculated from the electricity generated via the Combined Heat and Power installed at the Aqua Vale centre.

## 4 FLEET

For the council’s fleet, the data received collates the amount of fuel used by the different vehicles in use by AVDC and contractors staff. The recorded consumptions are reported in litres of fuel type in order to utilise the carbon conversion factors defined by DEFRA in “June 2014-environmental reporting guidance and the GHG-conversion-factors web based tool”. Carbon dioxide emissions are evaluated by applying respective conversion factors to the fuel consumption.

**Table 4:** Summary of fleet related emissions for 2014/15 compared against previous years.

Tonnes of CO <sub>2</sub>	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	% change from 08-09	% change from 13-14
<b>AVDC fleet</b>	1472.8	1373.8	1394.5	1320.8	1299.9	1252.5	1219.6	-17%	-3%
<b>SITA fleet</b>		212.8	201.7	196.8	201.9	218.4	204.4		-6%
<b>AVA/JOC</b>		150.4	110.8	101.4	68.6	32.8	31.2		-5%
<b>TOTAL</b>	<b>1472.8</b>	<b>1736.9</b>	<b>1707.1</b>	<b>1619.0</b>	<b>1570.4</b>	<b>1503.7</b>	<b>1455.1</b>	<b>-1%</b>	<b>-3%</b>



**Figure 4:** Total CO<sub>2</sub> emissions contribution per fleet 2014/15 compared against previous years.

**Comments:**

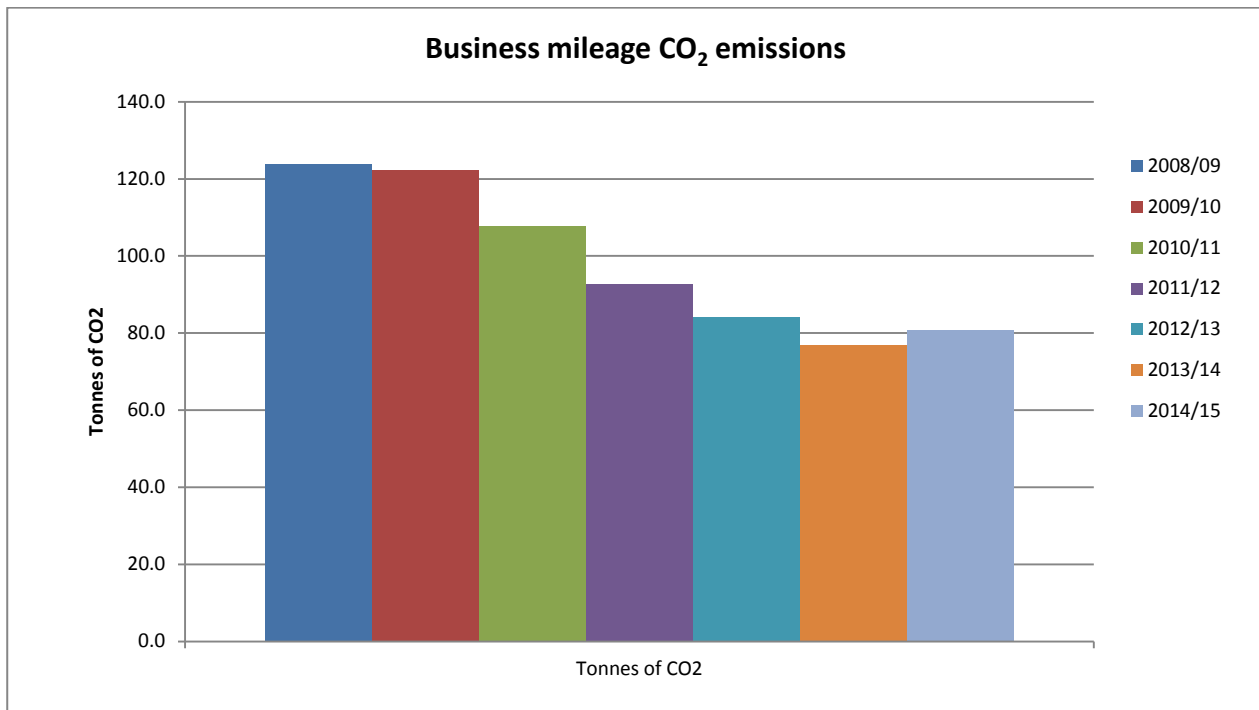
A minimal reduction of 3% in emissions, compared to last year.

## 5 BUSINESS MILEAGE

Emissions from the council’s business mileage were reported more accurately, however still totalised under unknown fuel and average engine size.

**Table 5:** Summary 2014/15 emissions compared against previous years.

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	% change from 08-09	% change from 13/14
<b>Tonnes of CO<sub>2</sub></b>	123.9	122.3	107.7	92.7	84.2	77	80.89	-35%	5%



**Figure 5:** Total CO<sub>2</sub> emission contribution for 2014/15 compared against previous years.

**Comments:**

An increase of 5% in emissions has resulted from last year approximated data for the business mileage. This year mileage was provided in a more detailed manner which resulted in a higher degree of accuracy.

Although important, this area of emissions still provides the smallest opportunity for CO<sub>2</sub> emission reductions.



## 6 RECOMMENDATION

**Corporate buildings:** Due to the large increase of electricity and gas consumption on most of the reported buildings, it would be advised to request accurate billing statement, unless under AMR. Overall, the rise in carbon dioxide emissions from corporate buildings is a combination of higher energy consumption and increase of this year's carbon factor defined by DEFRA (+11%).

With a programme of energy efficiency in place and ongoing at AVDC this trend should improve, as demonstrated by Value at Stake reporting, used by AVDC.

**Appendix 4 Salix 5 Year Plan**

Location	Project	Cost £	kWh Saving	Status	2015 to 2016 £	2016 to 2017 £	2017 to 2018 £	2018 to 2019 £	2019 to 2020 £	2020 to 2021 £
All Sites	BMS from old TREND PC (High St) back on line	5000		Pipeline				5000		
Gateway 5a (East)	LED Light and control within Corridors, Stairwells and GF Meeting rooms	7000		Pipeline			7000			
Gateway 5a (East)	All floors T5 to LED plus control	30000		Pipeline				30000		
Gateway (West)	All floors T5 to LED plus control	25000		Pipeline						25000
Gateway	UVC or Fogging to AHU	7000		Quoted						7000
Gateway - 5a GF	Climateq to AC controls - Trial	1500		New		1500				
Gateway	Air handling filter solutions (Trial Gateway)	2000		New	2000					
Gateway	TREND to Tridium - BMS Upgrade	25000		New				25000		
Gateway	New Gateway Offices Downlighter Refit	5900	8000	Verbal Quote			5900			
Gateway	EndoCool to Chiller - Trial	500		New		500				
66 High street	re-lamping to LEDS throughout (462x)	55000	78876	Quoted			55000			
66 High street	Re-lamping and sensors (Stairwells)	14950	26727	Requote			14950			
66 High street	EndoTherm to radiator CH system	1000		New		1000				
All Offices	A rated HVAC filters	10000		New				10000		
Walton Street MSCP	LED roof re-lamping lights	12000		Pipeline			12000			
Walton Street MSCP	Relamp and control	55000							55000	
Hampden House MSCP	Varying lamps to LED around payment meters and externally	3900		Commissioned	3900					
Upper Hundreds	Lighting columns on roof (6/9?x 190w)	3195	10756	Pipeline	3195					
Friars Croft MSCP Ph 1	(578) 70W HPS to LED and Controls Pt 1 (Ground and 1st floor)	57149	108405	Commissioned	57149					
Friars Croft MSCP Ph 2	Relamping Pt 2 (2 <sup>nd</sup> & 3rd floor ) and SS Stairwell lamps	51984	162247	Completed		51984				
Friars Croft MSCP	Roof Columns	11000		Pipeline			11000			
Waitrose MSCP	Car park Re-lamping	40000		Quoted		40000				
Waitrose MSCP	Lighting columns on roof	1420	6877		1420					
Swan Pool	DBMU to boilers	3700						3700		
Swan Pool	VSDs	25000							25000	
Swan Pool	UVC to AHU	9000						9000		
Aqua Vale	UVC to AHU	9000							9000	
Aqua Vale	DBMU to back up boilers	3700						3700		
Aqua Vale	Draft door	5000								5000
Aqua Vale	Demand Response HVAC, Motors, Pumps			Non Salix						
Aylesbury Waterside Theatre	Demand Response HVAC, Motors, Pumps			Non Salix						
Aylesbury Waterside Theatre	Relamping (Simone Williams)	20000						20000		
Wendover LED Lighting refurbishment	LED Lighting refurbishment (12) 2D to LED	1000	683	Bundle all WCs	1000					
Buckingham LED Lighting	LED Lighting refurbishment (13) 2d to LED	1000	740		1000					

Winslow LED Lighting	LED Lighting refurbishment (13) 2d and (6) GLs lamps to LED	2000	2081		2000					
Q&M Recreation Area	Floodlights to LED	21780	40124	Reassess best technology					21780	
Multicultural Centre	Relamping	2850	18844							2850
Multicultural Centre	Boiler/HWS/Cylinder to Micro CHP or ASHP	10000								10000
All Centres	Electronic Timers	2000			2000					
All Centres	Hot water timers	300	9067				300			
All centres	DBMU	12950	72393		12950					
Aylesbury Vale Estates	Retrofits at various premises. In readiness for EPC reg'n 1 Apr 2018			Meeting to discuss potential way fwd Jan 2017						
Meadowcroft Pavillion	Heating and shower pumps	5000								5000
Edinburgh Pavillion	SS Fluorescents to LED (42)	2000				2000				
Bedgrove Pavillion	All Weather Pitch floods to LED	10000								10000
Bedgrove Pavillion	(39) GLS Tungstens to LED	4500								4500
Bedgrove Pavillion	Boiler to Micro CHP or ASHP	8000						8000		
Fairford Leys Pavillion		0					0			
Bedgrove Pavillion	TREND to Tridium	3000				3000				
All Pavillions	Electronic Timers	2000				2000				
Pembroke Road Depot	Battery Storage (linked to non salixable PV)	20000		In project planning				10000	10000	
Pembroke Road Depot Unit 18 GF	Ground Floor Relamp from 18W T8 to LED	8000		Towards completion of project			8000			
Pembroke Road Depot 1st Floor unit 18	Office Cat2 T8s to LED panels and controls	4000		Towards completion of project			4000			
Pembroke Road Unit 18	Gekko Hand dryers	2000		Towards completion of project			2000			
Pembroke road Unit 18	DBMU to boiler	1,850.00	42,039.00			1,850.00				
Gateway	External Car Park Lighting Columns	7,000.00	15,000.00	Pipeline					7,000.00	
		632128	602859		86614	103834	120150	124400	127780	69350

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Assume all above carry a 15% Salix Management Fee