

CAMBOURNE PARISH COUNCIL

District of South Cambridgeshire

Council Meeting 6th June 2017

ENERGISING OUR FUTURE

Further to considering the previous email from Sheryl French, the Council requested that she attend the meeting to give a presentation on The County Council's Draft Corporate Energy Strategy.

This has now been agreed by the County Council as their strategy and Sheryl French, Project Director, Mobilising Energy Investment will be in attendance to give an update on the Corporate Energy Strategy.

A copy of the Corporate Energy Strategy attached for your information.

During January 2017, we consulted parish councils on the development of a Corporate Energy Strategy for Cambridgeshire County Council. Thank you for your feedback, this was very helpful and improved our final strategy document.

In March 2017, General Purposes Committee approved Cambridgeshire County Council's Corporate Energy Strategy and the development of an energy action plan to implement and monitor progress. Please see attached document.

The **aim of the strategy** is to reduce energy bills, generate income for our services and lead our communities to adapt to a low carbon future. This will be achieved through improving the efficiency of the Council's assets, reducing energy consumption of its services and generating low carbon energy for the Council to use as part of its service delivery or to sell to local consumers.

What this means is we will look to :

- Provide a better, joined up, corporate approach to energy investment
- Reduce energy consumption through service delivery redesign
- Attract investment into energy infrastructure on the Council's assets
- Identify how the Council's assets can facilitate low carbon energy infrastructure to support transport, housing, waste management and smart community projects
- **Work with all partners (public and private sector) and the local community to identify and facilitate low carbon energy projects**

The Energy Strategy will be uploaded to Cambridgeshire County Council's corporate website as soon as possible during the next few weeks. If you would like to know more about the energy strategy and the potential policy benefits that can be achieved through its implementation, please contact me (see details below) in the Energy Investment Unit, Growth and Economy Service.

Kind regards

Sheryl

Sheryl French

Project Director, Mobilising Local Energy Investment

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CAMBRIDGESHIRE COUNTY COUNCIL'S CORPORATE ENERGY STRATEGY



Soham Solar Park generates 12 MW of electricity, enough to power the equivalent of 3000 homes whilst also providing an income to Cambridgeshire County Council, which benefits the community.

Photo courtesy of Bouygues Energies & Services Ltd

March 2017



Cambridgeshire
County Council

Foreword

As a society we need to move towards energy sustainability. This will require changes not only in the way energy is supplied, but in the way it is used. We need to reduce the amount of energy required to deliver goods and services. Renewable energy and energy efficiency are sometimes said to be the "twin pillars" of sustainable energy policy. Both resources need developing if we want to stabilise and reduce carbon dioxide emissions to help tackle climate change but also if we wish to remain a competitive modern society.

Historically the rate of energy efficiency improvements has generally been outpaced by the rate of growth in energy demand. This is due to continuing economic and population growth coupled with inefficient energy use. This needs to change. Slowing the growth in energy demand is essential and we need to reduce the carbon content of energy sources.

Cambridgeshire County Council owns more than two hundred public buildings, 240 schools, manages the largest local authority farm estate in England and Wales at 13,400 hectares and manages over 2,700 road assets. We also run significant services across Cambridgeshire including transport, waste, street lighting, adult and family services and education and employ thousands of staff. Changing how we use, run and manage our services and assets can make a difference. For example, we can reduce energy demand in our buildings through insulation and better energy management, we can redesign services to reduce energy consumption and we can deliver low carbon energy generation on our land and other assets.

We have recently set up a new Housing Company to deliver local housing for our community. It is important that these new housing developments can be used to demonstrate sustainable energy opportunities that others can learn from and replicate. By setting out our ambitions for our buildings and land assets in this energy strategy we hope to provide a clear statement of political leadership and commitment to sustainable energy. It is also important to us that we demonstrate best practice community engagement as it is vital our communities come on this journey and support us.

We are still learning how to deliver our ambitions. During the last three years we are proud that we have invested into projects such as the 12 MW Solar park which is an investment of £10million generating £1million per year revenue for 25 years. Return on £4.5million investment into schools and our office buildings is generating approximately £400,000 savings per year. Our investments seek to cut our energy bills and generate income from renewables that directly support the delivery of services. We have invested in developing staff skills across finance, legal, project development and contracts to have the confidence to develop and deliver energy projects that bring new innovations. Moving forward, it is essential that we develop strong partnerships and collaborations with colleagues in Local Authorities, the Private Sector, our Universities and our Communities to help deliver a successful strategy and support the change to a low carbon Cambridgeshire economy.

Yours Sincerely



Cllr Steve Count

Leader, Cambridgeshire County Council

CONTENTS

1	INTRODUCTION	4
	<ul style="list-style-type: none">• Why do we need an energy strategy?• Aim and objectives of the Strategy• The National Perspective• The Local Context	
2	OUR VISION	6
	<ul style="list-style-type: none">• A Sustainable and Prosperous Place• Priorities and outcomes	
3	LOCAL RENEWABLE ENERGY OPPORTUNITIES	9
	<ul style="list-style-type: none">• The available fuels and technologies and opportunities• What are the new opportunities that can be explored by the Energy Strategy?	
4	FUNDING AND RESOURCES TO DELIVER THE STRATEGY	20
	<ul style="list-style-type: none">• Grants funding and income generation• The Energy Investment Unit• The Governance of the Strategy and success measures	
5	WORKING WITH PARTNERS, KEY STAKEHOLDERS AND OUR COMMUNITY	22
	<ul style="list-style-type: none">• Government, key stakeholders and partners• Communities	
6	THE BENEFITS OF AN ENERGY STRATEGY FOR CAMBRIDGESHIRE COMMUNITIES	23
	APPENDIX A: EXISTING AND FUTURE POTENTIAL ENERGY PROJECTS	24

1 INTRODUCTION – WHY DO WE NEED AN ENERGY STRATEGY?

A low carbon and secure supply of energy is essential for our economy. We need energy to heat and light our homes, to power our businesses and to transport people and goods. At the same time, we need to design out energy waste, reduce energy consumption and minimise carbon emissions from the generation and distribution of energy to help combat climate change.

The UK is becomingly increasingly dependent on imported energy, such as oil and gas. This is at a time when global demand for energy and prices are increasing. At the same time, many of our coal and nuclear power stations are coming to the end of their useful lives and without action to ensure reliable supplies to replace power plants, there will be a dramatic shortfall in our energy capacity and risks to our energy security. Even minor disruptions in supply can cause major problems for communities and businesses. Without low carbon energy, we could not function as a modern, competitive society.

There is also significant change taking place across the energy market. *Decentralised* and *decarbonised* energy along with new technologies are *disrupting* the energy market. Technological advances such as battery storage, internet of things and data analytics alongside smart meters and smart grids will help facilitate greater diversity of energy supplies, better local balancing of supply and demand for energy and opportunities for consumers to participate both in the buying and selling of energy as part of the energy market. This means more local generation and selling of energy and more shifting of energy demand to achieve lower or higher tariffs that help balance our local distribution grid.

The **aim of the strategy** is to improve the efficiency of the Council's assets, reduce energy consumption of its services and produce low carbon energy on its assets for local energy consumption. We hope by doing this, we can bring bigger policy and other benefits for our businesses and communities.

The objectives of the strategy are to:

- Provide a better joined up, corporate approach to energy investment on our assets to generate income and make savings for the Council;
- Identify how we can reduce energy consumption through service delivery redesign and policy development
- Attract investment into energy infrastructure on the Council's assets which can benefit the Council and the broader community
- Identify how the Council's assets can facilitate the development of low carbon energy infrastructure to support transport, housing, waste management and smart community projects
- Work with all partners (public and private sector) and the local community to identify and facilitate low carbon energy projects using the Council's assets that bring benefits to all partners

The National Perspective

In August 2010, legislation was passed to allow Local Authorities to sell electricity generated from renewable sources to create an opportunity for councils to gain financially (as well as environmentally) from developing local renewable energy projects, either on their own or in partnership. This was intended to encourage the development of local renewable electricity projects and open up new sources of income for local councils.

Government, through the UK Energy Efficiency Strategy (November 2012) is keen to promote that the UK gets as close as possible to using only the energy it really needs. It calculated that through reducing energy consumption, the equivalent of 22 power stations could potentially not be required if cost-effective investment in energy efficiency develops at scale. To facilitate this change, government is supporting the public sector to increase knowledge on the process, costs and benefits of financed energy efficiency projects, and how these investments work with public sector budgets.

Government published the Energy Bill 2012 to deliver electricity market reform (EMR) and attract £110 billion investment to replace current generating capacity (e.g. coal-fired power stations and old nuclear facilities), upgrade the grid by 2020 and to cope with the rising demand for electricity. The focus is on energy security and supporting growth to ensure UK businesses and consumers have secure supplies of energy. This will ensure that energy projects maximise the benefits to the economy in terms of jobs, growth and investment.

The Climate Change Act places legally binding obligations on the UK to reduce its CO₂ emissions by 80% by 2050. The UK has also signed up to delivering 15% of its primary energy from renewable energy sources by 2020 and a series of market mechanisms have been introduced to stimulate investment into clean energy to meet these targets including Feed in Tariff, Contracts for Difference and the Renewable Heat Incentive. Demand for fossil fuels is greatest from the transport sector and Government is tackling this problem through supporting the market for plug-in electric vehicles, recharging infrastructure and the development of bio-fuels to support the shift to low carbon.

The Local Context

Cambridgeshire has the technical potential to deliver 28% of its energy needs (for buildings and services but excluding transport) through local renewable energy projects (CRIF 2012)¹. The main opportunities are set out in table 3.1 below and include solar, wind, micro renewables and biomass. The Council has the potential to deliver energy infrastructure via schools, offices, non-domestic buildings and land developments as well as through our obligations to manage waste, transport planning, street lighting and other services.

The role of the public sector is particularly relevant as we move towards a Cambridgeshire and Peterborough Devolution Deal that attracts infrastructure and other funding opportunities that could support energy investment opportunities. Working in partnership with the public, private and community sectors we can realise investment into local decentralised energy infrastructure that benefits our communities and helps us transition to greater energy self-sufficiency and a low carbon economy.

¹ Cambridgeshire Local Authorities adopted the Cambridgeshire Renewables Infrastructure Framework (CRIF) in 2012 as an evidence base for local plan and policy development.

Cambridgeshire County Council owns more than 200 buildings, land assets and manages a large farm estate. It has responsibility to deliver a range of services including transport, education, street lighting and waste. The County produced over 82,000 tonnes of municipal biomass waste (green waste) and 141,500 tonnes of black bin waste during 2015/16. The Cambridgeshire and Peterborough Joint Municipal Waste Management Strategy 2008-2022 includes objectives to manage waste as a resource, ensuring energy is recovered where possible and putting outputs from waste treatment facilities to beneficial use. The Waste PFI contract is at a stage where there are enough years remaining within it to allow investment into an energy from waste facility. This would reduce the costs for landfilling, generate income from the sale of heat and electricity locally and provide more local jobs.

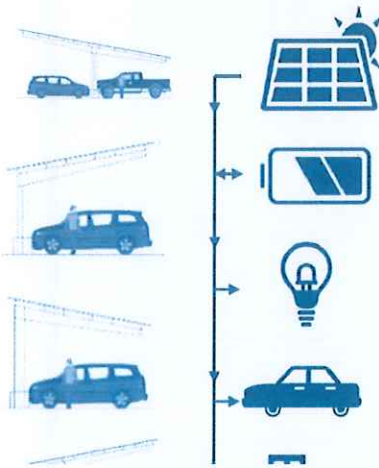
2 OUR VISION

Setting out the priorities and outcomes

Cambridgeshire County Council's vision is for a *Sustainable and Prosperous Place* and to ensure the whole county can benefit from Cambridgeshire's economic prosperity. An ambitious approach to energy can support the delivery of this vision through:

- Helping to secure renewable and low carbon energy supplies and infrastructure on our assets that can help support the needs of our businesses and communities;
- Maximising commercialism, income generation and making best use of the Council's assets to reduce carbon emissions and environmental impacts;
- Building energy resilient communities through aligning the Council's assets and its potential for energy generation with local needs
- Exploiting new technologies, Internet of Things (IoT) and data analytics to reduce energy consumption and make better use of scarce resources; and
- Integrating energy solutions into our work on waste, transport, housing and digital infrastructures to bring new solutions and innovation to the growth agenda as well as reducing carbon and methane emissions and
- Attracting investment into Cambridgeshire from third parties to upgrade energy infrastructure on the Council's assets for the benefit of the wider community

Reducing energy consumption is key. If we don't reduce consumption through greater energy efficiency there will be insufficient resources on this planet to provide for global growth and development and maintain our quality of life and that of future generations. To help deliver our vision, six priorities for the energy strategy have been developed, and include:



1. Energy generation – exploiting local availability of fuels and assets to generate low carbon electricity and heat;
2. Energy supply – putting in the infrastructure to supply local energy to consumers;
3. Energy efficiency – reducing consumption and waste, helping to make supplies go further;
4. Managing costs - reduce energy costs through collective purchasing, contract negotiations, data analytics and the Internet of Things (IoT)
5. Selling energy – generating income through selling electricity and heat to local consumers; and
6. Supporting sustainable growth – integrating energy and digital infrastructure with transport and housing to strategically manage supply and demand for energy.

In addressing these priorities, we will deliver a number of key outcomes as set out in the figure 1 below and in the following pages, recognising that each of the priorities is mutually supportive with many interdependencies. National policy will drive some outcomes more swiftly than others through the use of financial incentives and other mechanisms.

Figure 1 - Outcomes anticipated from each priority

Priority 1 - Energy Generation	Priority 2 - Energy Supply	Priority 3 - Energy Efficiency	Priority 4 - Managing Costs	Priority 5 - Selling Energy	Priority 6 - Supporting Growth
<ul style="list-style-type: none"> • Make best use of our assets through energy generation on our schools, offices, non-domestic buildings and land assets to reduce energy bills and generate income • Attract investment to help upgrade local energy infrastructure • Generating income through attracting finance incentives and selling energy to cover costs as a minimum • Developing the Low carbon economy by using local renewable and waste fuels to shift from dependence on fossil fuels 	<ul style="list-style-type: none"> • Build resilient communities through developing local energy supplies outside of the influence of global market changes • Supporting vulnerable people through continuity of local energy supplies to support critical local services • Supporting a prosperous economy through creating local energy related jobs and sharing our learning 	<ul style="list-style-type: none"> • Reducing costs and waste by reducing energy consumption • Supporting vulnerable people to keep warm, improve health and reduce costs • Making best use of our assets by reducing energy consumption and bringing down service costs • Supporting growth of new technologies and integrated design for communities to balance energy demand and supply more efficiently • Reduce energy consumption through service redesign and policy development 	<ul style="list-style-type: none"> • Supporting vulnerable people by collective purchasing and negotiation on energy to reduce bills • Working in partnership to procure low carbon energy and reduce costs • Amend contracts such as Street Lighting, Waste and Highways to include new technologies to save or generate low carbon energy • Attracting investment by equipping councillors and officers with the skills and knowledge to negotiate and attract energy investments • Collect and analyse data to improve decision making on life cycle carbon emissions and energy projects. 	<ul style="list-style-type: none"> • Make best use of our assets by integrating energy schemes into what we already do, for example electric vehicle charging, park and ride, and then sell energy to customers. • Create a sustainable and prosperous local economy through selling locally produced energy to generate income. • Exploiting digital infrastructure to meter, control and sell energy to local customers 	<ul style="list-style-type: none"> • Manage energy supply and demand for transport and housing developments by integrating new technologies and digital infrastructure to create smart energy communities. • Improve air quality for new developments through access to local clean energy supplies for transport and housing. • Supporting local ownership and investment in energy infrastructure will keep financial returns local which is good for a prosperous economy.

3 LOCAL RENEWABLE ENERGY OPPORTUNITIES

Cambridgeshire has the technical potential to deliver renewable energy projects across a range of different technologies listed below. It is important that all opportunities for local generation are explored. Due to the geography and population distribution across Cambridgeshire, research shows that there is potential for projects at all scales but greater numbers of smaller projects are likely due to balancing of supply and demand.

Table 1: List of renewable energy types and relevant technologies

Fuel Type	Opportunities	Challenges	Income potential
<p>Solar PV</p> <p>Suitable for buildings and land assets (small scale to large scale projects)</p>	<ul style="list-style-type: none"> Generates electricity Attracts feed-in tariff at low levels At scale, can apply for Contracts for Difference via the auction process Electricity can be sold to local consumers if connected to battery storage to smooth the generation profile (this applies to wind below) Local planning policy generally supportive 	<ul style="list-style-type: none"> Exporting electricity via the local distribution network is difficult due to network constraints Identifying the right business model to make a project financially viable with reduced or no incentives Assessing glint and glare of projects on local wildlife and housing Planning permission required 	<p>Triangle Farm 12 MW Solar Park delivers sufficient electricity for approximately 3000 homes per annum and generates £350K net revenue p.a. The contracts for difference price started at £79 per MWh in 2015. (For comparison the cost of the Hinckley Point nuclear plant, is either £90 or £93 per MWh depending on how many reactors are eventually built.)</p>
<p>Bioenergy / Biomass (wood-based)</p> <p>Suitable for school/ office boilers or heating for housing or industrial buildings. (Small – large scale)</p>	<ul style="list-style-type: none"> Generates low carbon heat and electricity Attracts renewable heat incentive at a good price (2016) Wood can be sourced locally Green waste from households can be prepared and used as a fuel for larger schemes 	<ul style="list-style-type: none"> Planning permission required for the biomass boilers and chimney Negotiating local supplies of biomass pellets and the length of contracts Design and delivery challenges for new sites Air quality management zones need to be checked Cost to conserve archaeological assets must be factored into new crop schemes where appropriate 	<p>For a 499kWth biomass boiler for larger schools, renewable heat incentive of £0.05 per kWth (March 2016) is paid. School projects are generating income of £23K-£25K per annum.</p>
<p>Biomethane (Produced through the anaerobic digestion of organic matter, such as plant or livestock waste materials)</p>	<ul style="list-style-type: none"> Potential opportunities for the farm estates e.g. energy beet crops Can be delivered at a range of scales 	<ul style="list-style-type: none"> Planning permission is required for anaerobic digestion facilities There are some tracts of land not appropriate to grow energy crops 	<p>Renewable Heat Incentives (RHI)</p>

Fuel Type	Opportunities	Challenges	Income potential
Appropriate for farm estate – (Small - Medium Scale)	<ul style="list-style-type: none"> Attracts Renewable Heat Incentive (RHI) for smaller schemes which can aid viability 	<ul style="list-style-type: none"> e.g. Grade 1 and 2 agricultural land Sourcing sufficient on-site or local organic matter to support an energy project 	
Biomethane (larger scale)	<ul style="list-style-type: none"> Larger schemes can attract Contracts for Difference (CfD) Community benefits can be addressed through consultation and engagement with the local community if larger schemes are developed. 	<p>As above but including</p> <ul style="list-style-type: none"> Transporting large amounts of organic waste onto site by road over long distances, brings higher carbon emissions and traffic impacts Local road infrastructure can be inadequate for large scale lorries creating disruption to rural communities. 	<p>**For schemes greater than 5MW, contracts for difference maximum strike price is estimated at £140 per MWh for projects deploying in 2021/22</p>
<p>Waste</p> <p>Pre-treated organic waste and black bin waste used to extract energy for heating and electricity generation</p> <p>(Small – large scale)</p>	<ul style="list-style-type: none"> Produces electricity and heat. Anaerobic digestion of organic waste also produces biogas that be used as a fuel (see above) Supply energy for new housing developments and /or existing developments. To generate income through Combined Heat and Power (CHP) and district heating networks. Attracts renewable heat incentives (RHI) for small schemes and CfD for large schemes Cost savings on waste disposal via landfill Extract value from waste locally (rather than give to others to get this value) A local EfW could reduce the transport costs associated with shipping Refuse Derived Fuel (RDF) to a facility outside the county or outside the country and provide a 	<ul style="list-style-type: none"> Local perception of energy from waste schemes. Schemes can be controversial Planning permission required. The planning application will need to address: <ul style="list-style-type: none"> transport impacts environmental impacts visual impact Environmental Permit required. Permit application will need to address environmental impacts including impact on air quality Grid reinforcement costs could be significant to export electricity as part of early financial viability 	<p>**Contract for difference maximum strike price is estimated at £80 per MWh for projects commissioned in 2017/18</p> <p>**Dedicated Biomass with Combined Heat and Power for projects deploying in 2021/22 is estimated at £115KWh</p>

Fuel Type	Opportunities	Challenges	Income potential
	<p>more sustainable solution for waste from local commercial sources than landfill.</p> <ul style="list-style-type: none"> • Provide long term capacity for the treatment of household and commercial waste • Commercial food, processing and retail waste could be used for anaerobic digestion. 		
<p>Wind</p> <p>Appropriate for transport assets (e.g. guided bus route way) or farm estate</p>	<ul style="list-style-type: none"> • Generates electricity • Significant land development opportunities particularly along the guided bus way and farm estate • Finance incentives available particularly via Contracts for Difference • Wind at scale generates good commercial returns • Wind with battery storage and EV charging is an opportunity to balance supply and demand for electricity 	<ul style="list-style-type: none"> • Planning permission will be required • National and Local planning policy is less supportive of onshore wind development • Noise and flicker of the blades give rise to local concerns • Local perception of wind projects on house prices can be negative • Grid connection is a barrier unless developed with local customers and storage options • The Council currently has a policy to not build wind turbines on its assets 	<p>*The future strike price for onshore wind projects is expected to be around £79 per MWh. (For off-shore wind the price is anticipated at £114 per MWh).</p>
<p>Hydro electricity</p>	<ul style="list-style-type: none"> • Small opportunities on the river and canal systems that could be developed 	<ul style="list-style-type: none"> • Limited opportunities as low lying, flat geography • Economics of small scale hydro in low lying areas still to be tested 	
<p>Geothermal energy and extraction of heat from air and water</p> <p>Thermal energy generated and stored in the Earth or water.</p>	<ul style="list-style-type: none"> • Produces low level heat • Ground source heat pumps can supply low level heat for new buildings and communities to reduce heat consumption. 	<p>Ground source heating can have archaeological consequences, where vast coils or vertical ducts are excavated through sites. This can be costly if it applies.</p>	<p>**For large scale schemes greater than 5MW, contracts for difference maximum strike price is estimated at £140 per MWh for projects commissioned in 2017/18.</p> <p>***Air and Ground source heat pumps attract renewable heat incentive of</p>

Fuel Type	Opportunities	Challenges	Income potential
	<ul style="list-style-type: none"> Air source heat pumps extract heat and recirculate warm air Water source heat pumps provide heat Attracts renewable heat incentives (RHI) for Ground Source heat pumps 		between £0.0257 and £0.0895 per kWhth dependent on projects.
Energy Storage <i>Not a fuel type</i> but a technology to help manage the variability of renewable energy	<ul style="list-style-type: none"> Stores excess energy produced when renewables are working Supplies energy when needed Helps balance generation with the need for continuity of supply 	<ul style="list-style-type: none"> To be eligible for finance incentives under National Grid's STOR programme a minimum of 3MW is needed 	Short Term Operating Reserves (STOR) is a negotiated payment for access to extra power either generation or demand reduction during certain periods of the day where actual demand is greater than forecast.
Demand response technologies <i>Not a fuel type</i> but technology to manage supply and demand	<ul style="list-style-type: none"> IT control systems Smart meters Smart Grid development DC micro grids 	<ul style="list-style-type: none"> Empowering individuals to become active energy consumers and generators to manage their energy better 	These mechanisms support reduced financial costs for grid reinforcements, better management of energy flows and therefore greater efficiency.

(*Source: <https://fullfact.org/economy/cost-onshore-wind/> 2016)

(**Source: Investing in renewable technologies – CfD contract terms and strike prices, DECC, Dec 2013)

(***<https://www.ofgem.gov.uk/environmental-programmes/non-domestic-rhi/contacts-guidance-and-resources/tariffs-and-payments-non-domestic-rhi>)

Cambridgeshire has the potential to deliver 28% of its energy needs for buildings and services (excluding transport) if all types of technologies and renewable fuels are deployed. It is recognised that there are some technologies that are currently more acceptable to the public than others, some which are more complex to deliver and some with significant technical and financial barriers. The key challenges include difficulties connecting to the local grid to export electricity; uncertainty over energy finance availability and community acceptability. However, innovation, technology and cooperation can help manage these issues providing there is leadership and willingness to find solutions.

Cambridgeshire County Council – 12 MW Solar Farm

A £10million investment by the Authority and a 'Contract for Difference' with the Low Carbon Contracts finance company generating income for the Authority. Below is an aerial view of the solar farm scheme, which generates electricity for the equivalent of 3000 homes.



Peterborough City Council – Energy from Waste Plant



The facility is located on the Eastern edge of the Fengate Resource Recovery Park in Peterborough. Viridor runs the facility and handles approximately 85,000 tonnes of waste per annum. The scheme makes a significant contribution to both waste policy and to energy policy.

What are the new opportunities that can be explored by the Energy Strategy?

Priorities and outcomes	Energy Projects underway	New areas of work and key Opportunities	Resources
<p>1 - Energy Generation</p> <ul style="list-style-type: none"> • Making best use of our assets • Attracting Investment • Generating income • Developing the low carbon economy • Displace carbon emissions from fossil fuels 	<p>£15million of projects including twenty four schools, seven CCC buildings and a 12 MW solar park are under contract. Solar energy and heat generated from biomass boilers attract feed in tariff, renewable heat incentive and contracts for difference. Investment to date at £15million generating approximate returns of £1.4million per annum.</p> <p>A further 23 schools have signed up for energy performance and have received outline business cases for decision.</p> <p>The aim is to maximise investment into Cambridgeshire schools and public buildings.</p>	<p>Bring forward the business cases for large scale energy projects on transport, farm estate, housing, waste and other assets. See appendix A for potential project areas. In particular scope the options for:</p> <ul style="list-style-type: none"> • wind turbines along the guided bus route • a demonstrator project for community energy for a new CCC housing development site • Energy from Waste technologies and sites to provide heat and electricity for local communities (grid capacity is a challenge) • Further solar parks • Opportunities for large scale storage <p>Identify opportunities to access grants, finance incentives and other funding options.</p> <p>Collaborate with local partners and other counties to achieve scale for generation, battery storage or other projects.</p>	<p><i>Capacity and skills:</i> Energy Investment Unit LGSS Finance and Legal Asset Managers Refit Service Provider (Engineering support) Farm Estate Assets and Commissioning</p> <p><i>Finance</i> PWLB loan facility Upfront developed through budgets recovered through profits from schemes Finance incentives and grants Private sector finance to share risk on large projects</p>
<p>2 – Energy Supply</p> <ul style="list-style-type: none"> • Building resilient communities 	<p>Development of the Smart Energy Grid Project for St Ives Park and Ride to generate, store and supply local energy.</p>	<p>Assess the local grid capacity and its ability to accommodate growth. Report the findings and impacts to Members.</p>	<p>As above but including: <i>Capacities and skills</i></p>

<ul style="list-style-type: none"> Supporting vulnerable people Supporting a prosperous economy 	<p>Delivery of a business support programme using the lessons learnt from the smart energy grid project to help build the supply chain.</p>	<p>Work with key services to scope the opportunities to develop energy projects on buildings and local sites to directly access local energy generation. This includes working with Children, Families and Adults Department to identify potential sites and the broader health and care networks.</p> <p>Work with partners to assess the benefit of different energy supply models for local government including council-run fully licensed supplier, license lite, white label or sleeved supply arrangements, private wire or license exempt supplier. Assessment includes the potential scale of energy generation and local demand to guide the potential options for 'energy company' set up.</p>	<p>Park and Ride Smarter Cambridge</p>
<p>3- Energy Efficiency</p> <ul style="list-style-type: none"> Reducing cost and waste Supporting vulnerable people Making best use of our assets Supporting Growth Reduce carbon emissions 	<p>Please see activities on schools and public buildings in 1 above. Energy performance contracting covers both energy generation and energy efficiency.</p>	<p>Continue to grow the pipeline of buildings to improve energy efficiency improvements and investment – see Appendix A.</p> <p>Bring forward the business case to invest in LEDs for street lighting to save money on the contract.</p>	<p>As for 1 above</p>

<p>4- Cost management</p> <ul style="list-style-type: none"> • Supporting vulnerable people • Working in partnership • Managing changes to contracts and procurements • Attracting investment 	<p>Delivered five 'collective switch' opportunities for residents and businesses to reduce energy bills.</p> <p>Procured electricity and gas supply tariffs for public sector buildings.</p> <p>Skills audit undertaken 2015 to identify in-house availability of skills to deliver energy projects</p> <p>Procured an energy service provider from the REFIT 2 Framework to deliver energy projects, manage performance risk on projects and upskill staff/members on the business model.</p> <p>The Council has developed a decision making tool for energy projects, DAREED Project, which includes:</p> <ul style="list-style-type: none"> • Data collection and monitoring • Renewables simulation • Energy simulation • Demand Management • Awareness raising • Market place • Best practice 	<p>Continue to deliver collective switch opportunities for residents and businesses through sharing the Peterborough's Collective Switch scheme.</p> <p>Evolving the current traffic signals platform to become a 21st century intelligent network.</p> <p>Develop demonstrator lighting projects (that sit outside the existing PFI) and migrate these opportunities to include smart meters and control for managing data to inform greater energy efficiency and load management. Links to priority 6 below)</p> <p>Review electricity and heat supply tariffs and contracts to source low carbon energy and renewable energy supplies for public sector buildings.</p> <p>Scope opportunities for setting up a data platform for energy and other data to analyse and identify new solutions to reduce consumption.</p> <p>Procure 'white label' or other opportunities for securing low cost energy</p> <p>Review skills audit to identify relevant skills and knowledge across Cambridgeshire and Peterborough to support energy project delivery across the</p>	<p>LGSS Energy Manager LGSS Procurement Energy investment Unit</p> <p>ICHOOSR/Peterborough collective switch scheme</p> <p>Assets and Commissioning Service</p> <p>Energy Investment Unit LGSS Finance and Legal Asset Managers Refit Service Provider (Engineering support)</p>
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<p>5- Selling Energy</p> <ul style="list-style-type: none"> • Make best use of our assets • A sustainable and prosperous economy • Generate income 	<p>Work is underway engaging with customers for the direct sale of electricity for the Smart Energy Grid Project described below.</p> <p>Draft power purchase templates are under discussion and negotiations on tariffs starting.</p>	<p>priorities, identify key skills gaps and potential new procurements.</p> <p>Procure new partner arrangements under REFIT 3 Framework to deliver Energy Performance Contracting for larger more complex projects to bring the engineering design skills and innovation to projects.</p> <p>All projects developed through the Energy Strategy to upload data into System Link - an energy management system, K2 – an asset management system and identify the potential for using the DAREED system to support data collection and analytics.</p>	
		<p>To participate directly in the buying and selling of energy is a trading activity and must be pursued through a company structure (the exception is where the supply is a result of solely selling output from generating assets held by the local authority). With partners, assess corporate structure options and the conditions under which this is best pursued.</p> <p>Identify if existing schools have extra land not required for educational purposes but which could be used for local energy projects. This land could generate energy to sell to the school and local community. Identify if and how this can be achieved.</p>	<p>As for 1 above but in addition:</p> <p>Licensed energy company arrangements</p> <p>Blue Sky Peterborough</p>

<p>6 – Sustainable Growth</p> <ul style="list-style-type: none"> • Creating Smart Energy Communities • Improving air quality • Supporting prosperous local economy • Working with innovative companies to test new ideas • Supporting electric vehicles • Future infrastructure funding through devolution deals 	<p>The business case for the development of a Smart Energy Grid Demonstrator Project on St. Ives Park and Ride has been agreed by the Authority and match funding is to be agreed before this project is finalised. The scheme will supply renewable energy for electric vehicle charging and to sell to local consumers.</p>	<p>Replicating the learning from this project to deliver Smart Energy Solutions on other park and ride sites and land assets including City Deal and growth area projects.</p> <p>Scope 'demand response' opportunities using cloud based software and the internet of things, to identify Virtual Energy Storage (VES) options that help balance the national grid earning revenue for the authority through the use of existing batteries on computers and other devices.</p> <p>Identify how 5th generation mobile network will inform the development of energy projects</p> <p>Explore opportunities for developing low carbon transport projects and smart community projects supported directly by local decentralised energy generation schemes.</p> <p>Collaborate with the private/ community sectors to identify new projects, planning in the energy requirements upfront and integrated into projects.</p> <p>Identify energy projects that can act as demonstrator projects to test innovative technologies, new business models and</p>	<p>As for 1 above but in addition:</p> <p>City Deal Smarter Cambridge Growth and development</p>
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		<p>commercials to identify replication opportunities for the future.</p> <p>Signpost parish and town councils to funding opportunities for renewable energy projects via the CCC website.</p> <p>Collaborate on parish council land and building projects.</p> <p>Replicate the Smart Energy Grid Project at St Ives on further park and ride schemes but including the opportunity to supply renewable energy for electric bus charging.</p> <p>Work with local Cambridgeshire Local Authorities, Peterborough City Council and neighbouring counties to collaborate on really big storage and demand response thinking.</p> <p>Identify opportunities for future devolution deal monies to support low carbon energy infrastructure delivery</p>
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4 FUNDING AND RESOURCES TO DELIVER THE ENERGY STRATEGY

Grants funding and income generation

There are a range of financial incentives to support renewable energy projects. The Energy Investment Unit has already accessed and explored funding opportunities in the following areas:

Feed in Tariff (FIT)

This is available for renewable electricity generation and is generally applied to solar, wind, combined heat and power and anaerobic digestion. Access to high levels of incentive for technologies can reduce over time as experienced recently with solar but remains available for schemes, albeit at a reduced level. Individual business cases will include the expected level of support from finance incentives where they still apply.

Renewable Heat Incentive

Specific examples include financing incentives from Government that have been accessed to bring forward heat projects. The Renewable Heat Incentive (RHI) is available for biomass, ground source heat pumps and combined heat and power. Some Cambridgeshire schools are already accessing this money through the installation of biomass boilers.

Contracts for Difference

Government also runs annual auctions to apply for 'Contracts for Difference'. This is aimed at larger projects where FITs don't apply and is an opportunity for projects to compete for finance incentive ensuring that competition drives down prices. The Authority has signed a Contract for Difference for the 12MW solar park.

Government Grants

Government is keen to incentivise heat networks, electric vehicles, smart meters and other technologies. There are also opportunities to apply for government grants to support projects and schemes to apply for support for innovation or change.

Milton CoE Primary School, Milton, Cambridgeshire



Cost of project: £166,000

Energy measures include:

- Insulation
- Building Management System
- Heating controls
- New boilers
- Solar PV

Savings:

- 26% savings on energy cost
- £11,000 energy spend reduction per annum
- 45 tonnes of CO2 per annum saved

Cambridgeshire's Energy Investment Fund

The Authority has invested directly in projects through borrowing from Public Works Loan Board (PWLB). A set of investment principles has been agreed by Members to guide the development of project business cases. For smaller projects, under £1million, a delegated decision making process is in place to facilitate investment and a loan facility has been agreed under which project approvals can be facilitated. For larger projects, it is agreed to set development budgets which are repaid through the profits on a project if investment is approved via Assets and Investment Committee.

Co-Investment

The Authority is supportive of co-investment into projects. At a small scale, this has worked through schools and academies contributing funds towards energy performance contracting, or attracting other grants such as Salix Finance but for larger projects this could include private sector and pension fund investments (not just from the UK) to help manage project risk.

Data collection and analysis

To improve energy efficiency and generation projects, data platforms and systems including System Link - an energy management system, K2 -an asset management system and a new platform called DAREED can help collect and report data that can inform decision making. For example, the DAREED platform includes monitoring data, renewables simulation, energy simulation, demand management, awareness raising, the market place and best practice. It is important to ensure that data collected from projects is analysed and used to improve performance of energy systems and can help prepare us for a future local energy market where consumers are more active managers of their energy, switching tariffs to reduce costs and selling energy generated. For further information follow the link <http://www.dareed.eu/>

The Energy Investment Unit

The Council has formed the Energy Investment Unit to develop and deliver energy projects to save money for the public sector and generate income for the authority. The unit is funded through income generated by projects and it works with asset managers and service managers to identify potential projects, access existing and new procurements, and brings forward the engineering, financial and legal skills to deliver projects on the ground. Working closely with finance and legal colleagues over the last three years, the unit has built a solid base of skills and knowledge to bring forward energy projects, assess complex business cases, identify benefit share arrangements and advise on contracting arrangements. The unit is currently managing over twenty five energy performance contracts.

Who will monitor the action plan, where will the process be reported and how will success be measured?

The strategy will be approved by Cambridgeshire County Council's General Purposes Committee which will also receive annual progress reporting. The Strategy will be reviewed every 3-4 years and progress closely monitored via the Strategic Asset Management Board which meets monthly. This officer board will oversee the development of an action plan with targets and help unlock barriers to the delivery of projects.

5 WORKING WITH PARTNERS, KEY STAKEHOLDERS AND OUR COMMUNITY

Delivery of the strategy requires collaboration and partnerships across a range of stakeholders and professional disciplines, both internal and external to the authority.

Government

Early engagement with government is needed to understand their plans for supporting local energy schemes and whether devolution plans could help facilitate delivery through new powers, responsibilities and funding.

Key Stakeholders

Strategic direction and potential funding for the delivery of the strategy can come through The Greater Cambridge Greater Peterborough Local Enterprise Partnership, Greater Cambridge City Deal and the new Combined Cambridgeshire and Peterborough Authority. These organisations have a key role setting the ambition and context for infrastructure development across Cambridgeshire and Peterborough. Working with these organisations will provide the opportunity to collaborate on multidisciplinary projects that help manage supply and demand for energy, seek solutions to delivery barriers and support new innovative ideas and cross- border project development.

Partners:

Owing to the local grid network having reached its capacity in many parts of Cambridgeshire, connections to the grid to export electricity are difficult to obtain and costly. It will be important to work closely with Ofgem, (the regulator), the network operator (UK Power Networks) and National Grid to establish where there are opportunities to connect and export electricity or to establish new partnerships, projects or models where supply and demand for decentralised energy can be facilitated in other ways such as smart grids, private wire and energy storage or other new innovations.

Colleagues in Cambridgeshire Local Authorities and Peterborough City Council are also key to our success. We will draw on the skills and experiences across the organisations to identify and deliver projects as well as ensuring a joined up approach to delivery and resource sharing, to bring benefits to the communities we serve. It will be important to ensure that any projects under development can (i) comply with national and local plan policies and (ii) demonstrate that any planning impacts that affect local communities are adequately addressed.

Our Community

Fundamental to the successful delivery of the strategy will be strong engagement with the community. The Council will look to achieve best practice engagement with Parish and Town Councils and their broader communities to feed into early design proposals. Engagement plans will need to facilitate constructive dialogue with different sectors in a community to understand the impact of an energy project, build relationships in the community and to seek views on how best to mitigate any problems. We will need to explore a range of engagement techniques, including social media, to secure as broad a range of engagement as possible. Through early engagement we hope to influence early design and thinking on a project and bring additional benefits for the community where possible. For example, an energy project could involve the village hall benefiting from energy efficiency improvements as part of an overall energy scheme.

6 THE BENEFITS OF AN ENERGY STRATEGY FOR CAMBRIDGESHIRE COMMUNITIES

Energy bills have more than doubled in the last 10 years and further price increases are expected. More than 40% of the UK's energy is imported and global demand for energy continues to grow.

Buying energy on the global market is competitive. Becoming more energy self-sufficient through generating local energy on buildings, car parks and other land assets reduces the amount of energy we import and provides greater certainty around energy bills whilst also helping the local economy. Building our community energy resilience is important should global energy supplies become restricted due to rising demand.

The UK Climate Change Act 2008 along with global agreements to reduce carbon emissions means that investors such as university pension funds are increasingly moving away from investing in fossil fuels and supporting low carbon investments. This brings emission reductions in the form of improved air quality and health as well as slowing global warming impacts.

Contact information

Please contact the Energy Investment Unit (EIU) if you would like to discuss the contents of the strategy or you have an idea for a project.

For policy, strategy and new project ideas please contact: Sheryl French, Project Director
Tel: 01223 728552 Email: sheryl.french@cambridgeshire.gov.uk

For Smart Energy Grid Projects or new ideas please contact Cherie Gregoire, Project Manager, Tel 01223 715689 Email: Cherie.gregoire@cambridgeshire.gov.uk

For school energy projects please contact Jane Frank, Project Manager
Tel: 01223 715545 Email: jane.frank@cambridgeshire.gov.uk

For schools and new project ideas please contact Ron D'Souza, Business Development Manager
Tel: 01223 699448 Email: Ron.Dsouza@cambridgeshire.gov.uk

For Cambridgeshire County Council buildings and managing energy costs please contact Claire Julian- Smith, Energy Manager, Tel: 01223 715349
Email: Claire.julian-smith@cambridgeshire.gov.uk

Appendix A: Existing and Future potential project areas for energy project development

White= already happening light grey= potential new opportunities dark grey= need scoping

Please note: Some projects may not yet be viable but could become viable should policy and finance incentives change.

Type of Asset	Project Development underway Y/N	Potential New project	Delivery of Strategy Priorities (All projects to collect data to inform future decision making)
Schools			
240 schools (existing)	Yes		Energy Generation Energy Efficiency Managing costs -
10 new schools	No	Yes	Energy Generation Energy Supply Selling Energy Supporting Growth
CCC Buildings			
Offices	Yes		Energy Generation Energy Efficiency Managing costs
Libraries	Yes		As above
Catering Services	No	Y- Small scale	As above
Community buildings	No	Y- Small scale	As above
Children Centres	No	Y -Small scale	As above
Transport Assets			
Park and Ride	Y- Demonstrator project	Yes – replication of demonstrator project	Energy Generation Energy Supply Selling Energy Supporting Growth
Guided busway	N	Yes – large scale	Energy Generation Energy Supply Selling Energy
Cycle ways	N	Possible demonstrator for solar paving	Energy Generation
Highways land/verges	N	Yes- small to large scale	Energy Generation Energy Supply Selling Energy
Farm Estate			
Barns + farm buildings	Y	Y – small scale	Energy Generation
Other Land - Further five sites		Y – medium to large scale	Energy generation Selling energy
Other			
Housing Company - land development	N	Demonstrator project potential	Energy Generation Energy Supply Energy Efficiency Selling Energy
Contracts			
Waste	N	Y- large scale	Energy Generation Energy Supply Energy Efficiency Selling Energy Managing contract costs
Street lighting	Y	Y – large scale	Energy Efficiency Managing Contract Costs
Highways	N	To be explored- large scale	Energy Generation Energy Supply Selling Energy

