



# **HKD Energy**

## **Annual Report 2018-19**

# HKD Energy

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HKD Energy is a Community Benefit Society, formed in 2014 to develop renewable energy projects, promote energy efficiency, and create awareness of environmental and energy issues in our villages of Hassocks, Hurstpierpoint, Keymer and Ditchling.

Our vision is to create low-carbon communities, by making buildings more energy efficient and generating the electricity we need from renewable sources.

## Downlands School solar project

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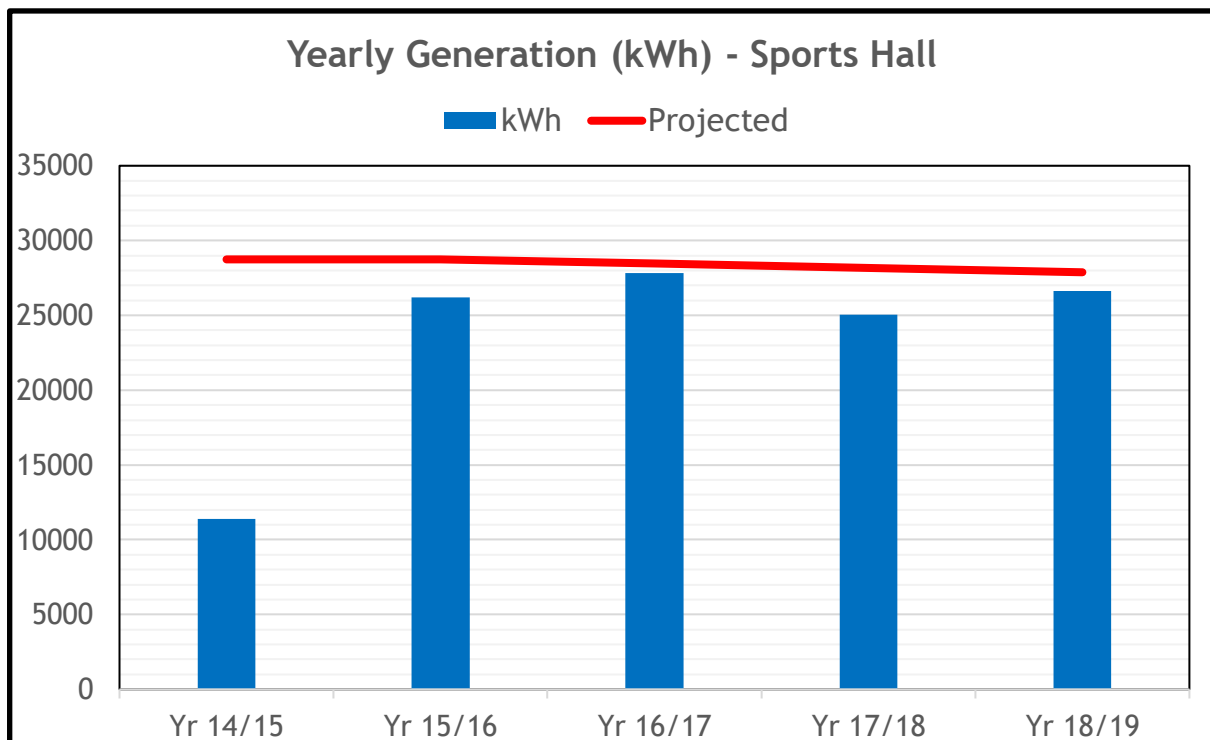
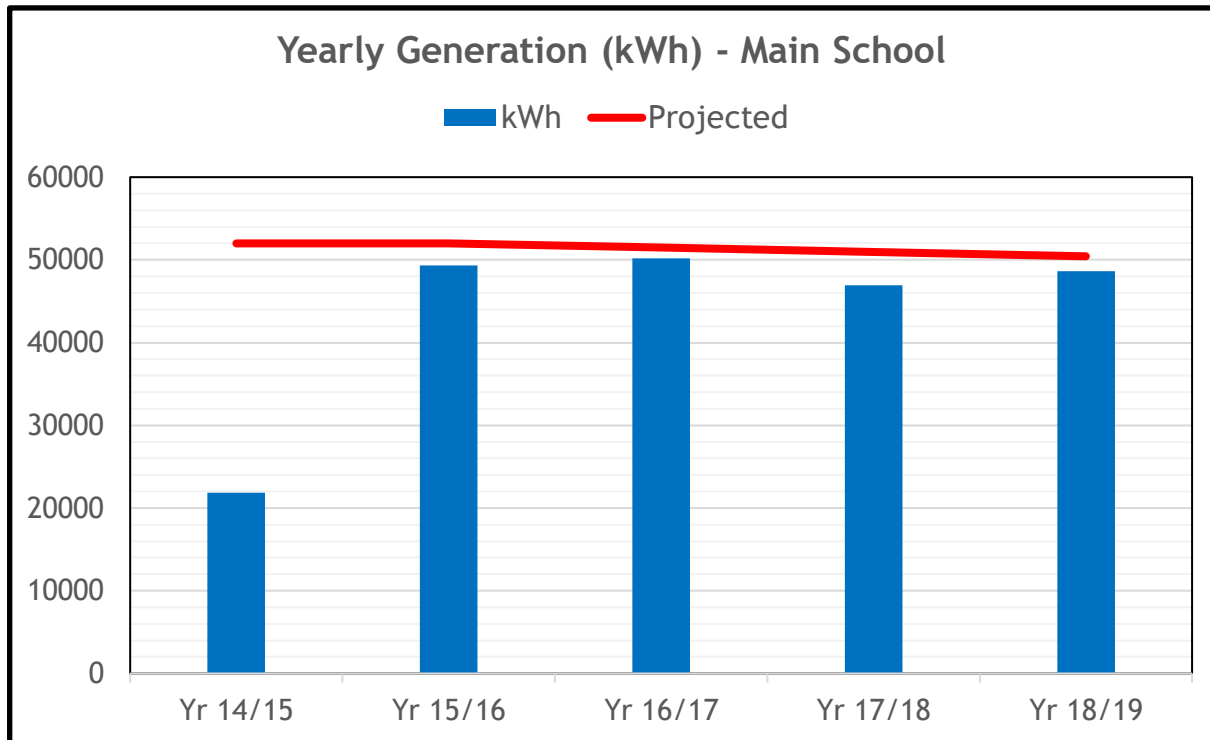
In February 2015 we installed 307 solar panels on the roofs of Downlands School and Sports Hall in Hassocks and began generating energy in March 2015.

The chart below shows how much electricity the panels have generated in each year since installation. In common with many other solar projects, we have learned that initial estimates of the electricity that could be generated were a little over-optimistic. However our current average annual generation figure of 940.2 kWh/kWp is very close to that of Brighton Energy Co-op's installations, where the average figure across their various projects is 944 kWh/kWp.

The bar charts below show the annual generation figures compared to the projected generation for the two systems. A few comments should assist in interpreting these diagrams:

- The projected generation (horizontal line) reduces at 1%/year to allow for panel degradation. The vertical bars give the total generation for each year.
- The first bar covers only the part-year from March 2015 to 30 June 2015 so comparison with the projected annual generation is not applicable.
- For the years with little or no adverse situations, the actual generation is only lower than projected by a small amount (about 3%).
- The effect of adverse conditions can be seen in Yrs 15/16 and 17/18 (due to loss of a panel and heavy bird fouling on Sports Hall in Yr 15/16, also building works and power supply upgrading on both systems in Yr 17/18, together with the two panels broken by seagulls on the Sports Hall discovered in June 2018 and replaced in October 2018).
- The problem of seagulls fouling the panels (mentioned in previous reports) has continued, with some impact on the output of the panels. This is monitored regularly and it is noticeable that heavy rain does partially clean the panels. We have the on-going frustration that the cost of manual cleaning can only be justified when the level of fouling becomes serious. Fortunately the seagulls seem to congregate in particular areas, leaving the majority of the panels largely unaffected.

Taking these comments into account, it can be seen that the overall performance of the solar systems remains satisfactory. Also, it should be noted that our operating and maintenance costs are significantly lower than anticipated in our business plan. Consequently it can be concluded that the performance of the two solar systems is more than adequate to meet all financial obligations, including paying shareholders' interest.



In addition to replacing the two broken panels referred to above, we have also purchased four spare panels which are now being stored at the school, in case we need to replace any of the panels in the future. The current panels are no longer manufactured and we want to be sure that we have the right sized replacements should we need them.

Our intention is for an inspection of the panels in spring 2020, with some cleaning as necessary, so that the panels perform well during the sunnier days after the winter period.

## Solar power for the railway

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In May 2018 HKD Energy received a grant from Rural Community Energy Fund (RCEF) for a feasibility study on using solar energy to power the railway around Hassocks, part of the Riding Sunbeams project.

Riding Sunbeams is an innovative and ground-breaking project to supply solar power direct to the railway system. A world-first, the project has attracted significant interest. Network Rail is the single biggest unregulated consumer of electricity in the UK (roughly 1% of total electricity demand): switching the railways to renewable energy would make a significant contribution to the UK's carbon reduction targets.

A partnership of national organisations and local community energy groups like ours is taking forward the Riding Sunbeams project. In our feasibility study in 2018-19 we worked with Community Energy South (CES) on commercial and legal aspects and Ricardo Energy and Environment on technical and financial aspects. The summary of our feasibility study is on our website.

RCEF was originally a £15 million programme, delivered by WRAP and jointly funded by the Department for Environment, Food and Rural Affairs and the Department for Business, Energy & Industrial Strategy. It supports rural communities in England to develop renewable energy projects which provide economic and social benefits to the community.

In 2019 the Riding Sunbeams consortium received a First of a Kind (FOAK) grant from the Department of Transport and Innovate UK to gather more fine-tuned data on power demand, test technical solutions and finalise the commercial delivery model and Power Purchase Agreement (PPA) with Network Rail. Network Rail are fully engaged with the project and a small pilot site is now operational. This work will continue into 2020, at which stage the project should be ready to start detailed delivery plans for the first project.

HKD Energy has been exploring the potential for a local site for solar panels to power the railway, and is in discussion with landowners. We hope to secure an option on a site so that we can proceed to a planning application in 2020, following an application for phase 2 funding from the RCEF (now supported by the Regional Energy Hub, Coast to Capital Local Enterprise Partnership and Department for Business, Enterprise and Industrial Strategy).

# Finances

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Financially we had a good year again to 30th June 2019, making a surplus after tax of £824 (2018 - £391 loss). Generated income was down £783 against budget. However, tight control of operating expenses plus free financial accounting and tax services, have meant that our recurring operating costs are running over £1,100 less than budget. Also, corporation tax cost is running currently over £800 less than budgeted – this is a timing difference effect due to the claiming of capital allowances, that will reverse in later years. Overall therefore our net profit has come out £892 ahead of budget for the year (and compared to a loss of £391 for 2018). We ended the financial year with free cash (uncommitted to purchase commitments) in excess of £20,000, virtually the same as 2018. Net cash generated was £32 (compared in 2018 to a cash reduction of £593).

HKD Energy is therefore on track to deliver the 4% interest expected by shareholders and an overall bonus to Downlands School over 20 years of in excess of £20,000. Most of this comes in the last 10 years. Accounts will be presented at the AGM and made available to shareholders electronically or on paper if requested.

# Impacts

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While we have not yet been able to develop further renewable energy projects, in a UK policy climate that is much less favourable to community energy, we nevertheless continue to have some impacts.

## **Carbon saving**

The project continues to make significant carbon savings. There is considerable debate about the most logical way of calculating the saving in CO<sub>2</sub> emissions from generating electricity using solar panels, particularly as the ‘average grid carbon intensity’ figure for UK has been steadily reducing as the proportion of renewable generation increases and coal fired generation has been reduced to zero (or close to zero). One straightforward approach is to assume that our solar generation is displacing the generation from the CCGT (combined cycle gas turbine) plants that typically provide the ‘top-up’ power to ensure overall demand is met at any given time. On this basis, in this financial year we saved the equivalent of 29.5 tonnes of carbon dioxide.

## **Saving money for the school**

Over the 20-year project we expect to save Downlands School around £150,000 in electricity costs. In the past year we saved the school around £4,540 in electricity costs. We are expecting the annual saving to increase steadily as the cost of electricity from the grid increases in future years. By comparison, the agreement with the School is for the tariff for the solar power they consume (ie most of what we generate) to remain fixed at the low figure (3.3p/kWh) agreed at the outset.

### **Educational impacts**

The panels and the information generated by the monitoring system are used by teachers at Downlands. Over the 20-year project we estimate that nearly 7,000 pupils will come into close contact with the panels, seeing first-hand how a system like this can cut carbon. Our friends at OVESCO have been successful in funding monitoring systems for some of their schools with solar systems, including providing a dedicated flat screen display. A current longer-term objective is to implement a similar system at Downlands, if feasible.

## **Future plans**

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### **Repaying investors**

Based on our income to date, the directors recommend that we pay interest of 4% to our investors. We also expect to continue the annual repayment of capital to investors.

We continue to hold a contingency fund to cover the costs of inverter replacements and the possibility of removing panels to allow roof repairs at the school.

We are not proposing a bonus payment to Downlands School this year.

### **Solar power for the railway project**

Work will continue on this project during 2019/20 and beyond. Any development in the Hassocks area would not take place for at least two to three years.

### **The future of HKD Energy**

When we set up HKD Energy we were confident that we would be able to develop other solar projects to run alongside the one at Downlands School. This would have enabled us to employ someone to take on the administration and other tasks that HKD Energy requires. Despite our best efforts, national policy changes have made it difficult to do this. Two of our original directors have stepped down and a third will step down at the AGM. We have not managed to recruit new directors and the current directors do not feel able to take on the additional and increasingly complex work that is required of us, especially as the Riding Sunbeams project progresses.

We are therefore exploring the possibility of merging or at least a much closer working arrangement with OVESCO, the community energy group based in Lewes. Talks are at a very early stage. If HKD Energy Directors feel that a merger or other arrangement with OVESCO is viable and offers security for our investors and for the Downlands School project we will bring a proposal to an extraordinary general meeting in 2020.