

**Leader**

**Solar Power for Schools – 2017/18**

**March 2017**

**Executive Director Economy, Infrastructure and Environment**

<b>Ref No: LDR22 (16/17)</b>
<b>Key Decision: Yes</b>
<b>Part I</b>
<b>Electoral Division: All</b>

### **Executive Summary**

The County Council successfully installed solar PV systems on eight schools in a pilot programme in 2015. Over the past year this has shown clear benefits for the schools with reduced consumption from the grid, cost savings and reduced CO<sub>2</sub> emissions.

This proposal is for an expanded programme to install solar PV systems in up to 48 additional schools in 2017/18. The total capacity would be 1,600 – 2,000 kWp requiring an investment by the Council of no more than £3,000,000. The investment will be repaid through Feed In Tariff (FIT) payments from central Government, sales of electricity to schools, and export of surplus generation to the local electricity network, with a net benefit of £1.7m to the County Council. In addition the cost to the schools of the electricity generated on site is 25 – 30% lower than if purchased from the grid, generating savings of £2.2m for schools over the 25 year life of the PV systems. Further large scale programmes will be planned in future years.

An Energy Strategy for the county was approved by the County Council in July 2016. The Action Plan accompanying it identified work with schools on renewable energy generation as a priority.

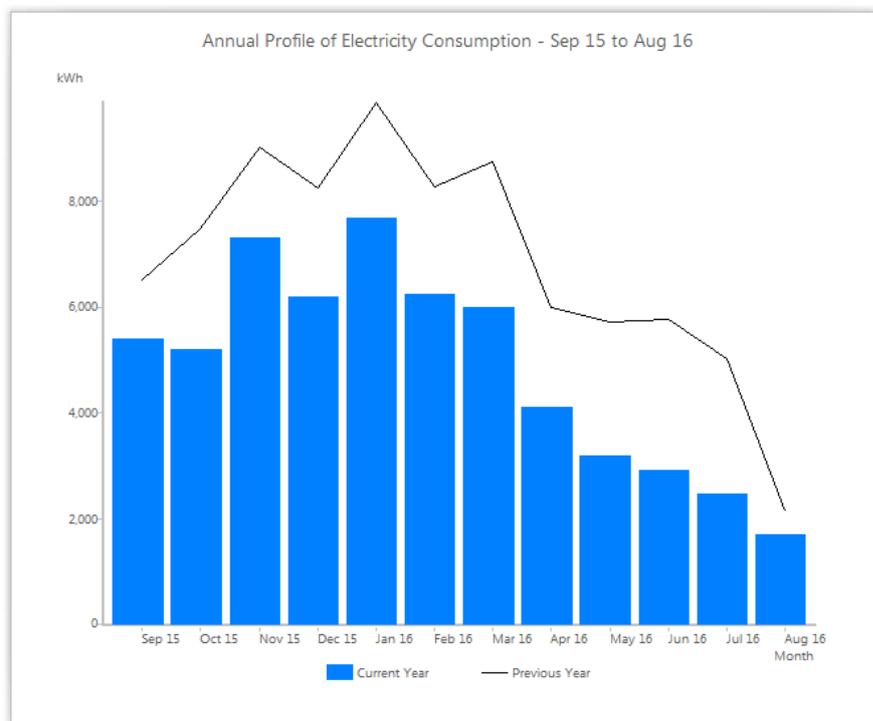
### **Recommendations**

That the Leader:

1. Approves the installation of solar PV systems in an estimated 48 schools by the end of March 2018 at a cost not exceeding £3 million provided thresholds for financial viability are met;
2. Approves the progression of an initial programme of work for site survey, design and costings for each project.
3. Delegates authority to the Director of Economy, Planning and Place to approve the individual schemes for delivery based on the survey, design and costing work undertaken.

## 1. Background

- 1.1 National policy to support renewable energy and address climate change was established with the passage of the Climate Change Act in 2008 and has been reinforced by the ratification of the UN Paris Climate Agreement by the UK Government in November 2016.
- 1.2 The County Council's Sustainability Strategy, approved in December 2015 demonstrates the County Council's commitment to tackling sustainability both within the authority and more broadly within West Sussex. An Energy Strategy for the county was adopted by the County Council in July 2016 and this proposal contributes to Priority 1 of the strategy: 'to reduce energy consumption and increase energy efficiency across the West Sussex County Council estate'. Work to support schools is identified as an early action in the accompanying Action Plan and was supported by members at ECSSC in their July 2016 meeting when they recommended that "the Cabinet Member for Finance supports the solar panel rollout and equipment across schools and other county buildings".
- 1.3 In 2015 the County Council installed solar PV systems in eight schools as a pilot trial. This showed clear benefits for the schools with a reduction in power drawn from the electricity network and cost savings for the schools. The impact at Leechpool Primary School is illustrated in the graph below. A reduction of almost 30% in use of electricity from the grid was achieved and 90% of the generated power was used on site. All schools in the pilot scheme with meters recording half hourly data showed 90% or more of the electricity generated by the panels was used on site.



### Impact of installing solar PV at Leechpool School in September 2015

The line shows the electricity drawn from the grid in year before the installation, the solid blue bars show the consumption from the grid in the year since the PV system was installed

- 1.4 In January 2016 the rate of support from central Government for solar PV installations was cut by more than 60%. However, despite reduced financial returns, there is still an opportunity to cost effectively install solar PV systems for electricity production in schools and similar sites.
- 1.5 Rising school rolls are placing increasing demands on school budgets. A solar PV installation reduces energy expenditure and so helps the school balance its budget although the contribution is only modest.

**2. Proposal for an expanded solar PV programme for schools**

- 2.1 The 2015 pilot scheme demonstrated an acceptable model for installation of solar PV systems in schools. In this schools make no contribution to the cost of the system or its maintenance. Risk for the school is very low. They commit to paying for electricity generated by the system that they use over the expected 25 year system life. This is 25 – 30% cheaper than buying electricity from the network, creating a saving for the school. Any electricity not used by the school is exported to the grid.
- 2.2 PV systems will be installed at between 38 – 48 schools with maximum expenditure of £3,000,000. The size of the systems will vary depending upon the size of the school, the condition of the roofs and other factors including available grid capacity. The scale of the programme for 2017/18 is summarised below:

Number of schools	38 - 48
Installed capacity	25 – 250 kW per school, total 1,600 – 2,000 kW
Capital cost	up to £3,000,000
Savings to schools	£47,000 in year 1, £2.2m over 25 years
Net Income to WSCC	£1,700,000 over 25 years
Investment payback	13.8 years
Indicative rate of return	5.6% over 25 years
Carbon emission (CO <sub>2</sub> ) savings	772 tonnes in year one

- 2.3 The standard County Council cost model for PV projects was used for the estimates above. This includes planned maintenance, data collection cost and a contingency allowance. Schools have no liability for maintenance costs, this liability remains with the County Council but has been allowed for in the modelling.
- 2.4 The investment will be coordinated with capital works to expand schools capacity to meet rising pupil numbers and the school roof replacements delivered through the existing maintenance programme, enhancing cost effectiveness. The investment will be repaid through Feed In Tariff (FIT) scheme payments from central Government to the County Council, payments by the schools for electricity used and sale of electricity exported to the wider network.
- 2.5 The estimate above is based on costs for recent school PV projects but each school has a different potential for PV and the programme will take account of this in a three stage implementation process:

- i) Desktop analysis to identify school sites with good PV potential
- ii) Initial site survey, outline design and costings to confirm viability and provide good information for review and decision on proceeding through WSCC capital project governance
- iii) Approval and installation will be based on groups of 8 - 10 schools with a geographical focus. This should achieve a lower cost for installed projects due to economies of scale.

### **3. Benefits of the approach**

3.1 Such a programme will create benefits additional to the electricity generated and cost saving for the schools. These include:

- Savings to the schools: the cost of electricity generated is 25 – 30% lower than purchase from the grid. Each school will save an average £1,920 per year over the 25 year life of the agreement, a total of £2.2m.
- A net income to WSCC of £1.7m over the 25 year period
- Continuing savings after the agreement ends. The solar panels are guaranteed to produce 80% of their initial rated output in year 25. The schools can expect to continue to benefit from solar power after the end of the agreement with WSCC. Savings will increase as no charge will be made by WSCC for the electricity.
- Education and engagement: being able to communicate to the pupils the benefits of sustainability through a working example of renewable technology in their own school will provide more direct engagement, particular in the subjects of IT, science, design and technology. . A Key Stage 1 educational pack was produced for the pilot phase which is available for use. There is also a demonstration of low carbon technology for parents and the wider school community.
- Support to the local economy. The installation programme will be managed by the Your Energy Sussex (YES) delivery partner, Carillion and delivered by local small or medium sized enterprises (SMEs). Local solar PV installers are adjusting to low FIT payments and their planned withdrawal for new projects in 2019. New business models such as combining solar PV generation with electricity storage are predicted.
- Reduced carbon emissions contribute to local, national and global targets.
- For the Your Energy Sussex Partnership and the County Council this project is a demonstration of project delivery for other YES partners across Sussex. There are reputational benefits from a project that saves schools money, provides clear environmental benefits and does not impose additional costs on West Sussex residents.

### **4. Alternative Options Considered**

4.1 Do nothing, the status quo was the only alternative considered. It was not favoured since:

- It would leave schools exposed to rising electricity costs at a time when schools budgets are coming under increasing stress.

- Schools without a PV system lack a resource that can be used in many areas of the curriculum from science and mathematics to geography and citizenship.
- A school with a solar PV system is often the starting point for engagement with the wider community for the YES programme. This is more difficult to achieve under a 'do nothing' scenario.
- The County Council also needs to make best use of its assets. Not installing a solar PV system may forgo the opportunity to generate a surplus of low carbon, low cost electricity for use in other corporate buildings.

4.2 As solar PV is a maturing technology with well known, low risks the benefits outlined in section 3 above clearly outweigh the risks identified in section 8.

## **5. Issues considered in making the recommendation**

- 5.1 This is a time limited opportunity - FIT payment rates are being steadily reduced before being phased out in 2019. Modelling indicates that the current proposal is viable until at least the end of March 2018.
- 5.2 The ability of the County Council to borrow money for investment at low interest rates - This is key to the viability of the scheme and if interest rates rise the financial model will have to be reviewed.
- 5.3 The types of school to which the offer is made - The offer is structured to enable a comprehensive offer which includes voluntary aided schools and academies.
- 5.4 Whether it is possible to increase benefits to schools by indexing annual price increases for PV electricity used by the Consumer Prices Index rather than the Retail Prices Index This was examined as recommended by the Environment and Community Services Select Committee on 10 March 2017. The conclusion was that the current indexation method balances the benefits to individual schools against the need to include as many schools as possible and the level of financial return to the Council needed for a viable programme. Further details of the review are outlined in Appendix 1.

## **6. Consultation**

- 6.1 The expansion of the schools PV programme has been under review and discussion within the YES team since the 2015 pilot scheme and reduction in FIT rates in early 2016. The potential for the 2017/18 phase was tested with:
- Head teachers, business managers and bursars at six schools where the potential for PV was assessed in more detail. All found the offer of electricity at 8p/kWh attractive when combined with a free system installation and no maintenance costs.
  - The Schools Resources Forum in November 2016 where there was opportunity for feedback from schools who had a PV system installed. They expressed their support for the programme.

- Principal Manager – Capital Planning & Projects, consultation about the overall programme and specifically to coordinate with the Schools Basic Needs programme which is developing capacity for increased pupil numbers.
- The Principal Facilities Manager to coordinate with the planned roof maintenance programme in 2017/18 financial year.
- Schools Buildings Surveyors to identify schools with good potential for PV and those to avoid due to roofs with limited service life remaining.
- The proposal has progressed through the County Council's governance process for capital projects:
  - the Education Asset Hub approved the programme and on 1 February 2017 and the outline business case was approved by the Strategic Capital Investment Board (SCIB). Batches of projects will be brought back as detailed business cases for consideration by SCIB.
  - On 10 March it was considered by the Environment and Community Services Select Committee. The committee was supportive of the programme and the contribution it could make to both schools and implementation of the County Council's Sustainability and Energy Strategies. A particular concern was to increase the benefits to individual schools so far as possible, see paragraph 5.4.

All those consulted were supportive of an expanded PV for schools programme and keen to work together to achieve it.

## **7. Resource Implications and Value for Money**

- 7.1 The project will be delivered through the established arrangements for the YES partnership and can be met from within existing resources.
- 7.2 The total capital cost for the 2017/18 programme is estimated at £3,000,000 and is within the allocation for YES projects included within the Income Generating Initiatives section of the 2017/18 capital programme. As such individual school PV projects will be modelled financially and the process outlined in paragraph 2.5 above will ensure that only those projects that meet the relevant criteria based on a programme internal rate of return (IRR) of 5% and consistent positive cash flow will be progressed.
- 7.3 The YES delivery partner, Carillion will manage the installations using local, experienced PV installation companies. Oversight and coordination will be provided by the YES team through weekly Operations Update meetings. Higher level accountability is through monthly Programme Liaison Group meetings. The pricing information from Carillion allows subcontractor costs to be compared to costs from the wider market, which are assessed through the YES team's links to other projects and installers. Coordination with the schools' capital works and maintenance projects will deliver enhanced value for money.
- 7.4 If the full allocation of £3m is utilised then the modelling suggests that the first full year's net income available to the County Council, after allowance for in-year maintenance costs and repayment of capital financing charges would amount to £24,000.

## **8. Risk Management Implications**

- 8.1 Solar PV systems are a well-established technology with known low technical risks, including:
- Poor performance of the PV system compared to predicted outputs due to faulty assessment of the site or poor project design. Using experienced contractors with a good track record and having their work checked by Carillion's in-house team mitigates this risk.
  - Design of a system for a roof in poor condition leading to delays and unnecessary expenditure. This risk will be limited by gathering information about the roof from multiple sources within the County Council and the school as well as carrying out a roof condition survey prior to detailed design work when there is doubt about its condition.
  - Lack of capacity in the supply chain, particularly capacity of installer sub-contractors could limit the number of schools fitted with PV systems. Carillion have recruited three subcontractors to mitigate this risk and ensure an element of competition for the installation work.
- 8.2 Planning constraints: Rooftop solar PV is a permitted development at the sizes appropriate for schools. However, special care has to be taken when dealing with listed buildings or buildings in conservation areas, areas of outstanding natural beauty (AONBs) and in the South Downs National Park. In these circumstances, the appropriate planning authority will be consulted to ensure that PV systems are sensitively sited..
- 8.3 Financial risks for both the County Council and the schools have been considered as follows:
- Schools do not invest in the PV system or pay for its maintenance so have limited risk. There is a risk that they will not save money if the price of electricity supplied from the grid drops below the price for PV electricity. The risk is low since the initial price for PV electricity is 25 – 30% below the current market price. Market prices are expected to increase faster than inflation due to the need for investment in the UK's electricity production and distribution infrastructure.
  - Changes in government incentives for renewable energy will not affect the scheme as once registered under the FIT scheme the incentive payments are grandfathered (the Government has guaranteed that they will continue under the same terms and conditions for 20 years).
- 8.4 If the programme is delayed for any reason a lower income will result as FIT payments rates are reduced each quarter. However, the reductions are small and predictable and the cost of solar PV panels and other materials continues to fall. Financial modelling shows a Solar PV for Schools programme is viable until at least the end of March 2018.

## **9. Impact of the proposal**

- 9.1 Equality Duty – An Equality Impact Report is not required as no actions are identified in the report which would impact on any specific groups of people.

- 9.2 Human Rights – There are no human rights implications arising from this proposal.
- 9.3 Social Value – The County Council has committed to fully embracing the Social Value Act as a means of enabling community engagement, economic value, and sustainable development, developing local capacity and generally seeking to improve the social, environmental and economic wellbeing of the County and contribute to the County Council’s priorities and commitments across the board.

Delivering projects through the YES partnership delivers social value, for example through requirements to use local subcontractors and provide training and apprenticeship opportunities. Support to schools using the PV system as a teaching resource is another element of social value.

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[Appendix 1](#): Indexation of Solar PV Electricity Charges to Schools

**Background Papers:** None