

Reach Community Solar Farm

Financial projections for 528kW array

23rd April 2015

Introduction

Our original intention was to build a solar farm that produced approximately as much electricity each year as is used in Reach. We calculated that a system of approximately 500kW would deliver this much electricity, and we were granted planning permission for a system of this size.

Unfortunately, however, we were unable to gain permission to connect a solar farm of this size to the grid, as connection of much larger solar schemes in the vicinity has used most of the available capacity for generation in the local electricity substation at Burwell.

We therefore downsized the solar farm to a 264kW array. Our current financial projections and share offer are based on a system of this size.

It is likely, however, that Burwell substation will be upgraded within the next couple of years. We will then be able to re-apply for a larger grid connection, and may be able to install the remaining panels that we have planning permission for - allowing us to fulfil our original vision of a system that would generate sufficient electricity to match the needs of the village.

We consider here the financial implications of installing another 264kW of solar panels in two years time ("Phase Two") in addition to the 264kW that will be installed initially ("Phase One").

Installation cost - phase two

The cost of solar panels and inverters has fallen rapidly over recent years, and is projected to continue to fall as production ramps up further and the technology matures. Component costs can be expected to be significantly lower in two years time.

A major part of the build cost of the solar farm is the grid connection to the 11,000V line that crosses the land. However, the connection only needs to be made once, and most of the components that will be used in Phase One will be capable of taking the increased load from the expanded system. The cost of upgrading the High Voltage system to take the increased load from Phase Two should therefore be very much smaller than the initial high voltage connection cost.

We have assumed a cost of £20,000 for upgrading the HV connection in phase two, and a reduction of 15% in the cost of the remainder of the build compared to the initial system. This gives a total installation cost for Phase Two of approximately £240,000. This compares to an installation cost for Phase One of approximately £340,000.

Recurring costs

The major recurring costs for the solar farm are maintenance, lease, business rates, administration and insurance.

The lease and business rates will be approximately proportional to the size of the array, so we have assumed that they will double once Phase Two is complete. The cost of administration of the Society should however be unchanged. Maintenance and Insurance costs will increase, but there are likely to be some economies of scale. Once Phase Two is operational we have therefore assumed that maintenance costs will increase from £1800 to £3000 per year, and insurance will increase from £1000 to £1800 per year.

Income

The income for the solar farm comes from Feed-in tariff payments for the electricity

generated, plus export payments for the sale of electricity. Feed-in tariff payments for new systems are reduced from time to time, and Phase Two can therefore be expected to receive a lower rate than the original system. Over the last two years, the feed-in tariff has degressed at a relatively slow rate.

Export payments are linked to the wholesale cost of electricity, which is expected to increase in line, or faster than, inflation over the coming years.

We have assumed that feed-in tariff payments for Phase Two will be 15% lower than for Phase One, whilst export payments will increase in line with RPI.

End of lifetime

The feed-in tariff contract is for 20 years. If Phase Two is completed in two years time then it will receive feed-in tariff payments for two years longer than the original system.

It is likely that the original system will still be operational at that point, so we have assumed that it will continue to operate and will continue to receive export payments, but will not receive feed-in tariff payments. We have assumed that both Phase one and Phase two will be decommissioned 20 years after Phase two is built (22 years after the initial system build).

Funding of expansion

The Society should be able to fund part of Phase Two from accumulated income, but this is expected to meet only a small proportion of the cost – approximately £30,000 to £40,000. It is expected therefore that a new share offer will be launched to pay for Phase Two. Approximately £200,000 to £210,000 would need to be raised.

We would expect any future share offer to be eligible for Social Investment Tax Relief (SITR) at 30% for investors who pay tax in the UK. This is due to replace the SEIS and EIS schemes that are currently in force

The model scenarios

A spreadsheet has previously been used to model financial projections for the scheme based on three scenarios – 'pessimistic', 'optimistic' and 'realistic'. These are explained in more detail in our Business Plan.

This spreadsheet has been modified to include the cost of building Phase Two, and to take into account the increased income and costs after Phase Two is built. The revised spreadsheet can be downloaded from our documents web page (reachsolarfarm.co.uk/documents.html). Only the 'realistic' and 'optimistic' scenarios have been remodelled, as if we are being pessimistic we would not build Phase Two anyway. The 'pessimistic' scenario is designed to indicate the lowest return that might be realised, which would not be lower as a result of building Phase Two.

Returns to investors

The installation cost of Phase Two is considerably less than Phase One, and there are economies of scale in most of the recurring annual costs, so it is likely to be very cost-effective even if feed-in tariff payments are lower at the point it is built.

As it should be possible to fund Phase Two partly from accumulated income, only limited further capital would need to be raised.

Taken together, these mean that significantly higher returns should be possible to investors once Phase Two is completed. Our spreadsheet model suggests returns of approximately 5.4% per year in our 'realistic' scenario, and 6.8% per year in our 'optimistic' scenario.

Community fund

We would also be able to increase donations to the community benefit fund once Phase Two was operational. We have assumed that donations would double from £500 to £1000 per year. Donations for the community fund could be increased further if the returns to investors were decreased slightly.

Summary

Fulfilling our original ambition to install a solar farm that would generate approximately as much electricity annually as is used in Reach may be possible in a couple of years time if the local electricity network is upgraded. The cost of a second installation phase is likely to be significantly lower than the original build. Returns to investors should be much improved, and the Society should be able to increase its community fund donations.

It should be noted however that there is no guarantee we would ever be able to build Phase Two, as we have no control over the timetable of upgrades to the local electricity network. There is also no guarantee that the Government will continue to support new solar installations through the feed-in tariff – and costs also become increasingly hard to predict several years into the future, so the assumptions used in this document may not be valid.