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Shropshire Council Carbon Management Programme Revenue from Renewable Energy

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Summary

The purpose of this report is to advise the Council that it has a short window of opportunity to invest in renewable energy generation and to generate a substantial revenue stream over the next 20-25 years depending on technology.

The areas that need serious and urgent consideration due to Central Government deadlines are:

1st Priority - Renewable Energy Generation - Feed-in-Tariff (FIT) (Solar PV section 2.1 and Wind Turbines 2.2);
2nd Priority - Renewable Heat Incentive (RHI) (section 2.4)
This produces net savings for both priorities of £745k by 2017/8.

Recommendations

It is recommended that Strategic Management Board:

A. Notes that the capital spending required to draw in net income from Renewable Energy Generation is on an 'invest to save' basis.

B. Recommends to Cabinet that the priority photovoltaic (PV) installations should now be taken forward as a matter of urgency so that the Council can benefit from the highest level of payments under the FIT scheme, generating net savings of £457k in 2012/13, rising to £695k in 2017/18.

C. Recommends that Cabinet approves the principle of investing in wind turbines and allow officers to investigate appropriate council owned sites for small wind turbine installations which will adopt a phased in approach, generating net savings of £2k in 2012/13, rising to £34k in 2017/18.

D. Note that officers will progress a potential Shrewsbury Weir hydro project including a formal OJEU tendering process.

Report

1. Background

The UK has a target that by 2020, 15% of our total energy demand (35% of our electricity) should come from renewable sources. All sectors of the UK economy are expected to contribute to this. Thus there is an urgent need to increase the amount of energy generated from renewable sources.

The Government has recently overturned a prior Act of Parliament, paving the way for Local Authorities to earn income from generating electricity and heat under these two programmes which have the ability to generate substantial income in future years.

Installations qualifying for the FIT need to be in place by March 2012 in order to benefit from the higher level payments for 25 years. The payment levels are expected to be reduced from 2012 onwards.

The RHI, to be introduced in June 2011, will also allow the Council to maximise returns.

1.1 Strategy

a. The Council completed the Local Authority Carbon Management Programme with the Carbon Trust in March 2010 which resulted in the production of a robust Carbon Management Plan. This included a challenging target of reducing carbon emissions from Council operations by 35% by March 2014.

b. This Plan was adopted by the Shropshire Council members on 25th February 2010.

2. Schemes to be Developed

In addition to the projects already in the Capital Programme, work has been ongoing to evaluate the revenue potential from Renewable Energy Generation through the Feed-in-Tariffs scheme.

Details of the schemes and their risks are in priority order as follows:

2.1 Solar Photovoltaics (PV)

This project is based on up to 400 installations all rated at 4 kilowatts of electricity (kWe) and producing 3600 to 3800 kilowatt hours per annum (kWh). At an average cost of £13k per installation, this would be a capital cost of £5.2m, with a borrowing period of up to 25 years, but net income will be in

excess of £700,000 by 2018 (*see table 1*). FITs are index-linked to the retail price index, so the initial 41.3p/kWh is now 43.3p/kWh and the Council will see its future revenue increase in a similar manner.

This project would need to be procured in one agreement to obtain volume discounts and to ensure as many installations are completed before March 2012 to gain the maximum tariff rate which reduces by approximately 10% per annum from 1st April 2012.

This is a low risk project to deliver but high risk if delayed. (*See Project Risk Assessment Table Appendix 1)*

Risks

1. Any further delay will risk the loss of income by not accessing the higher rate of feed-in-tariff payments for April 2012 which is 41.3p/kWh generated, plus 3p/kWh for 50% of any unused kilowatts exported back to the national grid.

2. Government is currently reviewing the FIT scheme in relation to large scale solar PV farm systems, those greater than 50kW in output.

3. It is anticipated up to 400 installations can be made. However, when the chosen contractors undertake structural assessments, some roofs may not be suitable. Additionally, the outcomes of the building review and rationalisation programme may further reduce the number of buildings available.

Table 1 – Capital Cost/Revenue Generation for PV

Solar PV	**Total Cost (£)**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**
Capital costs	**5,200,000**	**5,200,000**	**-**	**-**	**-**	**-**	**-**	**-**
CRC Liability		**-**	**-**	**-**	**-**	**-**	**-**	**-**
Debt Charges		**-**	468,000	458,000	447,000	437,000	426,000	416,000
Energy Savings		16,720-	167,200-	171,380-	175,660-	180,056-	184,560-	189,170-
CRC Tax Avoidance		9,790-	130,560-	146,880-	163,200-	179,520-	195,840-	212,160-
Feed-in-Tariff		62,760-	627,600-	643,290-	659,370-	675,860-	692,750-	710.070-
Net Cost/Savings		**89270-**	**457,360-**	**503,550-**	**551,230-**	**598,440-**	**647,150-**	**695,400-**

2.2 Wind Turbines

It is proposed to install small wind turbines rated at 6kWe. Seven locations have been identified as potential sites and upon further investigation other sites may be viable.

This will be higher risk than PV because planning permission will be required. The type of turbine proposed is small, graceful in design and produces minimal noise emissions.

Risks

1. Planning permission will be required for each installation and there may be public opposition.

Table 2 – Capital Cost/Revenue Generation for Wind Turbines

Wind Turbines	Total Cost (£)	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Capital costs	**330,000**		**128,000**	**138,000**	**64,000**	**-**	**-**	**-**
CRC Liability		**-**	**-**	**-**	**-**	**-**	**-**	**-**
Debt Charges		**-**	**-**	11,520	22,780	28,030	27,390	26,760
Energy Savings			530-	5,300-	11,240-	16,810-	17,230-	17,660-
CRC Tax Avoidance			30-	230-	900-	1,230-	1,360-	1,480-
Feed-in-Tariff			1,800-	17,980-	20,230-	39,610-	40,600-	41,620-
Net Cost/Savings			**2,360-**	**11,990-**	**9,590-**	**29,620-**	**31,800-**	**34,000-**

2.3 The Shrewsbury Weir Hydro Project

The Council has been considering a potential hydro generation scheme at the Castlefields Weir in Shrewsbury for some time. The weir was built in 1909 to raise the water level in the summer months and it is the only place in Shrewsbury where there is sufficient "head" of water for power generation. Even so, this would be regarded as a "low head" scheme at less than 2.5 metres drop, but because of the large flow of water for most of the year it would be possible to generate power for 8-9 months.

An initial Expression of Interest in 2010 generated strong interest from 9 organisations including two community interest groups. Most schemes suggested using two Archimedean Screw turbines at a total of 500kWh generating 2MWh/year (megawatt hours).

Initially, it had been assumed that the Council would merely lease the land on a 20-25 year option to a provider who would be responsible for feasibility, regulatory permissions, construction and operation. However, the introduction of Feed-in-Tariffs now available for local authorities, necessitates a re-evaluation of the project. The options are:

i. It could be built and run by a commercial company or as a community project, with the Council benefiting only from the rent of the land.

ii. It could be built and run in partnership by the Council with a commercial company or a community group, the latter raising the funding through grants and share issues, along with funding from the Council.

iii. The Council undertakes the feasibility works itself which would include all the monitoring, tests, surveys, impact assessments, flood risk assessments and potentially obtaining the necessary licenses. This would be an approximate initial cost of £250k over a two year period but would increase the value of the rent for the land should the Council decide that an external organisation takes on the design and build element.

iv. The Council could take forward the project in its entirety, tendering for a design and build project, then maintaining and running it, and benefiting fully from the revenue generated. The Council would need to find the capital outlay of approximately £2.5m. (Bedfordshire Council has already taken this route for a similar project).

This is a complex and long term project but the technology is proven and having a significant hydro scheme in Shropshire would complement the other forms of renewable energy. It is a high risk scheme but **Option ii**, working in a partnership agreement would reduce the risk whilst still gaining significant benefits over and above just leasing the land on a long term option.

Risks

1. A Feasibility Study is required to gain various permits and undertake EIA's. There is a risk it may identify issues that make the project non-viable and hence should not proceed.
2. Not able to agree a Partnership arrangement.
3. Planning permission and other permits may not be approved.
4. A Private Wire (ESCo) company cannot be formed to allow electricity to supply Shirehall. The figures given are assuming we can form such a relationship. These schemes do exist and electricity generation companies do support them.

Table 3 – Capital Cost/Revenue Generation for Shrewsbury Weir

Shrewsbury Weir	**Total Cost (£)**	**2011/12**	**2012/13 £**	**2013/14 £**	**2014/15 £**	**2015/16 £**	**2016/17 £**	**2017/18 £**
Capital costs	**2,000,000**		**100,000**	**100,000**	**50,000**	**700,000**	**1,050,000**	**-**
CRC Liability		**-**	**-**	**-**	**-**	**-**	**-**	**-**
Debt Charges		**-**	**-**	9,000	17,800	21,900	84,400	177,000
Energy Savings		**-**	**-**	**-**	**-**	**-**	6,000-	60,000-
CRC Tax Avoidance		**-**	**-**	**-**	**-**	**-**	2,570-	25,680-
Feed-in-Tariff		**-**	**-**	**-**	**-**	**-**	22,900-	229,000-
Net Cost/Savings		**-**	**-**	**9,000**	**17,800**	**21,900**	**52,930**	**137,680-**

2.4 Renewable Heat Incentive (RHI)

The renewable heat generation equivalent to the Feed-in-Tariffs, the RHI is a scheme to stimulate a new market in renewable heat, with the first phase starting in July 2011 targeting the non-domestic sector installations ie. industrial, commercial and public sector. The length of contract term is 20 years index-linked with 'degression' review (reduction in payments levels) for new installations every 4 years but with the intention of supporting new installations until at least 2020.

Biomass, ground source heat pumps and solar thermal installations are all eligible. Air source heat pumps may be eligible after 2012 subject to a cost/benefit analysis by Government.

It is proposed to fit solar thermal systems on up to 40 sites to produce hot water, mainly to complement the introduction of Biomass boilers to replace Oil fired boilers. The two systems form a synergy to maximise the use of the Biomass boiler and reduce the number of boiler starts during the warmer months.

Heating for the Parkhall Depot in Oswestry will qualify for the RHI and whilst it will be biomass only, it will still save the Council approximately £4,000/annum.

A Renewable Heat Incentive Green Paper will be submitted to Strategic Management Board as a matter of urgency to allow the Council time to consider the financial benefits before the scheme becomes operational.

Table 4 – Capital Cost/Revenue Generation for Solar Thermal – example under RHI

Solar Thermal	**Total Cost (£)**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**
Capital costs	**200,000**	**10,000**	**110,000**	**30,000**	**20,000**	**20,000**	**10,000**	**-**
CRC Liability		**-**	**-**	**-**	**-**	**-**	**-**	**-**
Debt Charges		**-**	900	10,770	13,240	14,740	16,200	16,720
Energy Savings		50-	980-	3,310-	7,110-	8,050-	8,940-	9,160-
CRC Tax Avoidance		**-**	240-	380-	490-	580-	780-	1,040-
Feed-in-Tariff		110-	1,130-	13,610-	14,280-	17,880-	20,210-	22,680-
Net Cost/Savings		**160-**	**1,450-**	**6,530-**	**8,640-**	**11,770-**	**13,730-**	**16,160-**

3. Conclusions

Urgent approval is requested to proceed with installations of solar PV on Council-owned buildings to benefit from FIT's and purchase of thermal modelling software to ensure buildings perform to a standard that will bring long term financial savings.

A commitment to overall use of renewable technology, both for electricity and heat generation is of significant importance if the Council is to reduce future energy bills and generate revenue.

List of Background Papers (This MUST be completed for all reports, but does not include items containing exempt or confidential information)
Human Rights Act Appraisal The recommendations contained in this report are compatible with the provisions of the Human Rights act 1998
Environmental Appraisal The Council completed the Local Authority Carbon Management Programme (CMP) with the Carbon Trust in March 2010 resulting in a robust Carbon Management Plan, and a challenging target of reducing carbon emissions from Council operations by 35% by March 2014. Rising fuel costs are becoming a significant issue for Shropshire Council and reducing dependence on fossil fuel for heating by using renewable sources will reduce emissions, costs and strengthen security of supply.
Risk Management Appraisal It was recognised when the reduction target was set that it would be particularly challenging in the current economic climate. In spite of the significant budget constraints there are sound financial reasons for taking advantage of, and developing renewable energy projects that will benefit the Council.
Community / Consultations Appraisal N/A
Cabinet Member Ann Hartley
Local Member All
Appendices Appendix 1 – Project Risk Assessment Table