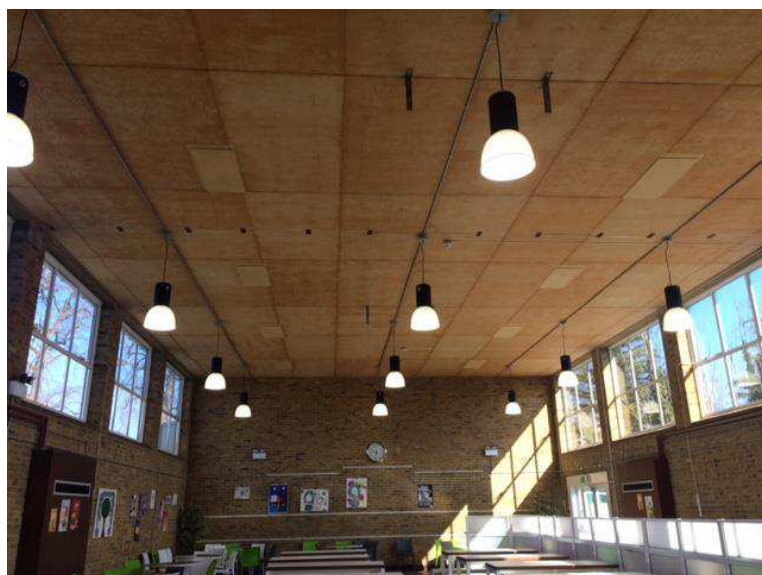


# A CORPORATE ENERGY STRATEGY



*A clean, secure and sufficient supply of energy is essential for a modern, low carbon economy. Even minor disruptions in supply can cause major problems for communities and businesses.*



Bassingbourn Village College improved their lighting, generate renewable energy from solar, heat their buildings through a new biomass boiler and receive income from the renewable heat incentive and feed in tariff from government.



## A Corporate Energy Strategy 2016-2020

### 1.0 INTRODUCTION – WHY DO WE NEED A CORPORATE ENERGY STRATEGY?

A clean, secure and sufficient 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. Without it, we could not function as an economy or modern society. Even minor disruptions in supply can cause major problems for communities and businesses.

The UK is becoming 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.

There is also significant change taking place across the energy sector. *Decentralised* and *decarbonised* energy along with new technologies are bringing *disruption* and *democratisation* to the energy market. This disruption comes through finding solutions to global challenges including climate change as well as technological advances such as battery storage, internet of things and data analytics which facilitate clean, decentralised energy and help to reduce consumption. Consumers are being empowered to participate in the energy market, generating and selling energy and shifting their energy demand to achieve lower or higher tariffs dependent on what works best, helping the strategic supply and demand challenge.

#### The purpose of the strategy is to:

- Provide a better joined up, corporate approach to energy investment, savings and delivery;
- Identify the benefits of a strategic and more ambitious approach to energy for the authority, its joint working with Cambridgeshire and Peterborough local authorities and our shared communities;
- Understand our role developing modern energy infrastructure that supports the delivery of transport, housing, waste management and smart community projects
- Identify how we can reduce energy consumption through our service delivery and policy development
- Identify projects, delivery mechanisms and partners that can work with us to help facilitate greater energy resilience for our communities using our shared assets; and
- Attract investment into energy infrastructure on the Council's assets which can benefit the broader community

### 1.1 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.

## **1.2 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)<sup>1</sup>. The main opportunities are set out in section 3, below and include solar, wind, micro renewables and biomass. The public sector has the potential to deliver energy infrastructure via schools, offices, non-domestic buildings and land developments. This is particularly relevant as we move towards a Cambridgeshire and Peterborough Devolution Deal. Investment into local decentralised energy infrastructure to facilitate transport and smart community ambitions in partnership with the commercial and community sectors, could facilitate greater energy self-sufficiency and a low carbon economy.

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.

## **2.0 OUR VISION**

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:

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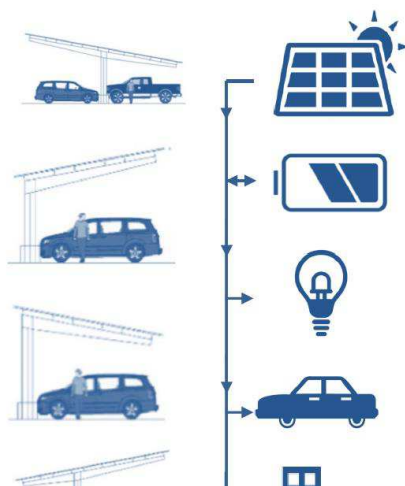
<sup>1</sup> Cambridgeshire Local Authorities adopted the Cambridgeshire Renewables Infrastructure Framework (CRIF) in 2012 as an evidence base for local plan and policy development.



- Helping to secure 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;
- 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
- Integrating energy solutions into our work on waste, transport, housing and digital infrastructures to bring new solutions and innovation to the growth agenda.
- Attracting investment into Cambridgeshire from third parties to upgrade energy infrastructure on the Council's assets for the benefit of the wider community

## 2.1 Setting out the priorities and outcomes

To help deliver the vision, key 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 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 below and in the following pages, recognising that each of the priorities is mutually supportive with many interdependencies.

**Figure 1 - Outcomes anticipated from each priority**

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

### 3.0 LOCAL RENEWABLE ENERGY OPPORTUNITIES

3.1 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.

| Fuel Type  | Opportunities   | Challenges   | Income potential  |
|--|---|--|---|
| <b>Solar PV</b><br><br>Suitable for buildings and land assets (small scale to large scale projects)  | <ul style="list-style-type: none"> <li>Generates electricity</li> <li>Attracts feed-in tariff at low levels</li> <li>At scale, can apply for Contracts for Difference via the auction process</li> <li>Electricity can be sold to local consumers if connected to battery storage to smooth the generation profile ( this applies to wind below)</li> <li>Local planning policy generally supportive</li> </ul> | <ul style="list-style-type: none"> <li>Exporting electricity via the local distribution network is difficult due to network constraints</li> <li>Identifying the right business model to make a project financially viable</li> <li>Assessing glint and glare of projects on local wildlife and housing</li> <li>Planning permission required</li> </ul> | 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 <a href="#">£90 or £93 per MWh</a> depending on how many reactors are eventually built. |
| <b>Bioenergy / Biomass</b> (wood-based)<br><br>Suitable for school/ office boilers or heating for housing or industrial buildings. (Small – large scale) | <ul style="list-style-type: none"> <li>Generates low carbon heat and electricity</li> <li>Attracts renewable heat incentive at a good price (2016)</li> <li>Wood can be sourced locally</li> <li>Green waste from households can be prepared and used as a fuel for larger schemes</li> </ul>   | <ul style="list-style-type: none"> <li>Planning permission required for the biomass boilers and chimney</li> <li>Negotiating local supplies of biomass pellets and the length of contracts</li> <li>Design and delivery challenges for new sites</li> <li>Air quality management zones need to be checked</li> </ul>                                     | 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 between £23K-£25K per annum.   |
| <b>Biomethane</b><br>(Produced through the anaerobic digestion of organic matter, such as plant or livestock waste materials)                            | <ul style="list-style-type: none"> <li>Potential opportunities for the farm estates e.g. energy beet crops</li> <li>Can be delivered at a range of scales</li> <li>Attracts Renewable Heat Incentive (RHI) for smaller schemes which can aid</li> </ul>   | <ul style="list-style-type: none"> <li>Planning permission is required for anaerobic digestion facilities</li> <li>There are some tracts of land not appropriate to grow energy crops e.g. Grade 1 and 2 agricultural land</li> </ul>  | **For schemes greater than 5MW, contracts for difference maximum strike price for 2017/18 is estimated at £140 per MWh  |

| Fuel Type  | Opportunities   | Challenges   | Income potential  |
|--|---|--|---|
| Appropriate for farm estate – (Small - Medium Scale)   | viability and for larger schemes<br>Contracts for Difference (CfD)  |  |   |
| <b>Waste</b><br><br>Pre-treated organic waste and black bin waste used to extract energy for heating and electricity generation<br><br>(Small – large scale) | <ul style="list-style-type: none"> <li>• Produces electricity and heat.</li> <li>• Anaerobic digestion of organic waste also produces biogas that be used as a fuel ( see below)</li> <li>• Supply energy for new housing developments and /or existing developments. To generate income</li> <li>• Attracts renewable heat incentives (RHI) for small schemes and CfD for large schemes</li> <li>• Cost savings on waste disposal via landfill</li> <li>• Extract value from waste locally (rather than give to others to get this value)</li> <li>• 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 more sustainable solution for waste from local commercial sources than landfill.</li> <li>• Provide long term capacity for the treatment of household and commercial waste</li> </ul> | <ul style="list-style-type: none"> <li>• Local perception of energy from waste schemes. Schemes can be controversial</li> <li>• Planning permission required. The planning application will need to address: <ul style="list-style-type: none"> <li>- transport impacts</li> <li>- environmental impacts</li> <li>- visual impact</li> </ul> </li> <li>• Environmental Permit required. Permit application will need to address environmental impacts including impact on air quality</li> <li>• Grid reinforcement costs could be significant to export electricity as part of early financial viability</li> </ul> | <b>**Contract for difference maximum strike price for 2017/18 is estimated at £80 per MWh</b> |

| Fuel Type   | Opportunities  | Challenges  | Income potential   |
|---|--|---|--|
| <b>Wind</b><br><br>Appropriate for transport assets (e.g. guided bus route way) or farm estate                    | <ul style="list-style-type: none"> <li>Generates electricity</li> <li>Significant land development opportunities particularly along the guided bus way and farm estate</li> <li>Finance incentives available particularly via Contracts for Difference</li> <li>Wind at scale generates good commercial returns</li> <li>Wind with battery storage and EV charging is an opportunity to balance supply and demand for electricity</li> </ul> | <ul style="list-style-type: none"> <li>Planning permission will be required</li> <li>Local planning policy is less supportive of onshore wind development</li> <li>Noise and flicker of the blades give rise to local concerns</li> <li>Local perception of wind projects on house prices can be negative</li> <li>Grid connection is a barrier unless developed with local customers and storage options</li> <li>The Council currently has a policy to not build wind turbines on its assets</li> </ul> | <p>*The current 16/17 strike price for onshore wind projects is around <a href="#">£79 per MWh</a>. (For off-shore wind the price is £114 per MWh and above.</p>   |
| <b>Hydro electricity</b>  | <ul style="list-style-type: none"> <li>Small opportunities on the river and canal systems that could be developed</li> </ul>   | <ul style="list-style-type: none"> <li>Limited opportunities as low lying, flat geography</li> <li>Economics of small scale hydro in low lying areas still to be tested</li> </ul>  |  |
| <b>Geothermal energy and extraction of heat from air</b><br><br>Thermal energy generated and stored in the Earth. | <ul style="list-style-type: none"> <li>Produces low level heat</li> <li>Ground source heat pumps can supply low level heat for new buildings and communities to reduce heat consumption.</li> <li>Air source heat pumps extract heat and recirculate warm air</li> <li>Attracts renewable heat incentives (RHI) for Ground Source heat pumps</li> </ul>  |   | <p>**For large scale schemes greater than 5MW, contracts for difference maximum strike price for 2017/18 is estimated at £140 per MWh.</p> <p>***Air and Ground source heat pumps attract renewable heat incentive of between £0.0257 and £0.0895 per Kwhth dependent on projects.</p> |
| <b>Energy Storage</b><br><br><i>Not a fuel type but a technology</i>  | <ul style="list-style-type: none"> <li>Stores excess energy produced when renewables are working</li> </ul>  | <ul style="list-style-type: none"> <li>To be eligible for finance incentives under National Grid's STOR</li> </ul>  | Short Term Operating Reserves (STOR) is a negotiated payment for access to extra power   |



| Fuel Type  | Opportunities  | Challenges                           | Income potential  |
|--|--|--------------------------------------|---|
| to help manage the variability of renewable energy | <ul style="list-style-type: none"> <li>Supplies energy when needed</li> <li>Helps balance generation with the need for continuity of supply</li> </ul> | programme a minimum of 3MW is needed | either generation or demand reduction during certain periods of the day where actual demand is greater than forecast. |

(\*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 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.

3.2 Cambridgeshire has the potential to deliver 28% of its energy needs for buildings and services but only if all types of technologies and fuels are deployed. It is recognised that there are some technologies that are currently more acceptable to the public than others, others 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.

### 3.3 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  |
|--|---|---|--|
| <b>1 - Energy Generation</b> <ul style="list-style-type: none"> <li>Making best use of our assets</li> <li>Attracting Investment</li> <li>Generating income</li> <li>Developing the low carbon economy</li> <li>Displace carbon emissions from fossil fuels</li> </ul> | <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 32 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. <b>See appendix A for potential project areas. In particular scope the options for:</b></p> <ul style="list-style-type: none"> <li>wind turbines along the guided bus route</li> <li>a demonstrator project for community energy for a new CCC housing development site</li> <li>Energy from Waste technologies and sites to provide heat and electricity for local communities and/or the grid dependent on grid capacity</li> <li>Further solar parks</li> <li>Opportunities for storage</li> </ul> <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><br/>Energy Investment Unit<br/>LGSS Finance and Legal<br/>Asset Managers<br/>Refit Service Provider (Engineering support)<br/>Farm Estate<br/>Assets and Commissioning</p> <p><i>Finance</i><br/>PWLB loan facility<br/>Upfront development budgets recovered through profits from schemes<br/>Finance incentives and grants<br/>Private sector finance to share risk on large projects</p> |
| <b>2 – Energy Supply</b> <ul style="list-style-type: none"> <li>Building resilient communities</li> </ul>  | <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:</p> <p><i>Capacities and skills</i></p>   |

|   |  |  |  |
|---|--|--|--|
| <ul style="list-style-type: none"> <li>Supporting vulnerable people</li> <li>Supporting a prosperous economy</li> </ul>   | <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 pros and cons for 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<br/>Smarter Cambridge</p>                                 |
| <p><b>3- Energy Efficiency</b></p> <ul style="list-style-type: none"> <li>Reducing cost and waste</li> <li>Supporting vulnerable people</li> <li>Making best use of our assets</li> <li>Supporting Growth</li> <li>Reduce carbon emissions</li> </ul> | <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><b>4- Cost management</b></p> <ul style="list-style-type: none"> <li>Supporting vulnerable people</li> </ul>   | <p>Delivered five 'collective switch' opportunities for residents and businesses to reduce energy bills.</p>   | <p>Continue to deliver collective switch opportunities for residents and businesses through sharing the</p>  | <p>LGSS Energy Manager<br/>LGSS Procurement<br/>Energy investment Unit</p> |

|  |  |   |   |
|--|--|---|---|
| <ul style="list-style-type: none"> <li>Working in partnership</li> <li>Managing changes to contracts and procurements</li> <li>Attracting investment</li> </ul>                      | <p>Procured electricity and gas supply tariffs for public sector buildings ( C J-S – please add any further details)</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>Peterborough’s Collective Switch scheme.</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 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>ICHOOSR/Peterborough collective switch scheme</p> <p>Assets and Commissioning Service</p> <p>Energy Investment Unit<br/>LGSS Finance and Legal<br/>Asset Managers<br/>Refit Service Provider<br/>(Engineering support)</p> |
| <p><b>5- Selling Energy</b></p> <ul style="list-style-type: none"> <li>Make best use of our assets</li> <li>A sustainable and prosperous economy</li> <li>Generate income</li> </ul> | <p>Work is underway engaging with customers for the direct sale of electricity for the Smart Energy Grid Project described below.</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</p>   | <p>As for 1 above but in addition:</p> <p>Licensed energy company arrangements</p>  |



|   |   |   |  |
|---|---|---|--|
|   | Draft power purchase templates are under discussion and negotiations on tariffs starting.   | <p>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>   | Blue Sky Peterborough  |
| <b>6 – Growth</b> <ul style="list-style-type: none"> <li>• Creating Smart Energy Communities</li> <li>• Improving air quality</li> <li>• A prosperous local economy</li> <li>• Working with innovative companies to test new ideas</li> </ul> | 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>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 5<sup>th</sup> 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</p> | <p>As for 1 above but in addition:</p> <p>City Deal<br/>Smarter Cambridge<br/>Growth and development</p> |

|  |  |   |  |
|--|--|---|--|
|  |  | <p>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>Replicate the Smart Energy Grid Project at St Ives on further park and ride schemes to link into City Deal and other projects where energy supply and demand can be development and managed</p> |  |
|--|--|---|--|

## 4.0 FUNDING AND RESOURCES FOR THE DELIVERY OF ENERGY STRATEGY

### 4.1 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.

#### 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

There are also opportunities to apply for government grants where there are projects that bring innovation or change but need some grant support to ensure they stack up financially.

#### 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.

##### 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

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 to help manage project risk.

## **4.2 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.

### **Contact information**

If your team has energy project ideas but not the capacity or know how to move forward, we are happy to help. Tel: 01223 728552 or email [sheryl.french@cambridgeshire.gov.uk](mailto:sheryl.french@cambridgeshire.gov.uk)

## **4.3 Who will monitor the action plan and where will process be reported?**

The strategy will be approved by Cambridgeshire's Economy and Environment and General Purposes Committees which will also receive annual progress reporting. The Strategy delivery will be monitored internally via the Strategic Asset Management Board which meets monthly and will help unlock barriers to the identification and delivery of projects.

## **5.0 WORKING WITH PARTNERS AND KEY STAKEHOLDERS TO DELIVER THE ENERGY STRATEGY**

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

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.

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 the network operator and National Grid to establish where there are opportunities to connect and export electricity or to establish find 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.



Stakeholder engagement is essential for the successful delivery of energy projects. It will be important to meet local communities, parish councils and businesses to talk through ideas, potential benefits and key challenges as projects come forward.

Working with colleagues at Peterborough City Council and our partner Cambridgeshire Local Authorities is also key. This 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 which brings benefits to the communities we serve.

## **6.0 THE BENEFITS OF AN ENERGY STRATGY 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, provides more certainty around energy bills, builds community resilience should global energy supplies become restricted, and supports the local economy.

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 slow global warming impacts.

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

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

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

